ZÁPADOČESKÁ UNIVERZITA V PLZNI
FAKULTA ELEKTROTECHNICKÁ

KATEDRA ELEKTROENERGETIKY A EKOLOGIE

DIPLOMOVÁ PRÁCE

Tvorba specifikace pro testování SmartLink technologie multimediálních jednotek MIB

Creation of specification for testing SmartLink technology in MIB

Bc. Josef Ort **2016**

ZÁPADOČESKÁ UNIVERZITA V PLZNI
Fakulta elektrotechnická
Akademický rok: **2015/2016**

ZADÁNÍ DIPLOMOVÉ PRÁCE

(PROJEKTU, UMĚLECKÉHO DÍLA, UMĚLECKÉHO VÝKONU)

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Studijní program:	**N2644 Aplikovaná elektrotechnika**
Studijní obor:	**Aplikovaná elektrotechnika**
Název tématu:	**Tvorba specifikace pro testování SmartLink technologie multimediálních jednotek MIB**
Zadávající katedra:	**Katedra elektroenergetiky a ekologie**

Zásady pro vypracování:

1. Prostudujte a popište specifikaci technologie SmartLink multimediálních jednotek MIB.
2. Navrhněte testovací postup(y) pro SmartLink.
3. Realizujte měření dle navrženého testovacího postupu.

Abstrakt

Předkládaná diplomová práce je zaměřena na nastudování specifikace SmartLink a následnou tvorbu testspecifikace. Popisuje různé typy testování a softwarového vývoje. Ukazuje rozdílná testovací místa pro testování SmartLink a výsledky testů dle vytvořené testspecifikace. Věnuje se také časovému vytížení testera a rozdělení testů na různá testovací místa.

Klíčová slova

SmartLink, MirrorLink, CarPlay, Android Auto, MIB, specifikace, testspecifikace, infotainment-würfel, breadboard, softwarový vývoj.

Abstract

The diploma theses presents studying of the specification of SmartLink and creation the testspecification. It describes different types of testing and software develompent. It shows various testing areas for testing SmartLink and test results according to testspecification. It devotes tester´s time management and distribution tests to different testing areas.

Key words

SmartLink, MirrorLink, CarPlay, Android Auto, MIB, specification, testspecification, infotainment-würfel, breadboard, software development.

Prohlášení

Prohlašuji, že jsem tuto diplomovou práci vypracoval samostatně, s použitím odborné literatury a pramenů uvedených v seznamu, který je součástí této diplomové práce.

Dále prohlašuji, že veškerý software, použitý při řešení této diplomové práce, je legální.

.....

podpis

V Mnichově Hradišti dne 16.5.2016 Bc. Josef Ort

Poděkování

Tímto bych rád poděkoval vedoucímu diplomové práce Ing. Oldřichovi Turečkovi, Ph.D. a Ing. Pavlovi Turjanicovi, Ph.D. za cenné rady, připomínky a metodické vedení práce. V neposlední řadě nejvíce děkuji všem okolo, kteří se mnou vydrželi toto náročné období života, zvláště pak přítelkyni Ivance.

Content

Introduction

This diploma thesis is concentrated on the creation of the testspecification of SmartLink and its testing in MIB. This theme is discussed because of the testing of all the tests according to the testspecification and because of the lack of the testers in technical development in Skoda Auto Inc. and external company working on the projects in the development. It presents certain proposition of the solution by dividing the tests into different testing areas in the development.

List of symbols and abbreviation

A2DP	Advanced Audio Distribution Profile
AA	Android Auto
ABT	Anzeige Bedienteil / Touch display
AOAP	Android Open Accessory Protocol
APP	Application
AT+BVRA	BlueTooth Voice Recognition Command
BMG	Betriebsmustergenehmigung
BT	Bluetooth
CCC	Car Connectivity Consortium
CDB	Common Data Bus
CDC	Communications Device Class
CTS	Conformance Test Suite
DAB	Digital Audio Broadcasting
DAP	Device Attestation Protocol
DDS	Drehdrücksteller / Rotary Knob
DHCP	Dynamic Host Configuration Protocol
DSI	Device Service Interface
EC	Echo Cancelation
FO	Function Owner
GAL	Google Automotive Link
GEM	Green Engineering Menu
GPS	Global Positioning System
HFP	Hands Free Profile
HK	Hard Key
HMI	Human Machine Interface
HU	Head Unit
HW	Hardware
IP	Internet Protocol
KPM	Konzern Problem Management
MAP	Message Access Profile
MD	Mobile Device
MDI	Media Device Interface
MFL	Multi Funktions Lenkrad / Multifunctional Steering Wheel
MIB	Modularer Infotainment Baukasten
ML	MirrorLink
MSC	Mass Storage Class
MTP	Media Transfer Protocol
MU	Main Unit
NCM	Network Control Model
NR	Noise Reduction
OOB	Out-of-Band (Pairing)
OTA	Over-the-Air
PBAP	Phone Book Access Profile
PCTS	Projection Compatibility Test Suite

PSD	Prediktive Strecken Daten / Predictive Route Data
PTEP	Preliminary Touch Evaluation Protocol
PTT	Push To Talk
RFB	Remote Framebuffer
RTP	Real-time Transport Protocol
RVC	Rear View Camera
SAI	Smartphone Application Interface
SBP	Service Binary Protocol
SD	Secure Digital
SDS	Speech Dialog System
SK	Soft Key
SMS	Short Message Service
SSP	Secure Simple Pairing
SW	Software
SWaP	Software as Product
TC	Test Case
TDLS	Tunneled Direct Link Setup
TOV	Test Object Verantwortlicher
TTS	Text To Speech
UDP	User Datagram Protocol
UI	User Interface
UIBC	User Input Back Channel
UPnP	Universal Plug and Play
USB	Universal Serial Bus
VNC	Virtual Network Computing
VW AG	Volkswagen Aktiengesellschaft
WGS84	World Geodetic System 1984
WLAN	Wireless Local Area Network

1. Software development

We distinguish two types of software development: classical and agile.

1.1 Classical software development [1]

There are four classical software developments: Waterfall Model, Spiral Model, Rational Unified Process and Unified Software Development Process.

1.1.1 Waterfall Model

The waterfall method is the most used and it is one of the oldest from all the methods. It is simple and elegant. It can work with a right project.
There are the steps from this model in the picture below.

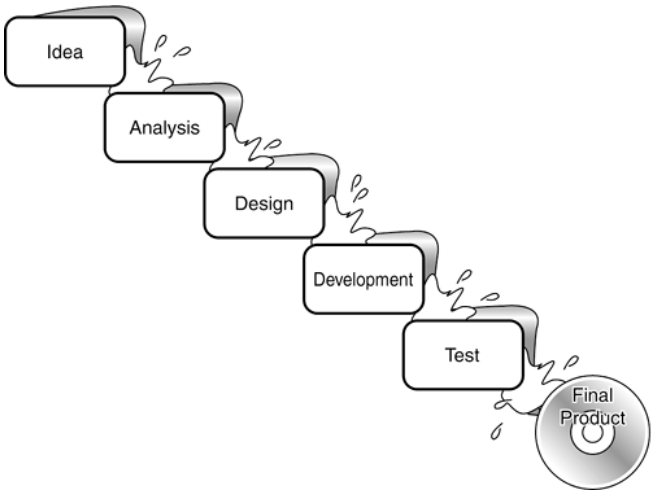


Figure 1.I Waterfall model

A project which uses a waterfall model moves step by step from initially idea to the final project. At the end of each step they decide whether they can move forward or not. The aim is to find out all the details before the first line is written. Problem is that the testing appears at the end where it could be too big. The possibility of earlier tests would be ideal.

1.1.2 Spiral Model

The spiral model was introduced by Barry Boehm in 1986 in his Association for Computing Machinery (ACM) paper, "A Spiral Model of Software Development and Enhancement." The main idea is not to define everything at the beginning but you define

only the small targets. You try them out, receive the feedback and if it is all right you move froward. You do this again and again until you have the final product. The testers like this model because they can test all along the process.

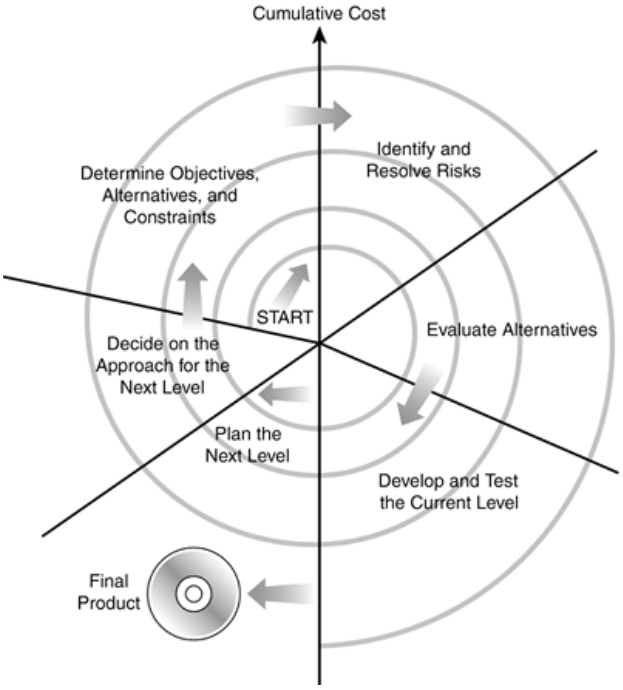


Figure 1.II Spiral model

1.1.3 Rational Unified Process

The Rational Unified Process (RUP) is an iterative software development process framework created by the Rational Software Corporation. It has got four phases. It is very similar to waterfall model. Each phase has one important objective to be accomplished. There is a RUP model.

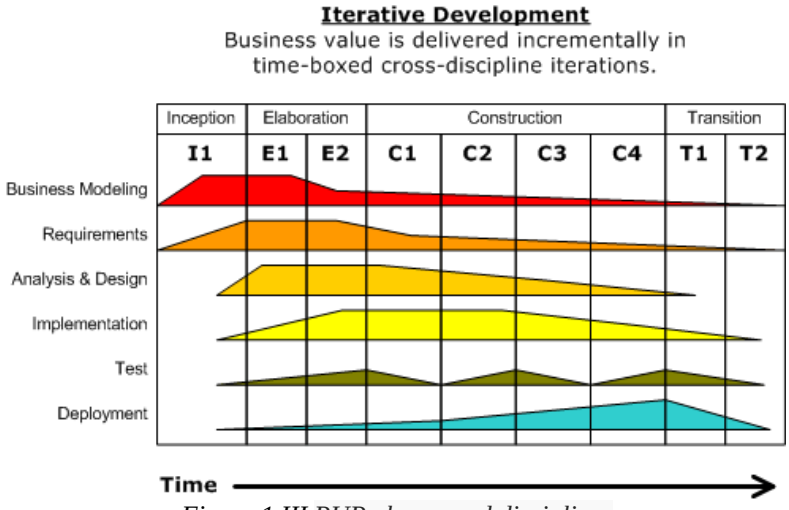


Figure 1.III RUP phases and disciplines

1.1.4 Unified Software Development Process

The Unified Software Development Process or Unified Process is a popular software development process.

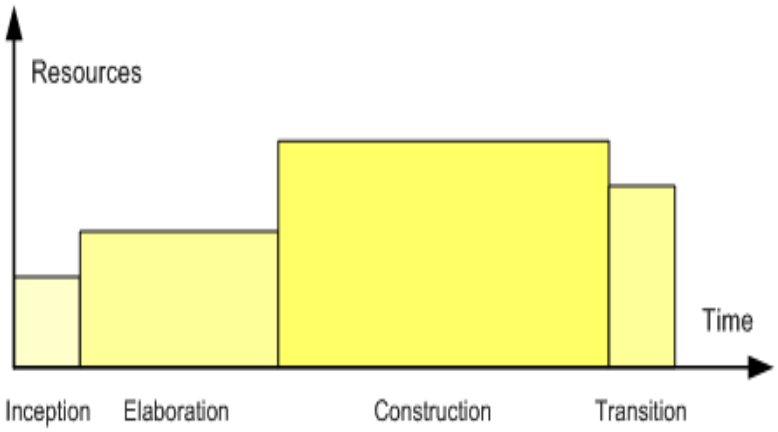


Figure 1.IV Profile of a typical project showing the relative sizes of the four phases of the Unified Process

1.2 Agile Software development

Agile software development is a set of principles. The requirements and solutions come due to collaboration. It is very active process which includes variable planning, quick development and continuous improvement. It is very flexible.

1.2.1 V Shaped Model [2]

This model is used in VW AG. It concentrates on the execution of processes in following stages similar to V Shaped. V Shaped model of system development is also called verification and validation model. Testing processes are written before coding. The plan is known before the developmnet stage. The SDLC V-Model works on the basics of the SDLC first waterfall model. Testing comes after each phase.

1.2.1.1 Design of SDLC V model

The developer planned testing phase after each stage of the process. The stages of the process are called Verification phases and testing phases are called Validation phases. We have Verification phase ona one side and the validation phases on the other side. The coding phase connects both phases.

The picture below shows the different phases of SDLC V-Model:

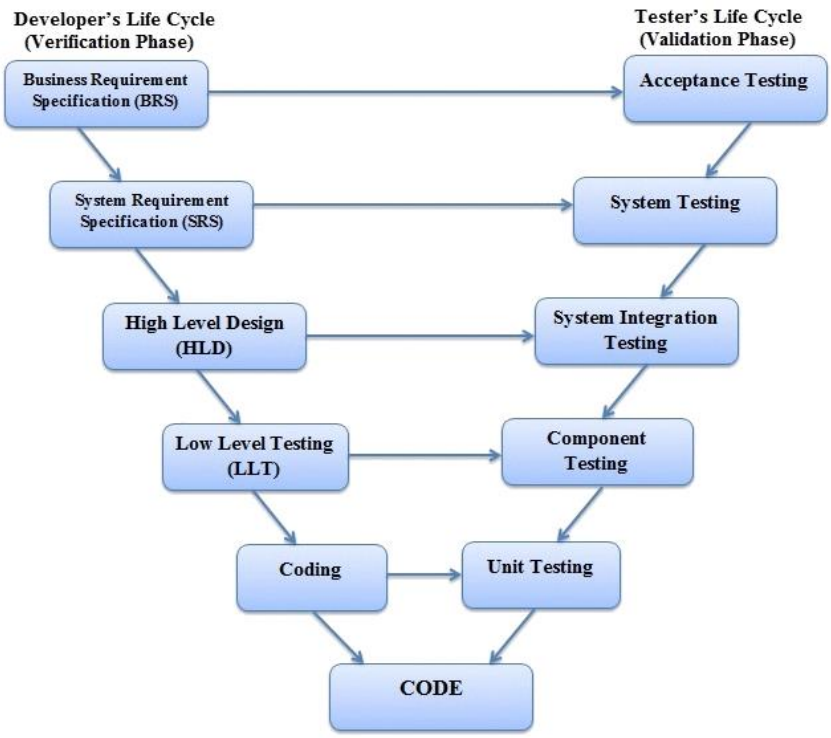


Figure 1.V Design phase of sdlc V-shaped model

1.2.1.2 Verification phase

The Verification phase of V-model includes various designs and coding. It includes checking of documentation and putting together data. There are several phases in verification phase of V-model.

- **Business Requirement Analysis:**

Business requirement analysis is the first phase of the verification phase. It includes customer´s demands so the communication with him is very important. The documentation is very important in this phase.

- **System Design:**

This phase of verification is also called system requirement specification (SRS). It contains the planning which is based on the previous phase. The process can start when the analysts kmow everything about product requirements. System design phase includes understandig of the whole hardware and it sets up communication for the product under. The test plan is

also introduced so it saves time later.

- **Architectural Design:**

An architectural design phase of verification is also known as High Level Design (HLD). In this phase architectural specifications of system are demanded. The main responsibilty in this phase is to transfer and communicate data beween inner parts and other systems. We can design the integration tests during this phase. An integration test plan is created, as well. So we can test that all the pieces of the software can work together.

- **Module Design:**

The module design phase is known as Low Level Design (LLD). The detailed design for all the system modules is designed here. This phase provides the unity of the system with other modules and other systems. The component testing is created in this phase. Unit tests are an important part of this phase and it helps exclude the most of the faults at a early stage.

- **Coding phase:**

The last phase is called coding. We have to choose suitable programming language and we use the coding guidelines and standarts. The aim is to make efficient and effective product.

1.2.1.3 Validation Phases

Validation process is the dynamic process which checks and tests the real product. Several phases are included in validation phase of V-model.

- **Unit Testing:**

The unit testing is executed on the modular code. This is the testing which runs on code level and tries to remove faults at an early stage. Even though not all the faults can be uncovered at this stage.

- **Component Testing:**

Component testing is a method where testing of each component is done separately. Component testing is known as module and program testing, too. This testing should find the faults and it should verify the software functionality. Component testing is done by the

tester.

- **Integration Testing:**

The integration testing tests whether all the components do not influence one another negatively. Integration testing is associated with the architectural design phase.

- **System Testing:**

This system testing module tests the functionality and the communication of the system under development with internal module and external module of the systems. System testing is connected with the System design phase.

- **Acceptance Testing:**

This testing is associated with the business requirement analysis phase. The testers test the product in user´s environment when it is completely developed. This kind of testing uncovers the compatibility issues with other systems and also the non-functional issues.

Advantages and disadvantages of V-shaped model:

Every software development model has own advantages and disadvantages that decide the working area of the model. Here we are listing all the advantage and disadvantages of V-shaped model:

Advantages of V-Shaped model	Disadvantages of V-Shaped model
This is a highly disciplined model and Phases are completed one at a time.	Once an application is in the testing stage, it is difficult to go back and change a functionality
Simple and easy to understand and use.	No working software is produced until late during the life cycle.
Works well for smaller projects where requirements are very well understood.	Not a good model for complex and object-oriented projects.
Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.	Not suitable for the projects where requirements are at a moderate to high risk of changing.
	Poor model for long and on-going projects.
	High risk and uncertainty.

Figure 1.VI Advantages and disadvantages of V-shaped model

Application of V-Shaped model:

V-Shaped Model application is similar to waterfall model. The requirements must be very clear before the project starts, because it is usually expensive to go back and make changes. This model is used in the medical development field.

2 MIB

It is infotainment, essentially a multimedia unit, although most customers are still talking about the radio. Today, however, this multimedia unit can do a lot more functions than just listen to the radio. Context media allows you to listen to music from an SD card, USB drive, via BT audio from the AUX jack. Telephone context combines phone MIB via BT. MIB may further include navigation, voice control, DAB and TV tuner. Context app serves to connect a mobile phone via a USB cable with the unit.

Skoda Auto Inc. in conjunction with the concern is developing three types of units: Entry, Standard and High. These units can be founded on the two different platforms, these are MQB or PQ. The units are developped according to the market these are Europe, North America, China and Korea. We are developing second generation of MIB and we are preparing fro third generation which will be sold in 2018. They vary with one hand contained functionality according to the above listed options and display sizes.

3 Testing areas

As I mentioned in chapter 1.2.1.3 Validation phases, we have more types of testing in V Shaped model and therefore there are different testing areas in VW AG, that are referential cars, intensive test in car, hardware in the loop, infotainment-würfel, breadboard, test-flashboard, CAN test, EMC, automation. The tests of SmartLink are transmitted only to three areas.

3.1 Infotainment-Würfel

This is a room with a lot of testbenches with differents MIB. Compotent testing and system testing are being done there.

Illustration of this area:

Figure 3.I Infotainment-Würfel MIB High Gen 2

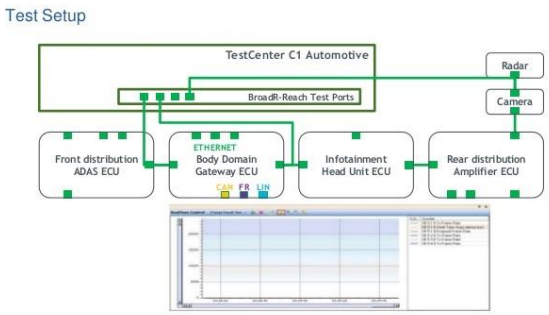


Figure 3.II Test setup

3.2 Breadboard

This is a big room with all the decomposed electrical parts of the car. Integration testing is being done there.

Illustration of this area:

Figure 3.III Breadboard SK481

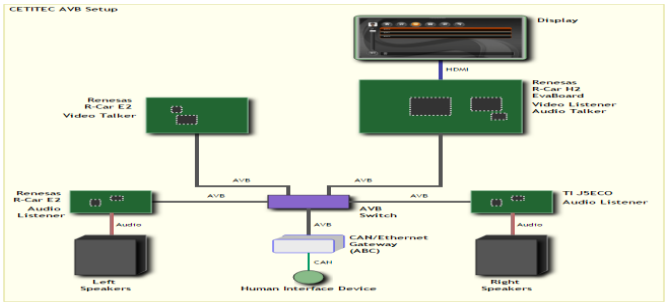


Figure 3.IV Test Setup

3.3 Automation area

This is a small room with Kuka robot and equipment which we want to test. It is necessary to verificate the manual tester and also save the tester´s time. Almost all the testcases are possible to test in this area, but some of them are unprofitable of time or money. SmartLink is very quickly developing area, therefore only the basic testcases from SmartLink are automatized. Android debug bridge via wifi is used for phones with android system and then it is possible to control the phone. Macbook via USB is used for phones with iOS system. The testcases are rewritten in tool command language for the testing.

You can see an example of rewriting in the appendix A. Rewriting one testcase lasts between one hour and two days according to complexity of the testcase.

Illustration of this area:

USB Switch v1.0
Connected 32 USB flash discs of different producers in order to ensure compatibility with MIB.

Robotic CD/DVD changer
20x CD/DVD with different audio formats in order to ensure compatibility with MIB.

Robotic SD card changer
22 SD cards of different producers in order to ensure compatibility with MIB.

Figure 3.V Atomation area

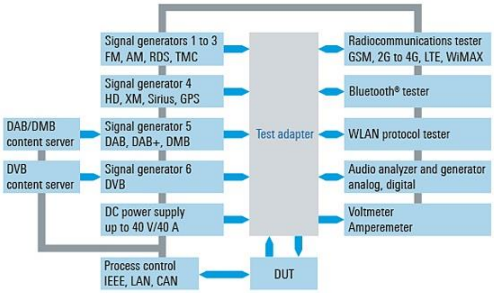


Figure 3.VI Test Setup

4 SmartLink

It is the collective name of Skoda Auto Inc. for three standards: MirrorLink, CarPlay and Android Auto. In all three terms it is connecting the mobile phone with the MIB via a USB cable and control the phone via unit.

4.1 Specification and testspecification

Both of the specifications are written in concern program called Doors. Specifications have tree structure. Each theme has its own chapture. Specification is written due to requirements and testspecification is written due to testcases. At minimum one testcase must be for each requirement. Requirements and testcases could be in more specifications, because of crossover themes. For example SmartLink, phone and media have many requirements and testcases in common.

Short example from Doors specification:

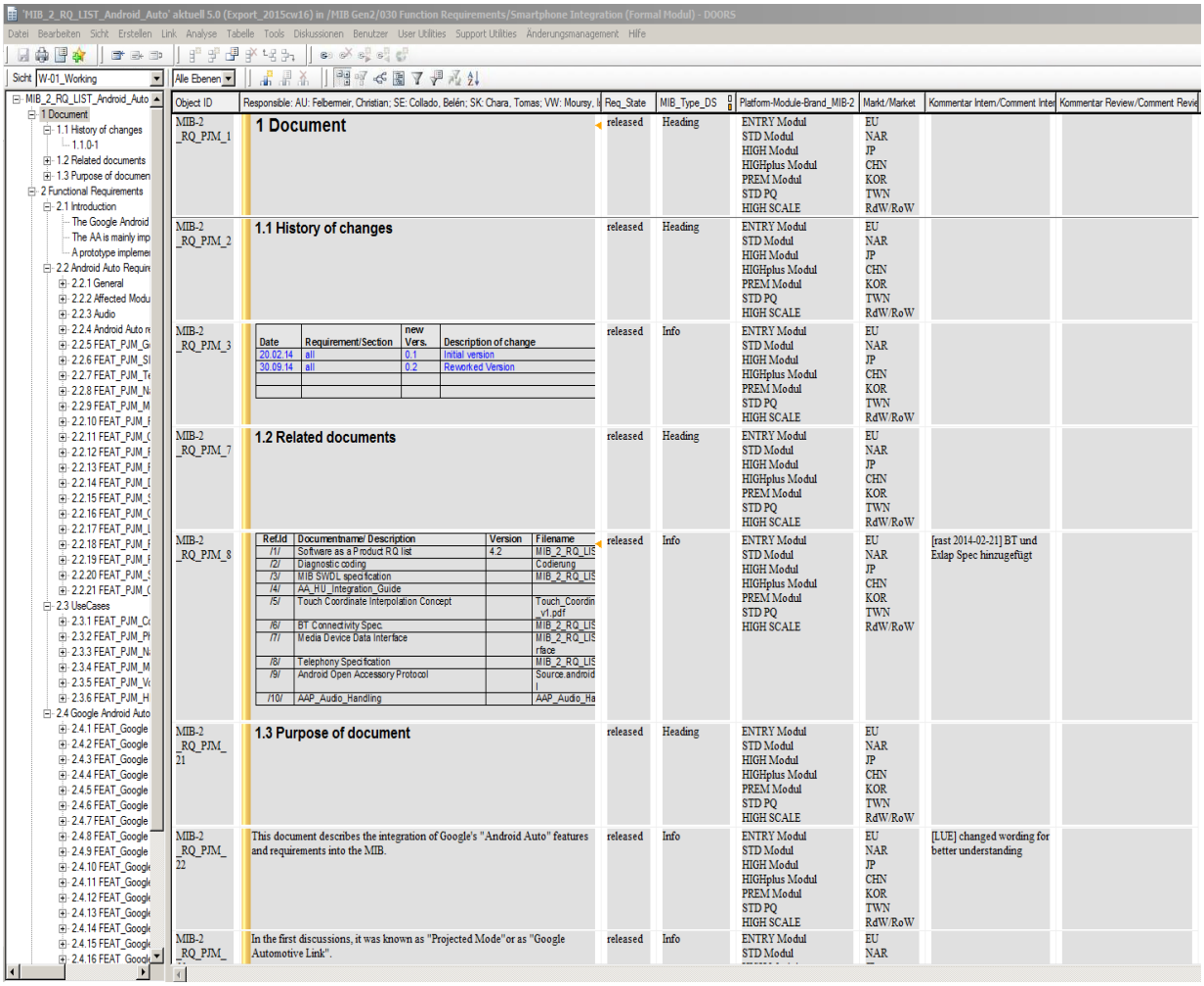
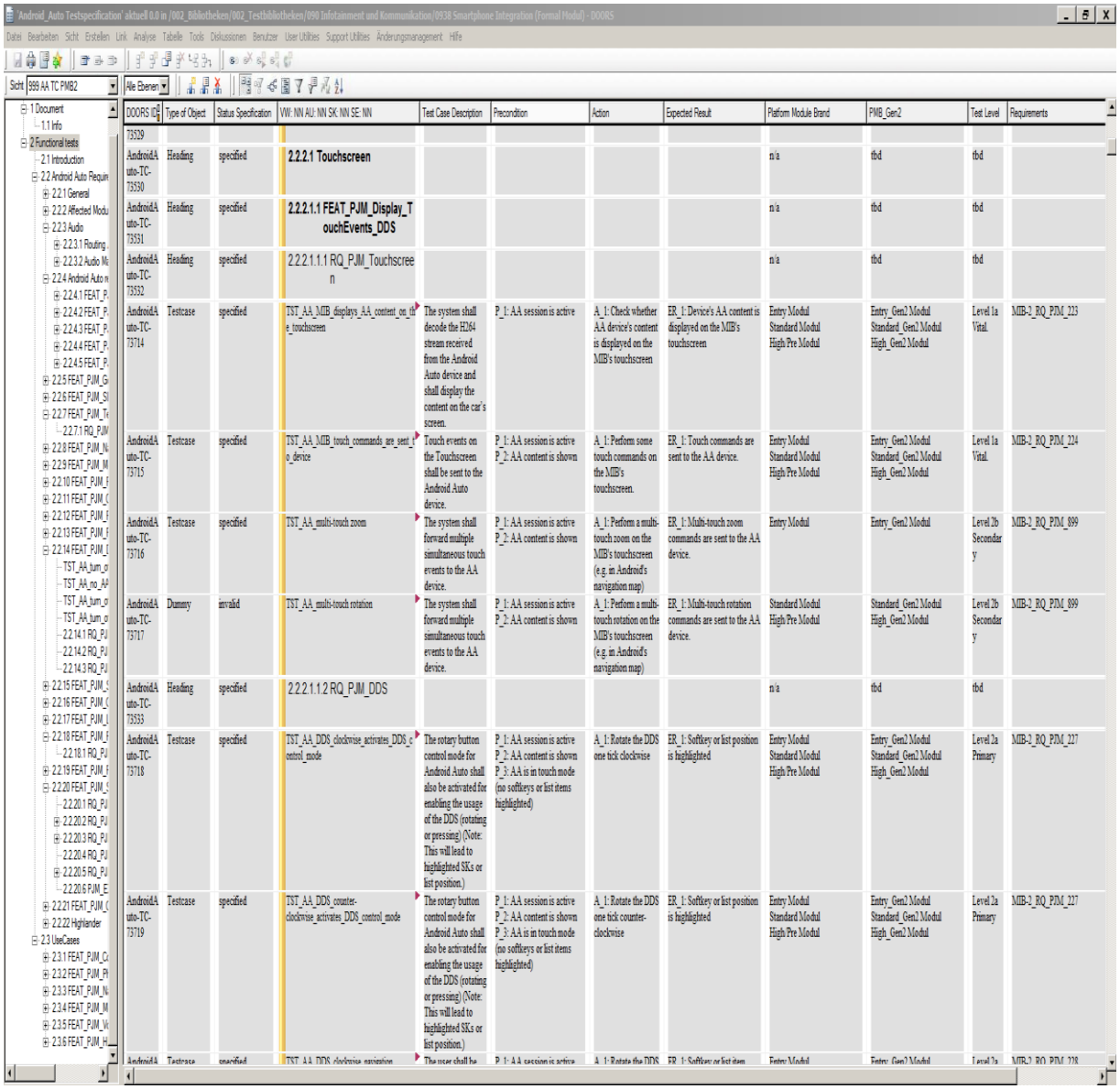


Figure 3.VII Doors specification

Short example from Doors testspecification:



DOORS ID	Type of Object	Status Specification	VW: NN AU: NN SK: NN SE: NN	Test Case Description	Precondition	Action	Expected Result	Platform Module Brand	PMB_Gen2	Test Level	Requirements
73529											
AndroidAuto-TC-73530	Heading	specified	**2.2.2.1 Touchscreen**					n/a	tbd	tbd	
AndroidAuto-TC-73531	Heading	specified	**2.2.2.1.1 FEAT_PJM_Display_TouchEvents_DDS**					n/a	tbd	tbd	
AndroidAuto-TC-73532	Heading	specified	2.2.2.1.1.1 RQ_PJM_Touchscreen					n/a	tbd	tbd	
AndroidAuto-TC-73714	Testcase	specified	TST_AA_MIB_displays_AA_content_on_the_touchscreen	The system shall decode the H264 stream received from the Android Auto device and shall display the content on the car's screen.	P_1: AA session is active	A_1: Check whether AA device's content is displayed on the MIB's touchscreen	ER_1: Device's AA content is displayed on the MIB's touchscreen	Entry Modul Standard Modul High Pre Modul	Entry_Gen2 Modul Standard_Gen2 Modul High_Gen2 Modul	Level 1a Vital	MIB-2_RQ_PJM_223
AndroidAuto-TC-73715	Testcase	specified	TST_AA_MIB_touch_commands_are_sent_to_device	Touch events on the Touchscreen shall be sent to the Android Auto device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform some touch commands on the MIB's touchscreen.	ER_1: Touch commands are sent to the AA device.	Entry Modul Standard Modul High Pre Modul	Entry_Gen2 Modul Standard_Gen2 Modul High_Gen2 Modul	Level 1a Vital	MIB-2_RQ_PJM_224
AndroidAuto-TC-73716	Testcase	specified	TST_AA_multi-touch zoom	The system shall forward multiple simultaneous touch events to the AA device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform a multi-touch zoom on the MIB's touchscreen (e.g. in Android's navigation map)	ER_1: Multi-touch zoom commands are sent to the AA device.	Entry Modul	Entry_Gen2 Modul	Level 2b Secondary	MIB-2_RQ_PJM_899
AndroidAuto-TC-73717	Dummy	invalid	TST_AA_multi-touch rotation	The system shall forward multiple simultaneous touch events to the AA device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform a multi-touch rotation on the MIB's touchscreen (e.g. in Android's navigation map)	ER_1: Multi-touch rotation commands are sent to the AA device.	Standard Modul High Pre Modul	Standard_Gen2 Modul High_Gen2 Modul	Level 2b Secondary	MIB-2_RQ_PJM_899
AndroidAuto-TC-73533	Heading	specified	2.2.2.1.1.2 RQ_PJM_DDS					n/a	tbd	tbd	
AndroidAuto-TC-73718	Testcase	specified	TST_AA_DDS_clockwise_activates_DDS_control_mode	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in touch mode (no softkeys or list items highlighted)	A_1: Rotate the DDS one tick clockwise	ER_1: Softkey or list position is highlighted	Entry Modul Standard Modul High Pre Modul	Entry_Gen2 Modul Standard_Gen2 Modul High_Gen2 Modul	Level 2a Primary	MIB-2_RQ_PJM_227
AndroidAuto-TC-73719	Testcase	specified	TST_AA_DDS_counter-clockwise_activates_DDS_control_mode	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in touch mode (no softkeys or list items highlighted)	A_1: Rotate the DDS one tick counter-clockwise	ER_1: Softkey or list position is highlighted	Entry Modul Standard Modul High Pre Modul	Entry_Gen2 Modul Standard_Gen2 Modul High_Gen2 Modul	Level 2a Primary	MIB-2_RQ_PJM_227

Figure 3.VIII Doors testspecification

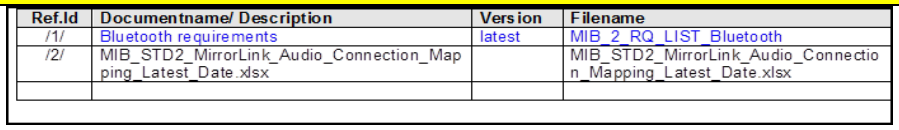
4.2 MirrorLink

4.2.1 General information

MirrorLink is a standard which allows connection between a smartphone and a car's infotainment system. It uses a set of technologies such as IP, USB, Wi-Fi, Bluetooth, Real-Time Protocol and Universal Plug and Play. In addition, MirrorLink uses Virtual Network Computing.

4.2.2 Specification

The whole specification contents a lot of pages so it is in appendix B. I used colour sorting for tree structure. Short example of the MirrorLink specification:

ID	Responsible: AU:Halfmann, Jens; SE:Giralt, Roger; SK:Chara, Tomas; VW:Beckmann, Mark
MIB-2_RQ_TM_1	**1 Document**
MIB-2_RQ_TM_2	**1.1 History of changes**
MIB-2_RQ_TM_7	**1.2 Related documents**
MIB-2_RQ_TM_8	
MIB-2_RQ_TM_21	**1.3 Purpose of document**
MIB-2_RQ_TM_22	This document describes the TerminalMode features and requirements
MIB-2_RQ_TM_32	**2 Functional Requirements**
MIB-2_RQ_TM_59	**2.1 MirrorLink Technical Requirements**
MIB-2_RQ_TM_60	**2.1.1 MirrorLink General**
MIB-2_RQ_TM_61	**2.1.1.1 FEAT_TM_General**
MIB-2_RQ_TM_62	The system shall implement MirrorLink Client functionality as described in the official MirrorLink 1.1 specifications of the Car Connectivity Consortium and the current erratas at the time of development.
MIB-2_RQ_TM_780	The system shall implement MirrorLink.Next() Client functionality as described in the latest official MirrorLink specification and its sub-specifications of the Car Connectivity Consortium.
MIB-2_RQ_TM_553	**2.1.1.1.1 RQ_TM_General**
MIB-2_RQ_TM_554	The system shall implement MirrorLink Client functionality as described in the official MirrorLink 1.1 specifications of the Car Connectivity Consortium and the current erratas at the time of development.
MIB-2_RQ_TM_1046	The system shall implement all MirrorLink.Next Client functionalities which are described as mandatory in the official MirrorLink.Next specifications of the Car Connectivity Consortium and the current erratas at the time of development.
MIB-2_RQ_TM_63	**2.1.1.2 FEAT_TM_PERFORMANCE**
MIB-2_RQ_TM_64	The system shall be able to support MirrorLink with at least 5 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_65	The system shall be able to support MirrorLink with at least 10 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_66	The system shall be able to support MirrorLink with at least 20 frames/second for a navigation map application using Run Length Encoding, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_576	If the connected device supports HSML, the system shall be able to support HSML framebuffer transmission with at least 30 frames/second, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_781	The system shall be able to support MirrorLink with at least 15 frames per second

Ref.Id	Documentname/ Description	Version	Filename
/1/	Bluetooth requirements	latest	MIB_2_RQ_LIST_Bluetooth
/2/	MIB_STD2_MirrorLink_Audio_Connection_Mapping_Latest_Date.xlsx		MIB_STD2_MirrorLink_Audio_Connection_Mapping_Latest_Date.xlsx

	(full framebuffer updates) while using VNC connection.
MIB-2_RQ_TM_782	The system shall be able to support MirrorLink with at least 25 frames per second (full framebuffer updates) while using H.264 connection.
MIB-2_RQ_TM_783	The system shall be able to support MirrorLink with at least 25 frames per second (full framebuffer updates) while using Miracast connection.
MIB-2_RQ_TM_555	**2.1.1.2.1 RQ_TM_PERFORMANCE**
MIB-2_RQ_TM_556	The system shall be able to support MirrorLink with at least 5 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_557	The system shall be able to support MirrorLink with at least 10 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_558	The system shall be able to support MirrorLink with at least 20 frames/second for a navigation map application using Run Length Encoding, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_577	If the connected device supports HSML, the system shall be able to support HSML framebuffer transmission with at least 30 frames/second, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_578	The system shall ensure that the latency between user control events (e.g .touch events) and the reaction on the screen is less than 100ms with a USB connection.
MIB-2_RQ_TM_579	The system shall ensure that the latency between user control events (e.g .touch events) and the reaction on the screen is less than 200ms with a WLAN connection.
MIB-2_RQ_TM_417	**2.1.1.3 FEAT_TM_INTEROPERABILITY**
MIB-2_RQ_TM_420	The system supplier shall test and approve at least the top 200 devices as listed in the selling statistics quarterly of the different market regions (Europe, North America, Japan, China,...) as a "rolling list" at his expense, as long as the system is in mass production.
MIB-2_RQ_TM_421	All approved mobile devices shall be supported and tested with new system software for at least two years after market introduction, even, if the particular phones are not longer on the current TOP200 list. In case of interoperability problems, if the problem can be solved within the system, functionality shall be ensured by customized implementations.
MIB-2_RQ_TM_784	The system supplier shall provide list of tested ML smartphones with current SW implementation in release notes with each delivered SW. The list shall include all information about positive and negative behaviour which was observed during development.
MIB-2_RQ_TM_559	**2.1.1.3.1 RQ_TM_INTEROPERABILITY**
MIB-2_RQ_TM_560	The system supplier shall test and approve at least the top 200 devices as listed in the selling statistics quarterly of the different market regions (Europe, North America, Japan, China) as a "rolling list" at his expense, as long as the system is in mass production. Additionally the results of all tests shall be delivered. "Negative" test results and test results of devices that are not in the top 200 list shall explicitly be included in the documentation.
MIB-2_RQ_TM_561	All approved mobile devices shall be supported and tested with new system software for at least two years after market introduction, even, if the particular phones are not longer on the current TOP200 list. In case of interoperability problems, if the problem can be solved within the system, functionality shall be ensured by customized implementations. For the rest of the phones that are no longer in the "TOP 200" old test results shall be listed.
MIB-2_RQ_TM_905	The system supplier shall provide list of tested ML smartphones with current SW implementation in release notes with each delivered SW. The list shall include all information about positive and negative behaviour which was observed during development.
MIB-2_RQ_TM_422	**2.1.1.4 FEAT_TM_SW_UPDATE**
MIB-2_RQ_TM_423	The user shall be able to update the Mirrorlink software bundle independent of the mainunit software according to the SWDL specification of MIB.
MIB-2_RQ_TM_425	If online update is supported by the platform variant and a data connnection is available, the user shall be able to run an online update according to the SWDL specification of MIB

MIB-2_RQ_TM_426	The MirrorLink software shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_TM_427	In the case, that an incompatibility to a popular highrunner phone is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency" Mirrorlink software bundle update within 30 days after notice of the failure.
MIB-2_RQ_TM_785	The user shall be able to update the MirrorLink software independent of the mainunit software via external medium (e.g. SD card)
MIB-2_RQ_TM_786	If the system supports OTA (Over-The-Air) update in whole system, then OTA update must be available also for MirrorLink.
MIB-2_RQ_TM_429	**2.1.1.4.1 RQ_TM_SW_UPDATE**
MIB-2_RQ_TM_430	The user shall be able to load and update Mirrorlink software bundle release for dedicated mobile phones depending on the MainUnit software version.
MIB-2_RQ_TM_431	The HMI shall provide a menu item/dialog for this.
MIB-2_RQ_TM_443	**2.1.1.5 FEAT_TM_SW_AS_PRODUCT**
MIB-2_RQ_TM_444	It shall be possible to activate MirrorLink via SW as Product mechanisms
MIB-2_RQ_TM_562	**2.1.1.5.1 RQ_TM_SW_AS_PRODUCT**
MIB-2_RQ_TM_563	It shall be possible to activate MirrorLink via SW as Product mechanisms. MirrorLink must not be available if the FSID 00060300 is not activated.
MIB-2_RQ_TM_908	In case the SWAP ID for MirrorLink is enabled and MirrorLink connectivity is enabled in the diagnostic, then MirrorLink must be available to the user. In case the SWAP ID for MirrorLink is disabled and MirrorLink connectivity is enabled in the diagnostic, then the user shall be informed. If MirrorLink connectivity is disabled in the diagnostic, then MirrorLink must NOT be available to the user disregarding of the availability of the SWAP ID.
MIB-2_RQ_TM_67	**2.1.2 MirrorLink Transport**
MIB-2_RQ_TM_335	**2.1.2.1 FEAT_TM_TRANSPORT**
MIB-2_RQ_TM_336	The system shall be able to use USB as transport layer.
MIB-2_RQ_TM_580	The system shall be able to manage the connectivity for MirrorLink, Digital iPod Out and Google Automotive Link devices on the same connection interface at the same time.
MIB-2_RQ_TM_581	The system shall be able to select a technology (MirrorLink, Digital iPod Out, Google Automotive Link) for an attached device.
MIB-2_RQ_TM_787	The system shall be able to manage connectivity for MirrorLink, Android Auto and Apple CarPlay devices on the same connection interface based on user preference in system settings.
MIB-2_RQ_TM_788	The system shall be able to use WiFi as a transport layer.
MIB-2_RQ_TM_789	The system shall use USB standard descriptors for black listing of known devices which shall not be displayed (e.g. D-Link, non-MirrorLink or devices like MP3-Player).
MIB-2_RQ_TM_582	**2.1.2.1.1 RQ_TM_TRANSPORT**
MIB-2_RQ_TM_583	The system shall be able to manage the connectivity for MirrorLink, Digital iPod Out and Google Automotive Link devices on the same connection interface at the same time.
MIB-2_RQ_TM_584	The system shall be able to select a technology (MirrorLink, Digital iPod Out, Google Automotive Link) for an attached device.
MIB-2_RQ_TM_585	In case the device provides both MirrorLink and Google Automotive Link, the system shall be able to configure the preference to choose one technology.
MIB-2_RQ_TM_912	The system shall use USB standard descriptors for black listing of known devices which shall not be displayed (e.g. D-Link, non-MirrorLink or devices like MP3-Player).
MIB-2_RQ_TM_913	The system shall be able to manage connectivity for MirrorLink, Android Auto and Apple CarPlay devices on the same connection interface based on user preference in system settings.
MIB-2_RQ_TM_68	**2.1.2.1.2 RQ_TM_TransportLayer_USB**
MIB-2_RQ_TM_69	The system shall send a specific identification message to the device, prior configuring the device, according the format defined in MirrorLink specification.
MIB-2_RQ_TM_586	Switching from MirrorLink context to another context and back again to MirrorLink context, shall not change the last state (e.g. a running app in foregroud will still

	displayed in foreground after switching).
MIB-2_RQ_TM_587	The system shall save persistent the last connected device as pre selected device in case of more than one available devices.
MIB-2_RQ_TM_588	The system shall save persistent the settings related to the device in the HMI setting screen.
MIB-2_RQ_TM_589	The system shall save persitent the settings independend from the conntected devices
MIB-2_RQ_TM_70	The system shall send the identification message set configuration, since the phone may have wrong personality loaded before that.
MIB-2_RQ_TM_590	The HMI shall initiate to send the identification message, when an user action applies to it.
MIB-2_RQ_TM_591	The system shall support multiple USB personalities.
MIB-2_RQ_TM_592	The systen shall be able to disconnect MirrorLink mode and switch to another USB class (e.g. MTP, mass-storage) without detaching the USB cable.
MIB-2_RQ_TM_593	The system shall be able to connect a MirrorLink device, even if it is already coupled as a MTP/mass-storage/NCM thethering device or in charge. If necessary, a new USB enumeration shall be done.
MIB-2_RQ_TM_594	The system shall be able to detect a connection error which can be part of the USB NCM device class, IP address ansigning or MirrorLink initial handshaking.
MIB-2_RQ_TM_595	The system shall terminate the MirrorLink connection safely if a fatal error occurs.
MIB-2_RQ_TM_596	The system shall inform the user in case a connection error occurs.
MIB-2_RQ_TM_71	The system shall support MTP device class.
MIB-2_RQ_TM_451	Additionally to the mandatory CDC/NCM device class, the system shall also support CDC/ECM device class.
MIB-2_RQ_TM_508	Additionally to the mandatory CDC/NCM device class, the system shall also support the Remote Network Driver Interface Specification (USB RNDIS).
MIB-2_RQ_TM_597	The system shall support for HSML a vendor specific device class as defined in the MirrorLink Specification.
MIB-2_RQ_TM_598	The system shall be able to handle both USB devices classes at the same time: USB HSML Client as a vendor specific device class and USB CDC/NCM, which is compliant with HSML. The HSML function is used for video transmission and the CDC/NCM is used for carrying MirrorLink traffic.
MIB-2_RQ_TM_599	To comply with MirrorLink specification, the system MUST NOT have another USB vendor-specific interface whose subclass field is 0xCC and protocol field is 0x01.
MIB-2_RQ_TM_72	**2.1.2.1.3 RQ_TM_TransportLayer_WLAN**
MIB-2_RQ_TM_73	The system shall support WLAN access point functionality.
MIB-2_RQ_TM_452	The system shall support WLANclient functionality.
MIB-2_RQ_TM_447	If the system provides internet connectivity, the system shall be configured as WLAN Access Point and the MirrorLink server shall be configured as WLAN Client.
MIB-2_RQ_TM_448	If the system does not provide internet connectivity and the MirrorLink Server supports WLAN AccessPoint functionality, the system shall be configured as WLAN Client and the MirrorLink server shall be configured as WLAN Access Point.
MIB-2_RQ_TM_449	If the MirrorLink Client does not provide internet connectivity and the MirrorLink Server does not support WLAN AccessPoint functionality, the system shall be configured as WLAN AccessPoint and the MirrorLink server shall be configured as WLAN Client. The MirrorLink client SHOULD inform the user that internet connectivity is not available and that functions of the MirrorLink server may be limited.
MIB-2_RQ_TM_450	If the system can not provide internet access itself and the MirrorLink server does not support WLAN AccessPoint functionality, the user shall be informed that due to MirrorLink server limitations, the functionality of the MirrorLink Server might be limited.
MIB-2_RQ_TM_74	**2.1.2.1.4 RQ_TM_TransportLayer_BT**
MIB-2_RQ_TM_75	The system shall be support PAN user functionality (PANU). The MirrorLink Server will take the PAN-NAP role.

4.2.3 Testspecification

The whole testspecification contents a lot of pages, so it is in appendix E. Short example of the MirrorLink testspecification:

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-11	Prepare CTS tool from the CCC with VW PICS configuration document, connect the HU system to the appropriate CTS tool via USB and start the testing process.	P_1- an appropriate version of the CTS tool from the CCC is installed on a test system. P_2 the CTS tool is configured as described in the CTS-Instruction document provided by CCC. P_3 the CTS tool uses the VW PICS document for configuration.	A_1 Connect CTS server via usb A_2 Start running the CTS testing process.	A_1 CTS server is detected and displayed on MIB´s screen A_2 The CTS test cases are passed with 100% results.
MiLi-TC-134	Follow all IOP test cases from IOP Requirement document provided from the CCC.	P_1 start the CCC IOP test cases Please use the follow web site to registred and to start the CCC IOP test cases: https://cert.mirrorlink.com/iop/	A_1 connect the phone via usb and start all IOP test cases Please note that this test should be performed with defferent servers--> for more information about the used phones please refer to CCC web site	ER_1. All IOP tests with all Servers are passed with 100% results.
MiLi-TC-179	Touch events on the Touchscreen shall be sent to the MirrorLink device.	P_1: ML session is active P_2: ML content is shown	A_1: Perform some touch commands on the MIB's touchscreen	ER_1: Touch commands are sent to the ML device
MiLi-TC-180	The system shall forward multiple simultaneous touch events to the ML device.	P_1: ML session is active P_2: ML content is shown	A_1: Perform a multi-touch zoom on the MIB's touchscreen (e.g. in MAP/Sygic app) A_2: Extend the distance between the two finger positions A_3: Contract the distance between the two finger positions	ER_1: Multi-touch zoom commands are sent to the ML device ER_2: The app shall initiate a zoom in gesture. The effect result shall be linked to the movement of the distance between the two fingers ER_3: The app shall initiate a zoom out gesture. The effect result shall be linked to the movement of the distance between the two fingers
MiLi-TC-182	Areas at the borders of the touchscreen must generate touch events with the correct coordinates.	P_1: ML session is active P_2: ML content is shown	A_1: Perform a touch action at the very border or corner of the MIB's touch screen	ER_1: ML device locates the touch commands at the respective border or corner of the ML device

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-370	Touch events _Swipe left/right	P_1: ML session is active P_2: ML content is shown P_3: one app is active e.g. MAP or Sygic	A_1: Perform an application level Swipe event simply click in Map and move in left or right direction	ER_1: Swipe is working as excepected, the MAP moves to correct position
MiLi-TC-371	Touch events _Double touch/click	P_1: ML session is active P_2: ML content is shown P_3: one app is active e.g. MAP or Sygic	A_1: Perforrm a Double touch/click, simply press and lift the screen two times	ER_1: reaction of Double touch is working e.g. Map move outwards "Zoom in"
MiLi-TC-372	Touch events _Drag event	P_1: ML session is active P_2: ML content is shown P_3: one app is active e.g. MAP or Sygic	A_1: Perform an Drag event, simply Press & hold then move in any direction and release the screen	ER_1: Drag event is working as expected
MiLi-TC-183	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: ML session is active P_2: ML content is shown P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Roll MFL volume up once (Skoda/Seat) / press volume up button (VW)	ER_1: MIB's volume goes up one step. Volume bar is briefly shown in the cluster instrument ER_2: The volume on the ML device itself did not change
MiLi-TC-184	MFL _multimedia key in Mirrorlink_skips to the next song	P_1: ML session is active P_2: Audio app which support MFL is active e.g. "htc one app music", Audio over rtp is running	A_1: Skips to the next song via MFL	ER_1: Reaction of next track via MFL is working, the next track is selected
MiLi-TC-383	MFL _multimedia key in Mirrorlink_skips to the next song_skips to the Previous song	P_1: ML session is active P_2: Audio app which support MFL is active e.g. "htc one app music", Audio over rtp is running	A_1: Skips to the Previous song	ER_2: Reaction of previous track via MFL is working, the previous song is selected
MiLi-TC-185	MFL _multimedia key in Mirrorlink_fast forward song_rewind song	P_1: ML session is active P_2: Audio app which support MFL is active, Audio over rtp is running	A_1: Check fast forward song via MFL	ER_1: Reaction of fast forward song via MFL is working
MiLi-TC-384	MFL _multimedia key in Mirrorlink_fast forward song_rewind song	P_1: ML session is active P_2: Audio app which support MFL is active, Audio over rtp is running	A_1: Check rewind song via MFL	ER_1: Reaction of rewind song via MFL is working
MiLi-TC-186	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: ML session is active P_2: ML content is shown P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Roll scroll buton MFL volume down (Skoda/Seat) / press volume up button (VW) A_2: Release MFL volume down before min volume level is reached	ER_1: MIB's volume decreasing. Decreasing volume bar is displayed in the cluster instrument ER_2: Volume level and volume bar displayed in the cluster instrument do not change anymore. Volume bar disappears after a short time ER_3: The volume on the ML device itself does not change

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-188	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: ML session is active P_2: ML content is shown P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Roll scrool buton MFL volume down once (Skoda/Seat) / press volume down button (VW)	ER_1: MIB's volume decreases until it reaches min volume. Volume bar is displayed in the cluster instrument as long as the volume is changing ER_2: The volume of the ML device itself does not change
MiLi-TC-191	The microphone in the cabin shall provide the voice input to the MirrorLink device for speech recognition and phone calls.	P_1: ML session is active (e.g. HTC one M8)	A_1: Launch htc one app "Speak" A_2: Check the voice command mode e.g. say one of the followed command : - "Call [person's name in phonebook]" - "Play [song title,.." - "Navigate..."	ER_1: Reaction of all voice command mode is working
MiLi-TC-193	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows ML screen P_4: ML playback is not active	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts
MiLi-TC-194	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows native HMI screen	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts
MiLi-TC-198	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device(HTC One M9) is connected to the MIB P_3: ML session is active and MIB shows ML screen P_4: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: Audio over rtp is stopped and SDS starts Note. The music over rtp should be resumed and played again after terminate SDS(Test with HTC One M9)
MiLi-TC-390	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows ML screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1a: If the phone hasn't voice app, in cluster instrument must be info voice control not possible. ER_1b: If the phone has voice app, these app start. Note: Test with HTC phone and app Speak.

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-391	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1a: If the phone hasn't voice app, in cluster instrument must be info voice control not possible. ER_1b: If the phone has voice app, these app start. Note: Test with HTC phone and app Speak.
MiLi-TC-247	Disable Mirrorlink_Via _Diagnostic	P_1: MIB is powered up P_2: ML feature has been enabled by diagnostic P_3: ODIS diagnostic is connected with the MIB	A_1: Disable the Mirrorlink option via ODIS diagnostic A_2: Try to connect ML device via usb, check if the device is detected as media only and not as ML device	ER_1: Mirrorlink option is disabled, no ML option available on Appconnect after disabling ML via ODIS ER_2: ML device is detected only as Media "MTP" and not as ML device because ML option is disabled
MiLi-TC-385	Enable_Mirrorlink_Via _Diagnostic	P_1: MIB is powered up P_2: ML feature has been disabled by diagnostic P_3: ODIS diagnostic is connected with the MIB	A_1: Enable the Mirrorlink option via ODIS diagnostic A_2: Connect a ML device via usb and try to intiate ML connection check if all ML functionality is available after enabling ML via ODIS	ER_3: Mirrorlink option is enabled via ODIS, ML option is available on Appconnect ER_4: ML connection is established--> ML functionality "Audio over rtp, Audio blocking, ..." is working fine.
MiLi-TC-386	Change Mirrorlink RGB888_Via _Diagnostic	P_1: MIB is powered up P_2: ML option has been enabled by diagnostic P_3: ODIS diagnostic is connected with the MIB P_4: Pixel format set to RGB 565	A_1: Start Odis then change Mirrorlink RGB to 888	ER_1: The Mirrorlink pixel format is changed correctly to RGB 888[Note:For checking use CommonAPI app, section:client info or display parameters]
MiLi-TC-387	Change Mirrorlink RGB565_Via _Diagnostic	P_1: MIB is powered up P_2: ML option has been enabled by diagnostic P_3: ODIS diagnostic is connected with the MIB P_4: Pixel format set to RGB 888	A_1: Start Odis then change Mirrorlink RGB to 565	ER_1: The Mirrorlink pixel format is changed correctly to RGB 888[Note:For checking use CommonAPI app, section:client info or display parameters]

4.3 CarPlay

4.3.1 General information

CarPlay was developed by Apple Incorporated. CarPlay is available for all iPhones that use the Lightning connector and operate iOS 7.1 or higher iOS. CarPlay was released in March 2014. CarPlay contains Siri, Satellite navigation, Telephony instruction and control, Music control, Message control and response.

4.3.2 Specification

The whole specification contents a lot of pages so it is in appendix C. I used colour sorting for tree structure. Short example of the CarPlay specification:

ID	Responsible: AU: Felbermeir, Christian; SE: Collado, Belén; SK: Houštěk, Josef; VW:Sand, Peter
MIB-2_RQ_DPO_1	**1 Document**
MIB-2_RQ_DPO_2	**1.1 History of changes**
MIB-2_RQ_DPO_3	<table><tr><th>Date</th><th>Requirement/Section</th><th>new Vers.</th><th>Description of change</th><th>Author</th></tr><tr><td>22.11.13</td><td>all</td><td>0.1</td><td>Initial version</td><td></td></tr><tr><td>12.02.14</td><td>all</td><td>0.2</td><td>Reworked version</td><td></td></tr><tr><td>30.06.14</td><td>2.1 and 2.2</td><td>0.3</td><td>Sections added</td><td>PSa</td></tr><tr><td>31.07.14</td><td>all</td><td>0.4</td><td>Reworked version</td><td></td></tr><tr><td>28.04.15</td><td>2.1.2, 2.1.4, 2.1.6, 2.1.7</td><td>2.0</td><td>Rework for 22/16</td><td>PSa</td></tr></table>
MIB-2_RQ_DPO_7	**1.2 Related documents**
MIB-2_RQ_DPO_8	<table><tr><th>Ref.Id</th><th>Documentname/ Description</th><th>Version</th><th>Filename</th></tr><tr><td>[1]</td><td>Software as a Product RQ list</td><td>4.2</td><td>MIB_2_RQ_LIST_SW_As_Product</td></tr><tr><td>[2]</td><td>Diagnostic coding</td><td></td><td>Codierung</td></tr><tr><td>[3]</td><td>MIB SWDL specification</td><td></td><td>MIB_2_RQ_LIST_Download</td></tr><tr><td>[4]</td><td>MFi Accessory Interface Specification with Apple CarPlay (only available directly from Apple under the MFI license)</td><td></td><td></td></tr><tr><td>[5]</td><td>Touch Coordinate Interpolation Concept</td><td></td><td>Touch_Coordinate_Interpolation_Concept_v1.pdf</td></tr><tr><td>[6]</td><td>Flowchart connection handling SmartphoneIntegration</td><td>1.0</td><td>MIB2_ConnectionHandling_SmartphoneIntegration_Flowcharts_v0.1.0.pdf</td></tr><tr><td>[7]</td><td>Concept of Deviation Management</td><td></td><td></td></tr><tr><td>[8]</td><td>CarPlay CallStates mapping to BAP CallStates</td><td>1.0</td><td>CallStates_BAP_15042015_PSA.xlsx</td></tr></table>
MIB-2_RQ_DPO_21	**1.3 Purpose of document**
MIB-2_RQ_DPO_22	This document describes the integration of Apple's "CarPlay" features and requirements into the MIB.
MIB-2_RQ_DPO_32	**2 Functional Requirements**
MIB-2_RQ_DPO_186	**2.1 CarPlay Requirements**
MIB-2_RQ_DPO_279	**2.1.1 General**
MIB-2_RQ_DPO_830	**2.1.1.1 FEAT_DPO_CarPlay_Support**
MIB-2_RQ_DPO_280	The system shall support CarPlay functionality as an accessory device as defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_1196	**2.1.1.1.1 RQ_DPO_CarPlay_Support**
MIB-2_RQ_DPO_1302	The system shall support CarPlay functionality as an accessory device as defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_801	To be able to access the MFI Specification including CarPlay the MIB supplier must join the MFI program, and all (subcontracted) software developers must become MFI Development Licensees.
MIB-2_RQ_DPO_803	A Customer Update package for the CarPlay software component of the MIB shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_DPO_802	In the case, that an incompatibility to an CarPlay device is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency"

	update within 30 days after notice of the failure.
MIB-2_RQ_DPO_517	CarPlay function should be rolled out by Apple in all the regions where Siri and turn-by-turn navigation is available. A list of the currently supported countries is located here: http://www.apple.com/ios/feature-availability/#applecarplay-applecarplay
MIB-2_RQ_DPO_518	MIB generally supports CarPlay in all regions of the world; via EOL coding it can be restricted.
MIB-2_RQ_DPO_187	**2.1.2 Affected Modules**
MIB-2_RQ_DPO_188	**2.1.2.1 Touchscreen**
MIB-2_RQ_DPO_824	**2.1.2.1.1 FEAT_DPO_Display_TouchEvents_DDS**
MIB-2_RQ_DPO_825	The Touchscreen shall display the CarPlay screen and the system shall send touch events and DDS actions to the CarPlay device.
MIB-2_RQ_DPO_826	**2.1.2.1.1.1 RQ_DPO_Touchscreen**
MIB-2_RQ_DPO_827	The CarPlay device streams the CarPlay screen as a H264 stream from the CarPlay device to the MIB.
MIB-2_RQ_DPO_191	The MIB shall decode the H264 stream received from the CarPlay device and shall display the content on the car's screen.
MIB-2_RQ_DPO_192	Touch events on the Touchscreen shall be sent to the CarPlay device.
MIB-2_RQ_DPO_578	There is no multi-touch gesture support in CarPlay.
MIB-2_RQ_DPO_196	**2.1.2.1.1.2 RQ_DPO_DDS**
MIB-2_RQ_DPO_197	The rotary button control mode for CarPlay shall also be activated for enabling the usage (rotating or pressing) the DDS. (Note: This will lead to highlighted SKs or list position.)
MIB-2_RQ_DPO_198	The user shall be able to navigate across SKs or lists via the rotary knob function
MIB-2_RQ_DPO_199	Pressing the DDS shall activate the highlighted object
MIB-2_RQ_DPO_200	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)
MIB-2_RQ_DPO_203	**2.1.2.1.1.3 RQ_DPO_Algorithm_Dead_Touch_Areas**
MIB-2_RQ_DPO_579	The current MIB ABTs from Alpine have the hardware restriction, that areas at the borders of the touchscreen do not generate touch events with the correct coordinates. CarPlay uses the full display screen. Therefore a concept for a touchable area of the full display size is necessary.
MIB-2_RQ_DPO_205	The touch coordinates from the border shall be interpolated from the touchable frame to the full display screen size. An interpolation algorithm shall be implemented for all MIB ABT to fix the described deficiencies. [5]
MIB-2_RQ_DPO_206	**2.1.2.2 MFL**
MIB-2_RQ_DPO_820	**2.1.2.2.1 FEAT_DPO_CarPlay _Controll_via_MFL**
MIB-2_RQ_DPO_823	There shall be MFL button support to controll CarPlay
MIB-2_RQ_DPO_207	Button functionality shall be realized as described in: MFi Interface Specification with Apple CarPlay [4], chapter "Buttons"
MIB-2_RQ_DPO_822	**2.1.2.2.1.1 RQ_DPO_Volume**
MIB-2_RQ_DPO_213	The MFL volume buttons shall control the volume of the car's amplifier.
MIB-2_RQ_DPO_580	The volume of the CarPlay device cannot be controlled via buttons on the car side as the audio out of the CarPlay device is a constant line signal
MIB-2_RQ_DPO_821	**2.1.2.2.1.2 RQ_DPO_Siri**
MIB-2_RQ_DPO_210	It shall be possible to start and conrol Siri via the PTT button on the MFL depending on the HMI setting (e.g. long-press).
MIB-2_RQ_DPO_211	**2.1.2.2.1.3 RQ_DPO_Phone_Calls**
MIB-2_RQ_DPO_212	MFL phone button events (press and release) shall be sent to the CarPlay device (raw events without interpretation of the button events).
MIB-2_RQ_DPO_216	MFL Up- and Down-Buttons shall toggle through "Option list to handle a call" in cluster instrument
MIB-2_RQ_DPO_215	MFL Ok-Button shall activate the highlighted option
MIB-2_RQ_DPO_209	**2.1.2.2.1.4 RQ_DPO_Media**
MIB-2_RQ_DPO_218	Short press on one of the MFL Skip-Buttons shall skip music title

MIB-2_RQ_DPO_217	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song
MIB-2_RQ_DPO_208	Via the Škoda MFL button “Source Switch” it shall be possible to switch over from CarPlay media to any other native HMI media source.
MIB-2_RQ_DPO_581	It is not possible to switch to CarPlay via the Skoda MFL button "Source Switch".
MIB-2_RQ_DPO_219	**2.1.2.3 Instrument Cluster**
MIB-2_RQ_DPO_221	**2.1.2.3.1 FEAT_DPO_Instrument_Cluster_Phone_context**
MIB-2_RQ_DPO_1235	During an ongoing CarPlay session the cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1272	During any CarPlay phone call activity (i.e. none idle call state) the MFL buttons shall have no effect regarding any call activity including the CarPlay call.
MIB-2_RQ_DPO_1344	In case of an active CarPlay session the instrument cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_222	Once a CarPlay phone call is incoming, the cluster screen shall switch over to the phone context
MIB-2_RQ_DPO_1452	The fall back mechanism after the end of CarPlay phone calls shall be the same as for Bluetooth phone calls.
MIB-2_RQ_DPO_223	In systems without Phone functionality, there is no phone context visible for CarPlay in the cluster.
MIB-2_RQ_DPO_1236	**2.1.2.3.1.1 RQ_DPO_CarPlay_Cluster_Phone_Screen**
MIB-2_RQ_DPO_1237	During any CarPlay phone call activity (i.e. none idle call state) the cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1345	In case of an active CarPlay session the instrument cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1238	At the CarPlay_Cluster_Phone_Screen there shall be the string "Apple CarPlay" visible (language independent)
MIB-2_RQ_DPO_1273	During any CarPlay phone call activity (i.e. none idle call state) the MFL buttons shall have no effect regarding any call activity including the CarPlay call.
MIB-2_RQ_DPO_1453	Once a CarPlay phone call is incoming, the cluster screen shall switch over to the phone context
MIB-2_RQ_DPO_1454	The fall back mechanism after the end of CarPlay phone calls shall be the same as for Bluetooth phone calls.
MIB-2_RQ_DPO_813	**2.1.2.3.1.2 RQ_DPO_Phone_Context_Visible_Information**
MIB-2_RQ_DPO_225	Various information shall be visible in the instrument cluster, depending on the call state (idle, incomming-, outgoing-, ongoing-call).
MIB-2_RQ_DPO_228	Incoming calls shall be displayed.
MIB-2_RQ_DPO_231	If the name of the caller/telephonee is available, it shall be displayed in the cluster instrument phone context.
MIB-2_RQ_DPO_1455	If the name of the caller/telephonee is not available but the phone number is available the phone number shall be displayed in the cluster instrument phone context.
MIB-2_RQ_DPO_1456	If neither name nor number of the caller is available, "unknown" shall be displayed in the cluster instrument phone context. This string shall be language dependend.
MIB-2_RQ_DPO_1457	Call state of the call shall be displayed. I.e.: ringing/waiting, active, dialing, on hold
MIB-2_RQ_DPO_1458	Call states shall be mapped between Apple CarPlay protocol, DSI and BAP according to mapping defined in [8].
MIB-2_RQ_DPO_232	Option list to handle a call shall be displayed, during an incoming or ongoing call.
MIB-2_RQ_DPO_233	Signal strength (without info of cellular communication standard) shall be displayed.
MIB-2_RQ_DPO_226	If CarPlay phone is the sole connected phone, in phone context there shall be different information visible while no call is running
MIB-2_RQ_DPO_235	Apple CarPlay (In all languages same string) shall be visible if call state is IDL.
MIB-2_RQ_DPO_236	Provider shall be visible if call state is IDL.
MIB-2_RQ_DPO_1459	USB connection method icon shall be visible if call state is IDL.
MIB-2_RQ_DPO_237	Signal strength (without info of cellular communication standard) shall be visible
MIB-2_RQ_DPO_238	There is no Battery Level visible!
MIB-2_RQ_DPO_1460	There is no Call Stack List available/!

MIB-2_RQ_DPO_1461	There is no Call Option List available!
MIB-2_RQ_DPO_1462	There is no Missed Call Indication visible!
MIB-2_RQ_DPO_227	**2.1.2.3.1.3 RQ_DPO_User_Programmable-Cluster_Instrument_FPK behavior as MQB cluster**
MIB-2_RQ_DPO_817	The phone context in the Cluster Instrument FPK shall have the same behavior as MQB cluster.
MIB-2_RQ_DPO_582	No contact photos are visible
MIB-2_RQ_DPO_244	**2.1.2.3.1.4 RQ_DPO_Call_Option_List**
MIB-2_RQ_DPO_245	There shall be situation-dependent functions in the Call Option List to handle a call.
MIB-2_RQ_DPO_818	With Up- And Down-buttons of the MFL, it shall be possible to toggle through the list.
MIB-2_RQ_DPO_819	Press on OK-button of the MFL shall activate the visible option
MIB-2_RQ_DPO_248	Incoming call: Answer, Reject, Ignor shall be availablea
MIB-2_RQ_DPO_249	Outgoing call: Cancel shall be available
MIB-2_RQ_DPO_250	Call is ongoing: Hang up, Mic. off (Mute) shall be available
MIB-2_RQ_DPO_251	Respond to a second call: Answere, Reject shall be available
MIB-2_RQ_DPO_252	Two ongoing calls: Mic. off (Mute), Hang up shall be available
MIB-2_RQ_DPO_253	Conference call: Mic. off (Mute), Hang up shall be available
MIB-2_RQ_DPO_243	**2.1.2.3.2 FEAT_DPO_Instrument_Cluster_Audio_Context**
MIB-2_RQ_DPO_269	The string “Apple CarPlay” shall be displayed while CarPlay is the active Media Source
MIB-2_RQ_DPO_1274	**2.1.2.3.2.1 RQ_DPO_Instrument_Cluster_Audio_Context**
MIB-2_RQ_DPO_583	The string “Apple CarPlay” shall be displayed while CarPlay is the active Media Source. (language independent)
MIB-2_RQ_DPO_1463	USB connection method icon shall be displayed while CarPlay is the active Media Source.
MIB-2_RQ_DPO_268	No metadata from CarPlay will be visible on the Instrument cluster.
MIB-2_RQ_DPO_270	**2.1.2.3.3 FEAT_DPO_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_DPO_271	At the cluster screen the compass shall be visible in Navigation context while CarPlay route guidance is running. (This does not apply to freely programmable instrument clusters)
MIB-2_RQ_DPO_1197	**2.1.2.3.3.1 RQ_DPO_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_DPO_272	There are no turn by turn info visible in the instrument cluster navigation context.
MIB-2_RQ_DPO_273	In systems without navigation functionality, there is no navigation context visible in the instrument cluster.
MIB-2_RQ_DPO_274	In case of having a fully programmable cluster instrument (FPK), the native Nav module maps are not shown on the FPK while there is a route guidance active on the CarPlay device.
MIB-2_RQ_DPO_275	The FPK in combination with the system shall show a string “Smartphone Navigation active” in the navigation context while CarPlay route guidance is running. Translated in all languages which are supported by MIB
MIB-2_RQ_DPO_276	The FPK in combination with the system shall show a compass while CarPlay route guidance is running.
MIB-2_RQ_DPO_1275	At the cluster screen of None-FPKs the compass shall be visible in Navigation context while CarPlay route guidance is running.
MIB-2_RQ_DPO_282	**2.1.2.4 Microphone**
MIB-2_RQ_DPO_828	**2.1.2.4.1 FEAT_DPO_Microphone**
MIB-2_RQ_DPO_283	The microphone in the cabin shall provide the voice input to the CarPlay device for Siri, Phone and Facetime functionality.
MIB-2_RQ_DPO_1198	**2.1.2.4.1.1 RQ_DPO_Microphone**
MIB-2_RQ_DPO_1199	The microphone in the cabin shall provide the voice input to the CarPlay device for Siri, Phone and Facetime functionality.

4.3.3 Testspecification

The whole testspecification contents a lot of pages, so it is in appendix F. Short example of the CarPlay testspecification:

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73724	The MIB shall decode the H264 stream received from the CarPlay device and shall display the content on the car's screen.	P_1: CarPlay session is active	A_1: Check whether CarPlay device's content is displayed on the MIB's touchscreen	ER_1: Device's CarPlay content is displayed on the MIB's touchscreen	MIB-2_RQ_DPO_191
CarPlay-TC-73725	Touch events on the Touchscreen shall be sent to the CarPlay device.	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Perform some touch commands on the MIB's touchscreen.	ER_1: Touch commands are sent to the CarPlay device.	MIB-2_RQ_DPO_192
CarPlay-TC-73727	The rotary button control mode for CarPlay shall also be activated for anabling the usage (rotating or pressing) the DDS. (Note: This will lead to highlighted SKs or list position.)	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Rotate the right DDS one tick clockwise	ER_1: If any softkey or list position was highlighted, the next one is highlighted now, if not, the first softkey or list position is highlighted	MIB-2_RQ_DPO_197
CarPlay-TC-73728	The rotary button control mode for CarPlay shall also be activated for anabling the usage (rotating or pressing) the DDS. (Note: This will lead to highlighted SKs or list position.)	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Rotate the right DDS one tick counter-clockwise	ER_1: If any softkey or list position was highlighted, the previous one is highlighted now, if not, the first softkey or list position is highlighted	MIB-2_RQ_DPO_197
CarPlay-TC-74226	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS clockwise	ER_1: Softkey or list item highlight moves forward one step per DDS tick	MIB-2_RQ_DPO_198
CarPlay-TC-74227	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS counter-clockwise	ER_1: Softkey or list item highlight moves backward one step per DDS tick.	MIB-2_RQ_DPO_198
CarPlay-TC-74228	Pressing the DDS activates the highlighted item	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Press the DDS	ER_1: The highlighted softkey or list item is activated.	MIB-2_RQ_DPO_199

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74229	Touch event ends DDS control mode	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Initiate a touch event on MIB's touchscreen	ER_1: DDS control mode ends (softkey or list item is no longer highlighted)	MIB-2_RQ_DPO_200
CarPlay-TC-74230	Touch event ends DDS control mode	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Change context (e.g. to Phone or Media)	ER_1: Context is changed. DDS control mode ends (no softkey or list item is highlighted)	MIB-2_RQ_DPO_200
CarPlay-TC-73734	Areas at the borders of the touchscreen must generate touch events with the correct coordinates.	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Perform a touch action at the very border or corner of the MIB's touch screen	ER_1: CarPlay device locates the touch commands at the respective border or corner of the CarPlay device	MIB-2_RQ_DPO_205
CarPlay-TC-73735	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press/Roll MFL volume up once.	ER_1: MIB's volume goes up one step. Volume bar is briefly shown in the cluster instrument. ER_2: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73736	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press/Roll MFL volume down once.	ER_1: MIB's volume goes down one step. Volume bar is briefly shown in the cluster instrument. ER_2: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73737	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Longpress/Roll scroll buton MFL volume up. A_2: Release MFL volume up before max volume level is reached.	ER_1: MIB's volume is increasing. Increasing Volume bar is displayed in the cluster instrument. ER_2: Volume level and volume bar displayed in the cluster instrument do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73738	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back P_4: Playback volume is high.	A_1: Longpress/Roll scroll buton MFL volume down. A_2: Release MFL volume down before min volume is reached.	ER_1: MIB's volume decreasing. Decreasing volume bar is displayed in the cluster instrument. ER_2: Volume level and volume bar displayed in the cluster instrument do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73741	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press and hold/Roll scroll buton MFL volume up.	ER_1: MIB's volume increases until it reaches max volume. Volume bar is displayed in the cluster instrument as long as the volume is changing. ER_2: The volume of the CarPlay device itself does not change	MIB-2_RQ_DPO_213

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73739	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press and hold/Roll scroll buton MFL volume down.	ER_1: MIB's volume decreases until it reaches min volume. Volume bar is displayed in the cluster instrument as long as the volume is changing. ER_2: The volume of the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73745	Accept phone call by MFL	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Initiate an incoming call to connected CarPlay phone A_1: Accept phone call by MFL phone button	ER_1: Phone call is accepted	MIB-2_RQ_DPO_212
CarPlay-TC-73747	End phone call by MFL	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Active CarPlay phone call	A_1: End phone call by MFL phone button	ER_1: Phone call ends.	MIB-2_RQ_DPO_212
CarPlay-TC-73750	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback	A_1: Press MFL Next once	ER_1: Playback skips to the next music title.	MIB-2_RQ_DPO_218
CarPlay-TC-73751	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is > 3 s	A_1: Press MFL Previous once	ER_1: Playback skips to the beginning of the current music title.	MIB-2_RQ_DPO_218
CarPlay-TC-73752	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is < 3 s	A_1: Press MFL Previous once	ER_1: Playback skips to the beginning of the previous music title.	MIB-2_RQ_DPO_218
CarPlay-TC-73753	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is < 3 s	A_1: Longpress MFL Next	ER_1: Fast forward playback of the current music title.	MIB-2_RQ_DPO_217
CarPlay-TC-73754	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is < 3 s	A_1: Longpress MFL Previous	ER_1: Fast backward playback of the current music title.	MIB-2_RQ_DPO_217

4.4 Android Auto

4.4.1 General information

Android Auto was developed by Google Incorporated. It allows the driver to use his mobile through the dashboard's head unit. The Android Auto application was released in March 2015. Compatible applications include Google Maps, Google Play Music, Spotify, iHeart Radio, Joyride, TuneIn, etc.

4.4.2 Specification

The whole specification contents a lot of pages so it is in appendix D. I used colour sorting for tree structure. Short example of the Android Auto specification:

<table>
<tr><th>ID</th><th>Responsible: AU: Felbermeir, Christian; SE: Collado, Belén;
SK: Chara, Tomas; VW: Moursy, Islam</th></tr>
<tr><td>MIB-2_RQ_PJM_1</td><td>1 Document</td></tr>
<tr><td>MIB-2_RQ_PJM_2</td><td>1.1 History of changes</td></tr>
<tr><td>MIB-2_RQ_PJM_3</td><td>
<table>
<tr><th>Date</th><th>Requirement/Section</th><th>new Vers.</th><th>Description of change</th><th>Author</th></tr>
<tr><td>20.02.14</td><td>all</td><td>0.1</td><td>Initial version</td><td></td></tr>
<tr><td>30.09.14</td><td>all</td><td>0.2</td><td>Reworked Version</td><td>IMo</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>MIB-2_RQ_PJM_7</td><td>1.2 Related documents</td></tr>
<tr><td>MIB-2_RQ_PJM_8</td><td>
<table>
<tr><th>Ref.Id</th><th>Documentname/ Description</th><th>Version</th><th>Filename</th></tr>
<tr><td>/1/</td><td>Software as a Product RQ list</td><td>4.2</td><td>MIB_2_RQ_LIST_SW_As_Product</td></tr>
<tr><td>/2/</td><td>Diagnostic coding</td><td></td><td>Codierung</td></tr>
<tr><td>/3/</td><td>MIB SWDL specification</td><td></td><td>MIB_2_RQ_LIST_Download</td></tr>
<tr><td>/4/</td><td>AA_HU_Integration_Guide</td><td></td><td></td></tr>
<tr><td>/5/</td><td>Touch Coordinate Interpolation Concept</td><td></td><td>Touch_Coordinate_Interpolation_Concept_v1.pdf</td></tr>
<tr><td>/6/</td><td>BT Connectivity Spec.</td><td></td><td>MIB_2_RQ_LIST_Bluetooth</td></tr>
<tr><td>/7/</td><td>Media Device Data Interface</td><td></td><td>MIB_2_RQ_LIST_MobileDevice_DataInterface</td></tr>
<tr><td>/8/</td><td>Telephony Specification</td><td></td><td>MIB_2_RQ_LIST_Telephone</td></tr>
<tr><td>/9/</td><td>Android Open Accessory Protocol</td><td></td><td>Source.android.com/accessories/aoa.html</td></tr>
<tr><td>/10/</td><td>AAP_Audio_Handling</td><td></td><td>AAP_Audio_Handling_vX_VW_XXX</td></tr>
</table>
</td></tr>
<tr><td>MIB-2_RQ_PJM_21</td><td>1.3 Purpose of document</td></tr>
<tr><td>MIB-2_RQ_PJM_22</td><td>This document describes the integration of Google's "Android Auto" features and requirements into the MIB.</td></tr>
<tr><td>MIB-2_RQ_PJM_66</td><td>In the first discussions, it was known as "Projected Mode"or as "Google Automotive Link".</td></tr>
<tr><td>MIB-2_RQ_PJM_32</td><td>2 Functional Requirements</td></tr>
<tr><td>MIB-2_RQ_PJM_68</td><td>2.1 Introduction</td></tr>
<tr><td>MIB-2_RQ_PJM_69</td><td>The Google Android Auto (AA) is a method to access certain defined functions on certain mobile devices via another display i.e. via the Head Unit (HU) display. The mobile devices in question must be running a certain Android operating system that is compatible with the AA protocol.</td></tr>
<tr><td>MIB-2_RQ_PJM_71</td><td>The AA is mainly implemented in a SW module, which has to be integrated in the HU. This reference implementation is provided by Google.</td></tr>
</table>

MIB-2_RQ_PJM_72	A prototype implementation for the mobile device side will be provided by Google.
MIB-2_RQ_PJM_206	**2.2 Android Auto Requirements**
MIB-2_RQ_PJM_207	**2.2.1 General**
MIB-2_RQ_PJM_208	**2.2.1.1 FEAT_PJM_Android_Auto_Support**
MIB-2_RQ_PJM_209	The system shall support the AA functionality as an accessory device as defined by Google in the AA HU Integration Guide [4]
MIB-2_RQ_PJM_210	**2.2.1.1.1 RQ_PJM_Android_Auto_Support**
MIB-2_RQ_PJM_211	The system shall support the AA functionality as an accessory device as defined by Google in the Android Auto HU Integration Guide [4]
MIB-2_RQ_PJM_212	To be able to access the Google Android Auto Specifications, the MIB supplier and all (subcontracted) software developers must sign the required agreements and acquire the licenses from Google
MIB-2_RQ_PJM_213	A Customer Update package for the Android Auto software component of the MIB shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_PJM_214	In the case, that an incompatibility to an Android Auto device is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency" update within 30 days after notice of the failure.
MIB-2_RQ_PJM_215	The Android Auto function should be rolled out by Google in all the regions where the Google services are available.
MIB-2_RQ_PJM_216	MIB generally supports Android Auto in all regions of the world; via EOL coding it can be restricted.
MIB-2_RQ_PJM_217	**2.2.2 Affected Modules**
MIB-2_RQ_PJM_218	**2.2.2.1 Touchscreen**
MIB-2_RQ_PJM_219	**2.2.2.1.1 FEAT_PJM_Display_TouchEvents_DDS**
MIB-2_RQ_PJM_220	The Touchscreen shall display the Android Auto screen and the system shall send touch events and DDS actions to the Android Auto device.
MIB-2_RQ_PJM_221	**2.2.2.1.1.1 RQ_PJM_Touchscreen**
MIB-2_RQ_PJM_222	The Android Auto device streams the Android Auto screen as a H264 stream from the Android Auto device to the system.
MIB-2_RQ_PJM_223	The system shall decode the H264 stream received from the Android Auto device and shall display the content on the car's screen.
MIB-2_RQ_PJM_224	Touch events on the Touchscreen shall be sent to the Android Auto device.
MIB-2_RQ_PJM_899	The system shall forward multiple simultaneous touch events to the AA device.
MIB-2_RQ_PJM_225	Android Auto in its Version 1.0 supports Multi-touch functionality where the gestures are to be sent to the Android Auto device over the AA protocol. The Android device is responsible for the interpreation of these respective gestures.
MIB-2_RQ_PJM_956	If the Android phone is not able to deliver the requested video resolution of the HMI the south side shall scale the highest available video resolution of the smartphone with the same aspect ratio up or down to the resolution request by the HMI.
MIB-2_RQ_PJM_957	The aspect ratio of the video stream shall not be changed while scaling the video.
MIB-2_RQ_PJM_226	**2.2.2.1.1.2 RQ_PJM_DDS**
MIB-2_RQ_PJM_227	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)
MIB-2_RQ_PJM_228	The user shall be able to navigate across SKs or lists via the rotary knob function
MIB-2_RQ_PJM_229	Pressing the DDS shall activate the highlighted object
MIB-2_RQ_PJM_230	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)
MIB-2_RQ_PJM_231	**2.2.2.1.1.3 RQ_PJM_Algorithm_Dead_Touch_Areas**
MIB-2_RQ_PJM_232	The current MIB ABTs from Alpine have the hardware restriction, that areas at the borders of the touchscreen do not generate touch events with the correct coordinates. Android Auto uses the full display screen. Therefore a concept for a touchable area of the full display size is necessary.

MIB-2_RQ_PJM_233	The touch coordinates from the border shall be interpolated from the touchable frame to the full display screen size. An interpolation algorithm shall be implemented for all MIB ABT to fix the described deficiencies. [5]
MIB-2_RQ_PJM_234	**2.2.2.2 MFL**
MIB-2_RQ_PJM_235	**2.2.2.2.1 FEAT_PJM _Control_via_MFL**
MIB-2_RQ_PJM_236	There shall be MFL button support to control Android Auto
MIB-2_RQ_PJM_237	Button functionality shall be realized as described in: AA HU Integration Guide[4] in the "Buttons" Chapter
MIB-2_RQ_PJM_238	**2.2.2.2.1.1 RQ_PJM_Volume**
MIB-2_RQ_PJM_239	The MFL volume buttons shall control the volume of the car's amplifier.
MIB-2_RQ_PJM_240	The volume of the Android Auto device cannot be controlled via buttons on the car side as the audio out of the Android Auto device is a constant line signal
MIB-2_RQ_PJM_241	**2.2.2.2.1.2 RQ_PJM_Google_Voice**
MIB-2_RQ_PJM_242	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL.
MIB-2_RQ_PJM_243	**2.2.2.2.1.3 RQ_PJM_Phone_Calls**
MIB-2_RQ_PJM_244	In case of a Bluetooth connection for telephony, the MFL buttons shall control the Android Auto phone calls in the same way as Bluetooth telephony. This is specified in [8].
MIB-2_RQ_PJM_247	**2.2.2.2.1.4 RQ_PJM_Media**
MIB-2_RQ_PJM_248	Short press on one of the MFL Skip-Buttons shall skip music title
MIB-2_RQ_PJM_945	Short press on one of the MFL Up/Down-Buttons while being in Audio context in cluster shall skip music title
MIB-2_RQ_PJM_249	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song
MIB-2_RQ_PJM_250	Via the Škoda MFL button "Source Switch" it shall be possible to switch over from Android Auto media to any other native HMI media source.
MIB-2_RQ_PJM_251	It is not possible to switch to Android Auto via the Skoda MFL button "Source Switch".
MIB-2_RQ_PJM_252	**2.2.2.3 Instrument Cluster**
MIB-2_RQ_PJM_253	**2.2.2.3.1 FEAT_PJM_Instrument_Cluster_Phone_context**
MIB-2_RQ_PJM_254	The Android Auto representaion in the phone context on the instrument cluster will have the same feature set avaliable for the Bluetooth telephony functionality. This is defined in [8].
MIB-2_RQ_PJM_259	**2.2.2.3.1.1 RQ_PJM_Android Auto_Cluster_Phone_Context**
MIB-2_RQ_PJM_260	The Android Auto representation in the phone context on the instrument cluster will have the same feature set defined for the Bluetooth telephony functionality. This is defined in [8].
MIB-2_RQ_PJM_288	**2.2.2.3.2 FEAT_PJM_Instrument_Cluster_Audio_Context**
MIB-2_RQ_PJM_289	The string "Android Auto" shall be displayed while Android Auto is the active Media Source
MIB-2_RQ_PJM_290	**2.2.2.3.2.1 RQ_PJM_Instrument_Cluster_Audio_Context**
MIB-2_RQ_PJM_291	The string "Android Auto" shall be displayed while Android Auto is the active Media Source. (language independent)
MIB-2_RQ_PJM_292	No metadata from Android Auto will be visible on the Instrument cluster.
MIB-2_RQ_PJM_293	**2.2.2.3.3 FEAT_PJM_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_PJM_294	At the cluster screen the compass shall be visible in Navigation context while Android Auto route guidance is running. (This does not apply to freely programmable instrument clusters)
MIB-2_RQ_PJM_295	**2.2.2.3.3.1 RQ_PJM_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_PJM_296	There are no turn by turn info visible in the instrument cluster navigation context.
MIB-2_RQ_PJM_297	In systems without navigation functionality, there is no navigation context visible in the instrument cluster.
MIB-2_RQ_PJM_298	In case of having a fully programmable cluster instrument (FPK), the native Nav module maps are not shown on the FPK while there is a route guidance active on

	the Android Auto device.
MIB-2_RQ_PJM_299	The FPK in combination with the system shall show a string “Smartphone Navigation active” in the navigation context while Android Auto route guidance is running. Translated in all languages which are supported by the system
MIB-2_RQ_PJM_300	The FPK in combination with the system shall show a compass while Android Auto route guidance is running.
MIB-2_RQ_PJM_301	At the cluster screen of None-FPKs the compass shall be visible in Navigation context while Android Auto route guidance is running.
MIB-2_RQ_PJM_302	**2.2.2.4 Microphone**
MIB-2_RQ_PJM_303	**2.2.2.4.1 FEAT_PJM_Microphone**
MIB-2_RQ_PJM_304	The microphone in the cabin shall provide the voice input to the Android Auto device for speech recognition and phone calls
MIB-2_RQ_PJM_305	**2.2.2.4.1.1 RQ_PJM_Microphone**
MIB-2_RQ_PJM_306	The microphone in the cabin shall provide the voice input to the Android Auto device for speech recognition and phone calls
MIB-2_RQ_PJM_307	**2.2.2.5 ABT Hard Keys**
MIB-2_RQ_PJM_308	ABT HKs are always linked with the native HMI contexts, even if Android Auto is displayed on the MIB screen. An exception is the HK Voice.
MIB-2_RQ_PJM_309	**2.2.2.5.1 FEAT_PJM_ABT_Hard_Keys**
MIB-2_RQ_PJM_310	The voice HK on ABT shall have the same functionality as the MFL PTT button.
MIB-2_RQ_PJM_311	**2.2.2.5.1.1 RQ_PJM_ABT_Hard_Keys**
MIB-2_RQ_PJM_312	The voice HK on ABT shall have the same functionality as the MFL PTT button.
MIB-2_RQ_PJM_313	This also applies to the Joker HK in case it has been assigned the Voice functionality.
MIB-2_RQ_PJM_314	In case the Joker key has been assigned the AppConnect functionality, it shall link to the AppConnect context in the ABT.
MIB-2_RQ_PJM_315	**2.2.3 Audio**
MIB-2_RQ_PJM_318	**2.2.3.1 FEAT_PJM_Audio_Handling**
MIB-2_RQ_PJM_319	The system shall support the Audio specifications as described in the AAP_Audio_handling[10].
MIB-2_RQ_PJM_954	**2.2.3.1.1 RQ_PJM_Audio_Handling**
MIB-2_RQ_PJM_955	The system shall support the Audio specifications as described in the AAP_Audio_handling[10].
MIB-2_RQ_PJM_331	**2.2.3.2 FEAT_PJM_Audio_Input**
MIB-2_RQ_PJM_332	The system shall send audio signal from the microphone in the car's cabine to the Android Auto device.
MIB-2_RQ_PJM_333	**2.2.3.2.1 RQ_PJM_Signal_Processing**
MIB-2_RQ_PJM_334	The system shall send audio signal from the microphone in the car's cabine to the Android Auto device.
MIB-2_RQ_PJM_335	In case of speech recognition (i.e. Google Voice), before the signal from the microphone is transferred to the Android Auto device , the signal shall be not be enhanced by echo cancellation, noise reduction or automatic gain control as described in Google's Head Unit Integration guide: [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_336	Artifacts, Dropouts and Clipping on the processed microphone signal shall be avoided.
MIB-2_RQ_PJM_339	For Voice Recognition. the system shall support microphone signal sample rate of 16 kHz.
MIB-2_RQ_PJM_341	**2.2.3.3 FEAT_PJM_Audio_Connection_Labels**
MIB-2_RQ_PJM_342	There shall be different new Audio Connection Labels

4.4.3 Testspecification

The whole testspecification contents a lot of pages, so it is in appendix G. Short example of the Android Auto testspecification:

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73714	The system shall decode the H264 stream received from the Android Auto device and shall display the content on the car's screen.	P_1: AA session is active	A_1: Check whether AA device's content is displayed on the MIB's touchscreen	ER_1: Device's AA content is displayed on the MIB's touchscreen	MIB-2_RQ_PJM_223
AndroidAuto-TC-73715	Touch events on the Touchscreen shall be sent to the Android Auto device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform some touch commands on the MIB's touchscreen.	ER_1: Touch commands are sent to the AA device.	MIB-2_RQ_PJM_224
AndroidAuto-TC-73716	The system shall forward multiple simultaneous touch events to the AA device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform a multi-touch zoom on the MIB's touchscreen (e.g. in Android's navigation map)	ER_1: Multi-touch zoom commands are sent to the AA device.	MIB-2_RQ_PJM_899
AndroidAuto-TC-73718	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in touch mode (no softkeys or list items highlighted)	A_1: Rotate the DDS one tick clockwise	ER_1: Softkey or list position is highlighted	MIB-2_RQ_PJM_227
AndroidAuto-TC-73719	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing)	P_1: AA session is active P_2: AA content is shown P_3: AA is in touch mode (no softkeys or list items highlighted)	A_1: Rotate the DDS one tick counter-clockwise	ER_1: Softkey or list position is highlighted	MIB-2_RQ_PJM_227
AndroidAuto-TC-73720	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or is highlighted)	A_1: Rotate the DDS clockwise	ER_1: Softkey or list item highlight moves forward one step per DDS tick	MIB-2_RQ_PJM_228

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73721	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS counter-clockwise	ER_1: Softkey or list item highlight moves backward one step per DDS tick	MIB-2_RQ_PJM_228
AndroidAuto-TC-73722	Pressing the DDS shall activate the highlighted object	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Press the DDS	ER_1: The highlighted softkey or list item is activated	MIB-2_RQ_PJM_229
AndroidAuto-TC-73723	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Initiate a touch event on MIB's touchscreen	ER_1: DDS control mode ends (softkey or list item is no longer highlighted)	MIB-2_RQ_PJM_230
AndroidAuto-TC-73724	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted) P_4: Change context (e.g. to native Phone or Media)	A_1: Return to AA context	ER_1: DDS control mode ends (softkey or list item is no longer highlighted)	MIB-2_RQ_PJM_230
AndroidAuto-TC-73725	Areas at the borders of the touchscreen must generate touch events with the correct coordinates.	P_1: AA session is active P_2: AA content is shown	A_1: Perform a touch action at the very border or corner of the MIB's touch screen	ER_1: AA device locates the touch commands at the respective border or corner of the AA device (you may want activate "show touches" and "show pointer location" in the Android device's developer options to see where the device perceives the MIB's touch commands)	MIB-2_RQ_PJM_233
AndroidAuto-TC-73726	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll MFL volume up once	ER_1: MIB's volume goes up one step. Volume bar is briefly shown in the instrument cluster ER_2: The volume on the Android device itself did not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73727	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll MFL volume down once	ER_1: MIB's volume goes down one step. Volume bar is briefly shown in the instrument cluster ER_2: The volume on the Android device itself did not change	MIB-2_RQ_PJM_239

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73728	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume up A_2: Release MFL volume up before max volume level is reached	ER_1: MIB's volume is increasing. Increasing Volume bar is displayed in the instrument cluster. ER_2: Volume level and volume bar displayed in the instrument cluster do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73729	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume down A_2: Release MFL volume down before min volume is reached	ER_1: MIB's volume decreasing. Decreasing volume bar is displayed in the instrument cluster. ER_2: Volume level and volume bar displayed in the instrument cluster do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73730	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume up	ER_1: MIB's volume increases until it reaches max volume. Volume bar is displayed in the instrument cluster as long as the volume is changing. ER_2: The volume of the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73731	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume down	ER_1: MIB's volume decreases until it reaches min volume. Volume bar is displayed in the instrument cluster as long as the volume is changing ER_2: The volume of the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73732	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73733	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308
AndroidAuto-TC-73737	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows a native HMI screen screen P_4: Music playback by native HMI	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Audio is handled by AA ER_2: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308
AndroidAuto-TC-73736	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows Android Auto screen P_4: Music playback by AA	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Audio is handled by AA ER_2: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308
AndroidAuto-TC-73740	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows a context other than Audio	A_1: Short-press the MFL button Next	ER_1: AA device skips to the next playable title	MIB-2_RQ_PJM_248
AndroidAuto-TC-73741	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows a context other than Audio	A_1: Short-press the MFL button Previous	ER_1: AA device skips to the previous playable title or the start of the current title (depends on how the media player running on the Android device interprets the button press)	MIB-2_RQ_PJM_248
AndroidAuto-TC-73742	Short press on one of the MFL Up/Down-Buttons while being in Audio context in cluster shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows Audio (Media) context	A_1: Short-press the MFL button Up	ER_1: AA device skips to the next playable title	MIB-2_RQ_PJM_945
AndroidAuto-TC-73743	Short press on one of the MFL Up/Down-Buttons while being in Audio context in cluster shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows Audio	A_1: Short-press the MFL button Down	ER_1: AA device skips to the previous playable title or the start of the current title (depends on how the media player running on device interprets button press)	MIB-2_RQ_PJM_945

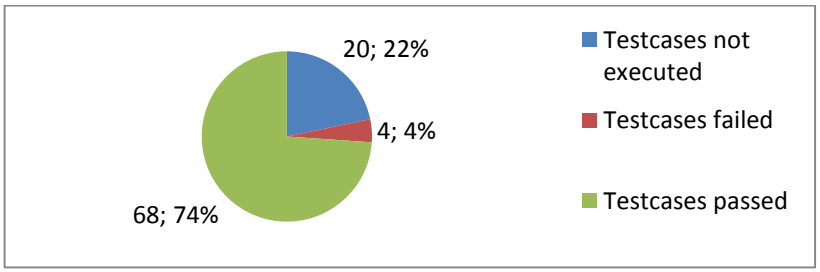
5 Test results

The test results of the suggested testspecification:

- MirrorLink

Testcases not executed	20
Testcases failed	4
Testcases passed	68

Chart 5.I Test result MirrorLink

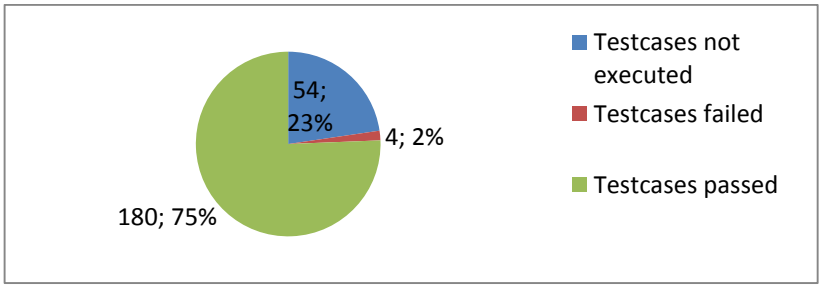


Graph 5.I Test result MirrorLink

- CarPlay

Testcases not executed	54
Testcases failed	4
Testcases passed	180

Chart 5.II Test result CarPlay

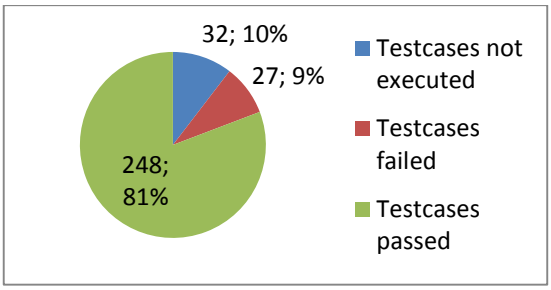


Graph 5.II Test result CarPlay

- Android Auto

Testcases not executed	32
Testcases failed	27
Testcases passed	248

Chart 5.III Test result Android Auto



Graph 5.III Test result Anfroid Auto

Short example of testing MirrorLink with using Microsoft Excel:

	A	B	F	G	H	I	J	M
			MoreFiles2Add2Ticke			Add Additional Ticket		Add Metadata
1	Valuation	Comment [optional]	Type of Object	ase Case Description	Precondition	Action	Expected Result	DoorsID
38	failed	Is not successful after switching device on	Testcase	Connect USB device - ML device powered off	P_1: MIB system is powered on. P_2: ML device is powered off and was already connected as ML P_3: USB cable detachted	A_1: Attach USB cable to both units. A_2: Power on ML device and check if ML connection happens automatically	ER_2: ML reconnect is successful after switching device on	MiLi-TC-138
39	not_testable	No USB 2	Testcase	ML device Switch from Server1 to server 2	P_1: ML session with phone 1 is active over USB1 P_2: ML Phone 2 is connected via usb--> ML not active	A_1: go to appconnect menu and intiate ML connection with Phone 2 during an active ML active session with phone 1	ER_1: the ML connection from phone 1 is disconnected and ML connection with phone 2 is established perfectly Note: phone 1 still detected as MI and media device	MiLi-TC-331
40	not_testable	No USB 2	Testcase	ML device Switch from Server1 to server 2	P_1: ML session with phone 1 is active over USB1 P_2: ML Phone 2 is connected via usb--> ML not active	A_1: go to appconnect menu and intiate ML connection with Phone 2, wait till the popup for establishing usb is shown, then remove the usb cable again from phone2 While the popup is shown	ER_1: 1- the popup for estblishing ML with phone 2 disappeared immediatellly when the usb cable is disconnected 2- ML connection is established with phone 1 again	MiLi-TC-332
41	passed		Testcase	The popup for estblishing ML connection should be disappeared after removing usb	P_1: ML session with phone 1 is active over USB1 P_2: MIB is in ML context P_3: End the ML session by disconnecting the USB cable from phone 1	A_1: Reconnect the USB cable to phone 1, wait till the popup for establishing usb is shown, then remove the usb cable again While the popup is shown	ER_1: the popup dissappears immediatellly when the usb cable is disconnected Note: test case is failed if the popup for establishing usb connection still appeared after dettaching usb	MiLi-TC-330
42	failed	Is not possible after disconnecting ML	Testcase	MIB screen: The appconnect context shall remain active Cluster screen: any ML specific content is not displayed any longer The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is not connected with the MIB in any way P_2: Media playback is active on phone 1	A_1: Go to AppConnect context, start an ML session with phone 1. A_2: End the ML session using the AppConnect HMI -> disconnect Softkey--> check in Medai conext if phone 1 is selectable as usb	ER_1: ML connection is successful, Music over USB in Media is stopped ER_2: ML is disconnected--> music over usb with Phone 1 is possible after disconnecting ML	MiLi-TC-272
				The system shall switch to AppConnect context if MirrorLink device is				

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Figure 5.I MirrorLink test

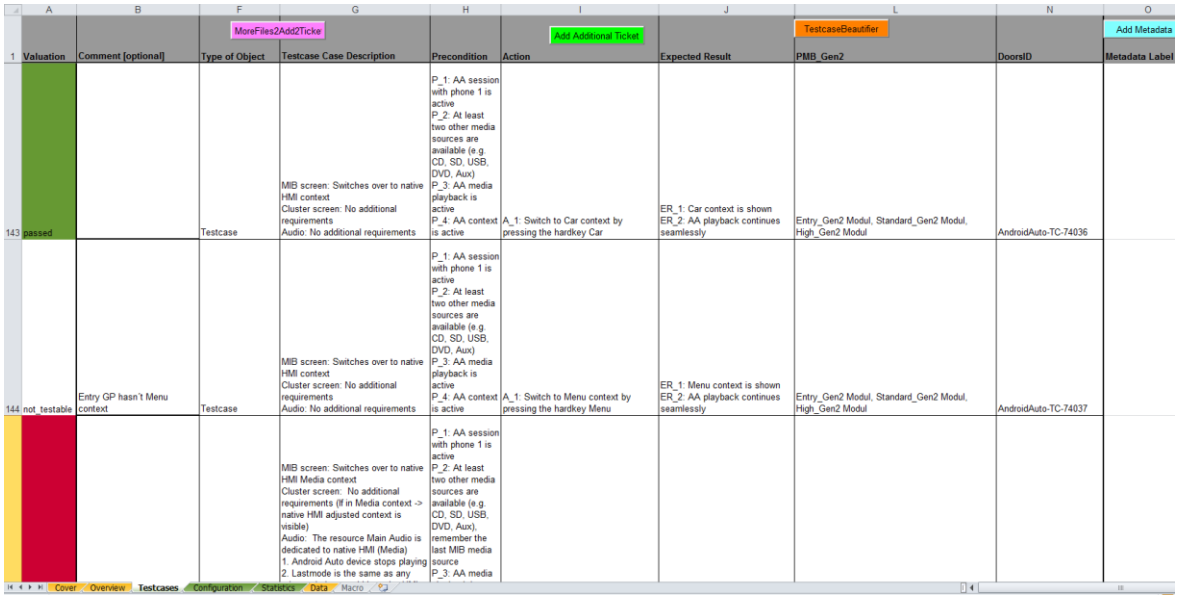
Short example of testing CarPlay with using Microsoft Excel:

	A	B	F	G	H	I	J	L	M	N
			MoreFiles2Add2Ticke			Add Additional Ticket		TestcaseBeautifier		Add Metadata
1	Valuation	Comment [optional]	Type of Object	Testcase Case Description	Precondition	Action	Expected Result	PMB_Gen2	DoorsID	Metadata Label
147	not_testable		Testcase	2 CarPlay devices at the same time	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active	A_1: Connect a second CarPlay device to the non-OTG-Port	ER_1: Second CarPlay device can be used for media playback in native HMI media context, but not as CarPlay device	Entry_Gen2 Modul, Standard_Gen2 Modul, High_Gen2 Modul	CarPlay-TC-74243	
148	failed	Playback don't start	Testcase	If the user tries to activate a native HMI entertainment source during an ongoing CarPlay phone call the system audio shall stay by the CarPlay phone call until CarPlay phone call is ended and switch to the selected audio source afterwards.	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Ongoing CarPlay phone call	A_1: Try to start media playback from one of MIB's media sources (e.g. SD, USB, CD) A_2: End the CarPlay phone call	ER_1: No media playback during call ER_2: Playback of the MIB's media source starts automatically	Entry_Gen2 Modul, Standard_Gen2 Modul, High_Gen2 Modul	CarPlay-TC-74090	
149	passed		Testcase	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI FM-radio context	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Call ends, MIB shows native HMI screen like before call Audio output from media context like before call	Entry_Gen2 Modul, Standard_Gen2 Modul, High_Gen2 Modul	CarPlay-TC-74264	
150	passed		Testcase	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI Media context	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Call ends, MIB shows native HMI screen like before call Audio output from media context like before call	Entry_Gen2 Modul, Standard_Gen2 Modul, High_Gen2 Modul	CarPlay-TC-74266	

Cover | Overview | Testcases | Configuration | Statistics | Data | Macro

Figure 5.II CarPlay test

Short example of testing Android Auto with using Microsoft Excel:



	A	B	F	G	H	I	J	L	N	O
			MoreFiles2Add2Ticke			Add Additional Ticket		TestcaseBeautifier		Add Metadata
1	Valuation	Comment [optional]	Type of Object	Testcase Case Description	Precondition	Action	Expected Result	PMB_Gen2	DoorsID	Metadata Label
143	passed		Testcase	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Car context by pressing the hardkey Car	ER_1: Car context is shown ER_2: AA playback continues seamlessly	Entry_Gen2 Modul, Standard_Gen2 Modul, High_Gen2 Modul	AndroidAuto-TC-74036	
144	not_testable	Entry GP hasn't Menu context	Testcase	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Menu context by pressing the hardkey Menu	ER_1: Menu context is shown ER_2: AA playback continues seamlessly	Entry_Gen2 Modul, Standard_Gen2 Modul, High_Gen2 Modul	AndroidAuto-TC-74037	
				MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. Android Auto device stops playing 2. Lastmode is the same as any	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux), remember the last MIB media source P_3: AA media				

Cover Overview Testcases Configuration Statistics Data Macro

Figure 5.III Android Auto test

6 Time and test management

6.1 Division of TC to different test area

While dveloping any components or parts of the car we must realise that the heart of the matter is that everything must work as one unit at the end. It is even more important in EE development because electrical components influence one another. Testers in certain area, as for example in SmartLink, are concentrated especially on their own technology and they usually test on the testbench. So it is really important to test all the components in the head unit and then test the head unit as a part of the whole car. As I have already mentioned this is happening on other testing areas where the whole testspecification is not tested but some basic parts are.

Here is the chart with number of TC:

TESTING AREA	*MIRRORLINK*	*CARPLAY*	*ANDROID AUTO*
Tester	*92*	*237*	*307*
IW	*56(61%)*	*96(41%)*	*131(43%)*
BB	*15(16%)*	*15(6%)*	*15(5%)*
Automation	*39(42%)*	*99(42%)*	*85(28%)*

Chart 6.I Number of TC chart

6.2 Limited number of employees and the results

As I mentioned in the introduction, there are about 1700 employees working in the technical development in Skoda Auto Inc. but there about 26000 employees in VW AG. It follows from this that everyone is responsible for more duties in Skoda Auto Inc. Concerning SmartLink there are eight employees in VW AG but only four employees Skoda Auto Inc. They have the same amount of work. So the solution is still being looked for to complete all the testing or to divide TC to different test areas. As you can see in the chart of TC one solution is to move one part of the testing to another test are and the second solution is automation which is quite developing in these days. We must program the robot which can control both a mobile phone and the head unit.

6.3 Time requirement for TOV and testers

I put into the chart individual tester´s work with proportional occupancy.

ACTIVITY	*PROPORTIONAL OCCUPANCY*
Creating and maintaining testspecification	*9%*
Defining, guidance and informing the testing areas	*3%*
Automation	*3%*
Testing	*45%*
Verrification of the corrected bugs	*7%*
Testing drive	*10%*
Submitting of the results	*3%*
Filling bugs into KPM	*10%*
Beforehand analysis of the bugs	*10%*

Chart. 2.V Activity and time requirement chart

6.4 Proposed solution

As you can see in the chart, there are four activities which demand the most time: testing itself, beforehand analysis of the bugs, filling the bugs into KPM and creating and maintaning testspecification. In view of the fact that for beforehand analysis and creating and maintaining testspecification we need people with specific knowledge, the only one solution is to move testing to different areas and not to test TC in EEC/4. The least we test TC the least bugs we find and so we need less time for filling them into KPM and we save

more time. The next idea is using IT tools for testing, which safe our time, because is possible create the statistic from test and also put the issues to KPM.

6.5 Tools for testing

I was trying and recommend these two software for testing. One is for the test in office on the testbench and one is for the test on the testdrive.

6.5.1 DTCM

This software is for the test in office and from it is possible submitting of the result and also creating the statistic.

Short example of testing with using DTCM:

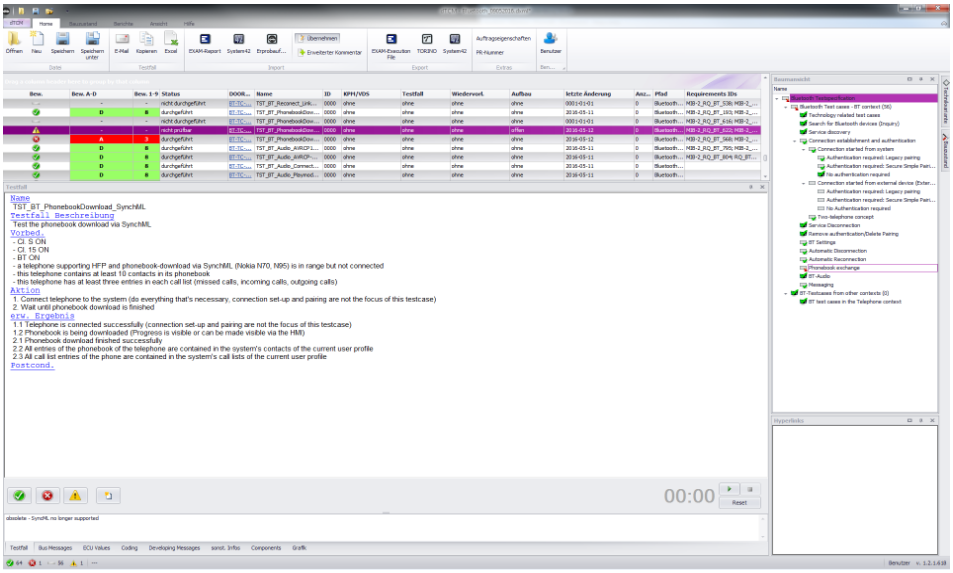


Figure 6.I DTCM software

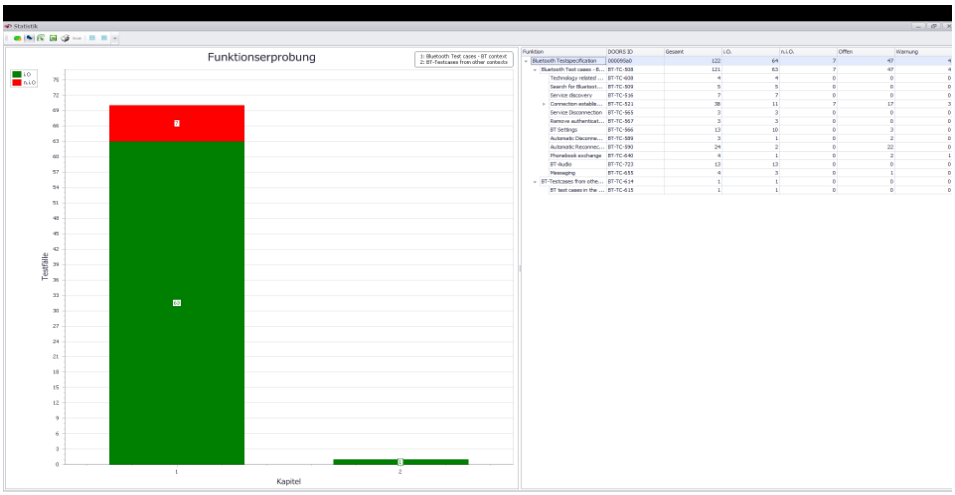


Figure 6.II DTCM software

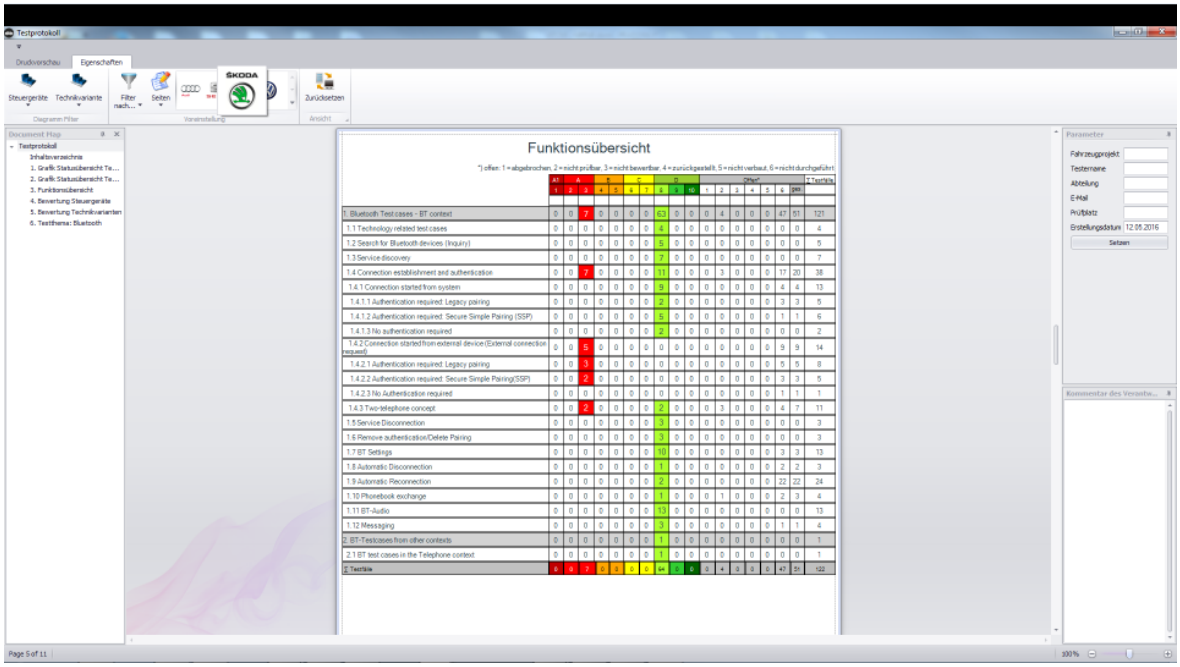


Figure 6.III DTCM software

6.5.2 Streetworker

This software is for the test on the testdrive and from it is possible exporting to KPM and also creating the statistic.

Short example of testing with using Streetworker:

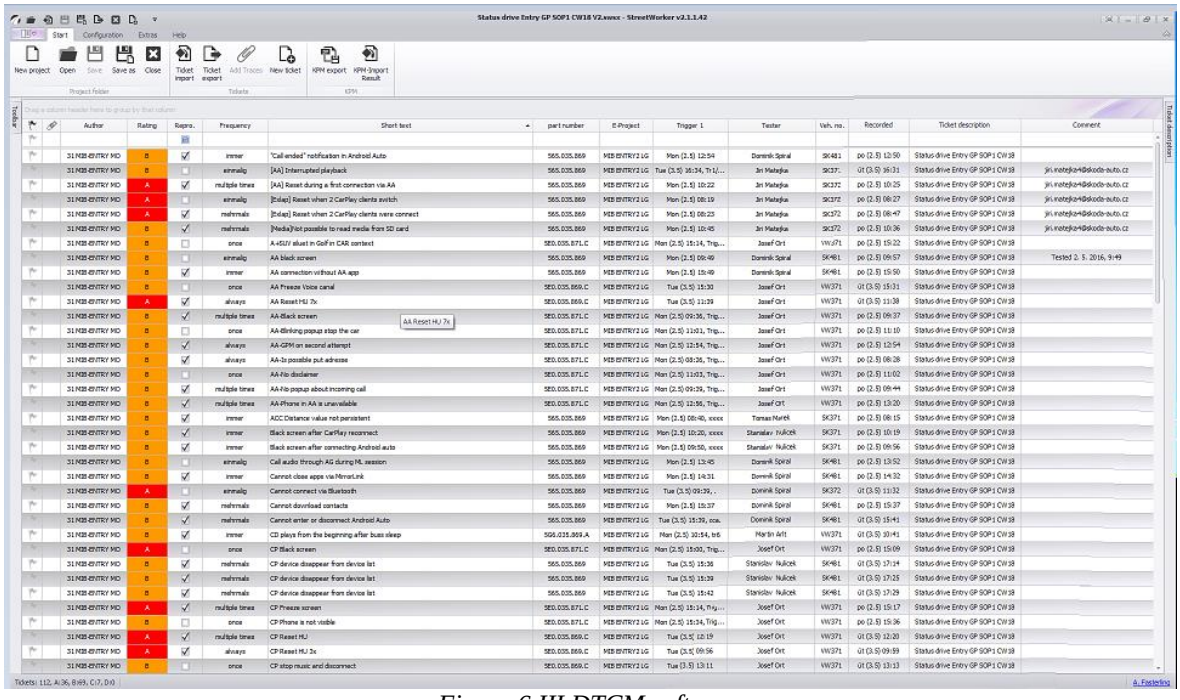


Figure 6.III DTCM software

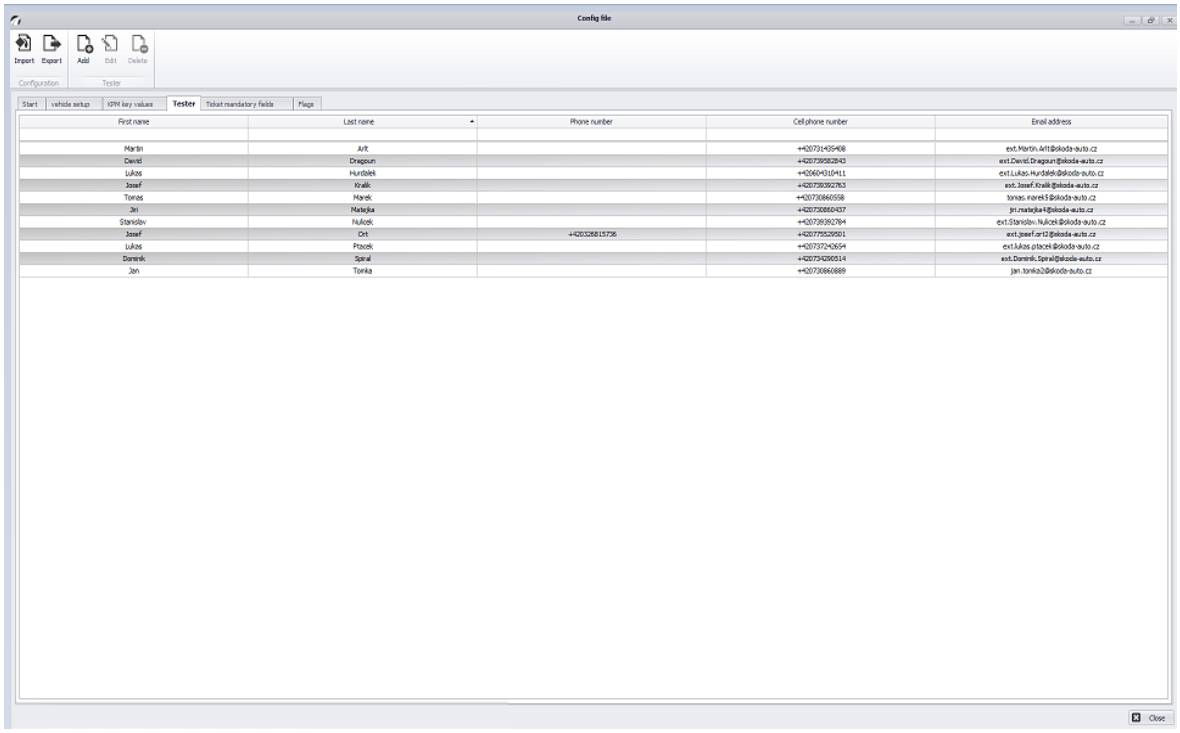


Figure 6.IV DTCM software

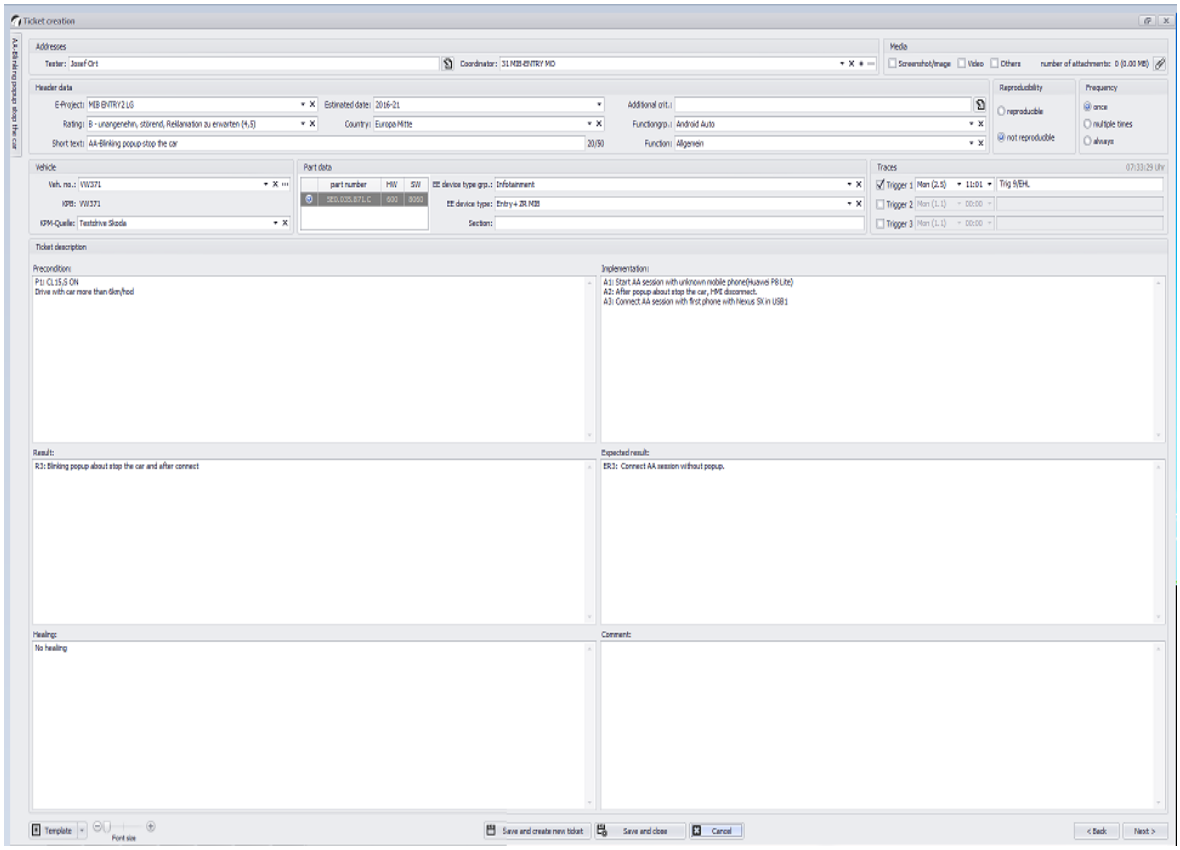


Figure 6.V DTCM software

7 Conclusion

The assignment of this work was to suggest the test process for SmartLink after studying its specification and then to implement measurement according to test process. Both of these items were successfully fullfilled.

Firstly, I described software development and more detaily explained V shaped model used in Skoda Auto Inc.

Then I showed the illustration of the specification of SmartLink which I had carefully studied before so that I was able to write the testspecification. I also tested the head unit according to the suggested testspecification. Shorts examples of specification, testspecification and tests are shown in diploma thesis, the whole specification and testspecification are in appendix.

I was asked to find the solution for this problem, because of the small number of testers in Skoda Auto Inc. Based on this request I selected tests which could be automatized with low efforts. Those tests were automated later on.

Above the framework of the assignment I evaluated time requirements of the testers and I divided the number of testcases in the different testing areas. On the basis of my 10 months work we are more concetrated on the testing MIB Entry instead of MIB Standard and MIB High.

I am glad that my work helped in improving the testing process of development of MIB.

References

[1] PATTON, Ron. *Software testing*. 1. vyd. USA, Indianapolis: Sams publishing, 2001. 389 s. ISBN 0-672-31983-7

[2] SDLC V Shaped model [online]. Poslední změna 25.5.2015. Dostupné z: http:// http://er.yuvayana.org/sdlc-v-shaped-model-design-phase-applications-advantages-and-disadvantages/

Appendix

Appendix A – Rewriting tool command language

```
#header start
#name: ANDROIDCNTRL
#version: 1.01
#executive: Hynek
#header end

#only one device has to be connected via adb to work properly
namespace eval ANDROIDCNTRL {
	global $::programPath/
	global xml_settings
	set xml_settings [miniDOM openFile
"$::programPath/TestXML/Mobile_settings.xml"]
	if { $xml_settings == "" || $xml_settings == 0 } {
	  warning "ANDROIDCNTRL opening
$::programPath/TestXML/Mobile_settings.xml failed"
	}

	global device_name
	#tests if device is properly connected
	proc TestConnection {} {
		# exec adb devices > out.tmp
		# set log_file [open "out.tmp" "r"]
		# set log_content [read $log_file]
		# close $log_file
		# file delete -force "out.tmp"

		# if { [ string first "\tdevice" $log_content ] != -1 } {
			# return 1
		# } else {
		  # return -1
		# }

		if { [catch {exec adb shell input} fid] } {
			return -1
		} else {
			return 1
		}
	}

	proc Find {node} {
	  global ANDROIDCNTRL::IP_ADDRESS
	  global ANDROIDCNTRL::xml_settings
	  if {[miniDOM getAttribute $node "DEV_NAME"] != "ANDROIDCNTRL"} {
			warning "ANDROIDCNTRL::Find - DEV_NAME wasn't find"
			return false
	  }
```

```
        set mobil_id [miniDOM getAttribute $node "ID"]

        global MOBILE::mobil_id_list
        if {$mobil_id != "0"} {
                lappend mobil_id_list $mobil_id
        } else {
                warning "ANDROIDCNTRL::Find - Mobil ID wasn't found"
        }

        if { [ string first "C:\\TestAut2\\Bin\\platform-tools" $::env(PATH) 0 ] == "-1" } {
                        warning "You don't have correctly install adb or set PATH!"
                        return false
        }

        return true
    }

    proc Destroy {node} {

            if {[miniDOM getAttribute $node "DEV_NAME"] !=
"ANDROIDCNTRL"} {
            error "ANDROIDCNTRL::Destroy - DEV_NAME wasn't find"
            return false
            }

            #killing adb - to unblock COM port
            set tasks [exec tasklist]
            set lines [split $tasks \n]

            foreach line $lines {
                    if { [ string match "adb.exe*" $line ] } {
                            set pid [ lindex $line 1 ]
                            exec [auto_execok taskkill] /PID $pid /F
                    }
            }

        return true
    }


    #Sets device's name (for load speciffic files and settings)
    proc SetDeviceName { name } {
            global ANDROIDCNTRL::device_name
            set device_name $name
    }

    #Gets device's name
    proc GetDeviceName { } {
            global ANDROIDCNTRL::device_name
            return $device_name
```

```
        }
        #Connects phone if it isnt already connected
        proc Connect {} {
          global ANDROIDCNTRL::IP_ADDRESS
          global ANDROIDCNTRL::xml_settings
          global ANDROIDCNTRL::device_name
          #try to connect if not connected
          if { [ TestConnection ] == -1 } {
                set model [miniDOM getElementByAttribut $xml_settings ID
$device_name]
                if { $model == "" || $model == 0 } {
                  error "ANDROIDCNTRL::Connect: reading model failed"
                }
                set ip_xml [miniDOM getElementByAttribut $model ID "IP_ADDRESS" ]
                if { $ip_xml == "" || $ip_xml == 0 } {
                  error "ANDROIDCNTRL::Connect: reading ip_xml failed"
                }
                set IP_ADDRESS [miniDOM getTextValue [miniDOM
getFirstChildElementByName $ip_xml VALUE]]
                if { $IP_ADDRESS == "" } {
                  error "ANDROIDCNTRL::Connect: reading IP_ADDRESS value failed"
                }
                  if { [ catch { exec adb connect $IP_ADDRESS } fid ] } {
                        warning "ANDROIDCNTRL::Connect: Connecting failed $fid"
                  }
                  after 1000
                  if { [ TestConnection ] == -1 } {
                        error "Can't connect android device!"
                  }
          }
        }

        proc Disconnect {} {
                if { [ catch { exec adb disconnect } fid ] } {
                        warning "ANDROIDCNTRL::Disconnect: adb error $fid"
                }
        }

        #Press button by key_value (could be found on
http://developer.android.com/reference/android/view/KeyEvent.html ) or by key_name
defined in device's XML
        proc KeyPress { key { sec 0 } } {
          global ANDROIDCNTRL::device_name
          global ANDROIDCNTRL::xml_settings
          if { [ string is integer $key ] } {
                if { [ catch { exec adb shell input keyevent $key } fid ] } {
                        if { $sec == 1 } {
                                warning "ANDROIDCNTRL::KeyPress: adb error $fid"
                                Connect
                        } else {
```

```
                        Connect
                        KeyPress $key 1
                }
        }
    } else {
        set model [miniDOM getElementByAttribut $xml_settings ID
$device_name]
        if { $model == "" || $model == 0 } {
          warning "ANDROIDCNTRL::KeyPress reading model failed"
        }
        set key_xml [miniDOM getElementByAttribut $model ID $key ]
        if { $key_xml == "" || $key_xml == 0 } {
          warning "ANDROIDCNTRL::KeyPress reading key_xml failed"
        }
        set key [miniDOM getTextValue [miniDOM getFirstChildElementByName
$key_xml KEY_CODE]]
        if { $key == "" } {
          warning "ANDROIDCNTRL::KeyPress reading key value failed"
        }
        puts "Pressing a $key"
        if { [ catch { exec adb shell input keyevent $key } fid ] } {

                if { $sec == 1 } {
                        warning "ANDROIDCNTRL::KeyPress: adb error $fid"
                        Connect
                } else {
                        Connect
                        KeyPress $key 1
                }
        }
    }
    }
    #Sends text to Android phone doesnt work with spaces yet neccessary to replace
with %s
    proc PlainText { msg { sec 0 } } {
        set no_space_msg [string map { " " "%s" } $msg]
        if { [ catch { exec adb shell input text $no_space_msg } fid ] } {
                if { $sec == 1 } {
                        warning "ANDROIDCNTRL::PlainText: adb error $fid"
                        Connect
                } else {
                        Connect
                        PlainText $key 1
                }
        }
    }

    #Touch screen on coordinates [x,y]
    proc Press { x y { sec 0 } } {
        if { [ catch { exec adb shell input tap $x $y } fid ] } {
```

```
                        if { $sec == 1 } {
                                warning "ANDROIDCNTRL::Press: adb error $fid"
                                Connect
                        } else {
                                Connect
                                Press $x $y 1
                        }
                }
        }
        #Start calling given phone number
        proc Call { phone_number { sec 0 } } {
                if { [ catch { exec adb shell am start -a android.intent.action.CALL -d
tel:$phone_number } fid ] } {
                        if { $sec == 1 } {
                                warning "ANDROIDCNTRL::Call: adb error $fid"
                                Connect
                        } else {
                                Connect
                                Call $x $y 1
                        }
                }
        }
        #Makes a swipe from first point [x,y] to second point [x,y] with duration in ms
        proc Swipe { gesture { x_start 0 } { y_start 0 } { x_end 0 } { y_end 0 } { duration 0
} { sec 0 } } {
          global ANDROIDCNTRL::device_name
          global ANDROIDCNTRL::xml_settings
          if { $gesture == "MANUAL" } {
                if { [ catch { exec adb shell input swipe $x_start $y_start $x_end $y_end
$duration } fid ] } {
                        if { $sec == 1 } {
                                warning "ANDROIDCNTRL::Swipe: adb error $fid"
                                Connect
                        } else {
                                Connect
                                Swipe $gesture $x_start $y_start $x_end $y_end $duration 1
                        }
                }
          } else {
                set model [miniDOM getElementByAttribut $xml_settings ID
$device_name]
                if { $model == "" || $model == 0 } {
                  warning "ANDROIDCNTRL::Swipe reading model failed"
                }
                set gesture_xml [miniDOM getElementByAttribut $model ID $gesture ]
                if { $gesture_xml == "" || $gesture_xml == 0 } {
                  warning "ANDROIDCNTRL::Swipe reading gesture failed"
                }
                set x_start [miniDOM getTextValue [miniDOM
getFirstChildElementByName $gesture_xml X_START]]
```

```
                set y_start [miniDOM getTextValue [miniDOM
getFirstChildElementByName $gesture_xml Y_START]]
                set x_end [miniDOM getTextValue [miniDOM
getFirstChildElementByName $gesture_xml X_END]]
                set y_end [miniDOM getTextValue [miniDOM
getFirstChildElementByName $gesture_xml Y_END]]
                set duration [miniDOM getTextValue [miniDOM
getFirstChildElementByName $gesture_xml DURATION]]
                if { $x_start == "" || $y_start == "" || $x_end == "" || $y_end == "" ||
$duration == ""} {
                  warning "ANDROIDCNTRL::Swipe reading some values
failed\nx_start:$x_start\ny_start:$y_start\nx_end:$x_end\ny_end:$y_end\nduration:$durati
on"
                }
                #puts "SWIPING $x_start $y_start $x_end $y_end $duration"
                if { [ catch { exec adb shell input swipe $x_start $y_start $x_end $y_end
$duration } fid ] } {
                        if { $sec == 1 } {
                                warning "ANDROIDCNTRL::Swipe: adb error $fid"
                                Connect
                        } else {
                                Connect
                                Swipe $gesture $x_start $y_start $x_end $y_end $duration 1
                        }
                }
          }
        }

        #Take a screenshot and transfer it to specified location
        proc Screen { path { sec 0 } } {
                if { [ catch { exec adb shell screencap -p /sdcard/srvtfgrt23.png } fid ] } {
                        if { $sec == 1 } {
                                warning "ANDROIDCNTRL::Screen: adb error $fid"
                                Connect
                        } else {
                                Connect
                                Screen $path 1
                                return
                        }
                }
                catch { exec adb pull /sdcard/srvtfgrt23.png } tmp
                unset tmp
                if { [ catch { exec adb shell rm /sdcard/srvtfgrt23.png } fid ] } {
                                warning "ANDROIDCNTRL::Screen: adb error $fid"
                                Connect
                        }
                file rename -force [pwd]/srvtfgrt23.png $path
                puts $path
        }
}
```

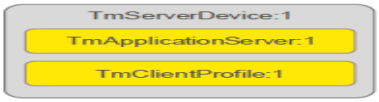
Appendix B – Specification of MirrorLink

ID	Responsible: AU:Halfmann, Jens; SE:Giralt, Roger; SK:Chara, Tomas; VW:Beckmann, Mark
MIB-2_RQ_TM_1	**1 Document**
MIB-2_RQ_TM_2	**1.1 History of changes**
MIB-2_RQ_TM_7	**1.2 Related documents**
MIB-2_RQ_TM_8	Ref.Id: /1/ — Documentname/ Description: Bluetooth requirements — Version: latest — Filename: MIB_2_RQ_LIST_Bluetooth Ref.Id: /2/ — Documentname/ Description: MIB_STD2_MirrorLink_Audio_Connection_Mapping_Latest_Date.xlsx — Filename: MIB_STD2_MirrorLink_Audio_Connection_Mapping_Latest_Date.xlsx
MIB-2_RQ_TM_21	**1.3 Purpose of document**
MIB-2_RQ_TM_22	This document describes the TerminalMode features and requirements
MIB-2_RQ_TM_32	**2 Functional Requirements**
MIB-2_RQ_TM_59	**2.1 MirrorLink Technical Requirements**
MIB-2_RQ_TM_60	**2.1.1 MirrorLink General**
MIB-2_RQ_TM_61	**2.1.1.1 FEAT_TM_General**
MIB-2_RQ_TM_62	The system shall implement MirrorLink Client functionality as described in the official MirrorLink 1.1 specifications of the Car Connectivity Consortium and the current erratas at the time of development.
MIB-2_RQ_TM_780	The system shall implement MirrorLink.Next() Client functionality as described in the latest official MirrorLink specification and its sub-specifications of the Car Connectivity Consortium.
MIB-2_RQ_TM_553	**2.1.1.1.1 RQ_TM_General**
MIB-2_RQ_TM_554	The system shall implement MirrorLink Client functionality as described in the official MirrorLink 1.1 specifications of the Car Connectivity Consortium and the current erratas at the time of development.
MIB-2_RQ_TM_1046	The system shall implement all MirrorLink.Next Client functionalities which are described as mandatory in the official MirrorLink.Next specifications of the Car Connectivity Consortium and the current erratas at the time of development.
MIB-2_RQ_TM_63	**2.1.1.2 FEAT_TM_PERFORMANCE**
MIB-2_RQ_TM_64	The system shall be able to support MirrorLink with at least 5 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_65	The system shall be able to support MirrorLink with at least 10 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_66	The system shall be able to support MirrorLink with at least 20 frames/second for a navigation map application using Run Length Encoding, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_576	If the connected device supports HSML, the system shall be able to support HSML framebuffer transmission with at least 30 frames/second, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_781	The system shall be able to support MirrorLink with at least 15 frames per second (full framebuffer updates) while using VNC connection.
MIB-2_RQ_TM_782	The system shall be able to support MirrorLink with at least 25 frames per second (full framebuffer updates) while using H.264 connection.
MIB-2_RQ_TM_783	The system shall be able to support MirrorLink with at least 25 frames per second (full framebuffer updates) while using Miracast connection.
MIB-2_RQ_TM_555	**2.1.1.2.1 RQ_TM_PERFORMANCE**
MIB-2_RQ_TM_556	The system shall be able to support MirrorLink with at least 5 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_557	The system shall be able to support MirrorLink with at least 10 frames/second for a navigation map application using Run Length Encoding.
MIB-2_RQ_TM_558	The system shall be able to support MirrorLink with at least 20 frames/second for a navigation map application using Run Length Encoding, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_577	If the connected device supports HSML, the system shall be able to support HSML framebuffer transmission with at least 30 frames/second, provided that the connected MirrorLink server also supports that frame rate.
MIB-2_RQ_TM_578	The system shall ensure that the latency between user control events (e.g .touch events) and the reaction on the screen is less than 100ms with a USB connection.
MIB-2_RQ_TM_579	The system shall ensure that the latency between user control events (e.g .touch events) and the reaction on the screen is less than 200ms with a WLAN connection.
MIB-2_RQ_TM_417	**2.1.1.3 FEAT_TM_INTEROPERABILITY**
MIB-2_RQ_TM_420	The system supplier shall test and approve at least the top 200 devices as listed in the selling statistics quarterly of the different market regions (Europe, North America, Japan, China,...) as a "rolling list" at his expense, as long as the system is in mass production.
MIB-2_RQ_TM_421	All approved mobile devices shall be supported and tested with new system software for at least two years after market introduction, even, if the particular phones are not longer on the current TOP200 list. In case of interoperability problems, if the problem can be solved within the system, functionality shall be ensured by customized implementations.
MIB-2_RQ_TM_784	The system supplier shall provide list of tested ML smartphones with current SW implementation in release notes with each delivered SW. The list shall include all information about positive and negative behaviour which was observed during development.
MIB-2_RQ_TM_559	**2.1.1.3.1 RQ_TM_INTEROPERABILITY**
MIB-2_RQ_TM_560	The system supplier shall test and approve at least the top 200 devices as listed in the selling statistics quarterly of the different market regions (Europe, North America, Japan, China) as a "rolling list" at his expense, as long as the system is in mass production. Additionally the results of all tests shall be delivered. "Negative" test results and test results of devices that are not in the top 200 list shall explicitly be included in the documentation.
MIB-2_RQ_TM_561	All approved mobile devices shall be supported and tested with new system software for at least two years after market introduction, even, if the particular phones are not longer on the current TOP200 list. In case of interoperability problems, if the problem can be solved within the system, functionality shall be ensured by customized implementations. For the rest of the phones that are no longer in the "TOP 200" old test results shall be listed.
MIB-2_RQ_TM_905	The system supplier shall provide list of tested ML smartphones with current SW implementation in release notes with each delivered SW. The list shall include all information about positive and negative behaviour which was observed during development.
MIB-2_RQ_TM_422	**2.1.1.4 FEAT_TM_SW_UPDATE**
MIB-2_RQ_TM_423	The user shall be able to update the Mirrorlink software bundle independent of the mainunit software according to the SWDL specification of MIB.
MIB-2_RQ_TM_425	If online update is supported by the platform variant and a data connnection is available, the user shall be able to run an online update according to the SWDL specification of MIB
MIB-2_RQ_TM_426	The MirrorLink software shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_TM_427	In the case, that an incompatibility to a popular highrunner phone is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency" Mirrorlink software bundle update within 30 days after notice of the failure.
MIB-2_RQ_TM_785	The user shall be able to update the MirrorLink software independent of the mainunit software via external medium (e.g. SD card)
MIB-2_RQ_TM_786	If the system supports OTA (Over-The-Air) update in whole system, then OTA update must be available also for MirrorLink.
MIB-2_RQ_TM_429	**2.1.1.4.1 RQ_TM_SW_UPDATE**
MIB-2_RQ_TM_430	The user shall be able to load and update Mirrorlink software bundle release for dedicated mobile phones depending on the MainUnit software version.
MIB-2_RQ_TM_431	The HMI shall provide a menu item/dialog for this.
MIB-2_RQ_TM_443	**2.1.1.5 FEAT_TM_SW_AS_PRODUCT**
MIB-2_RQ_TM_444	It shall be possible to activate MirrorLink via SW as Product mechanisms
MIB-2_RQ_TM_562	**2.1.1.5.1 RQ_TM_SW_AS_PRODUCT**
MIB-2_RQ_TM_563	It shall be possible to activate MirrorLink via SW as Product mechanisms. MirrorLink must not be available if the FSID 00060300 is not activated.
MIB-2_RQ_TM_908	In case the SWAP ID for MirrorLink is enabled and MirrorLink connectivity is enabled in the diagnostic, then MirrorLink must be available to the user. In case the SWAP ID for MirrorLink is disabled and MirrorLink connectivity is enabled in the diagnostic, then the user shall be informed. If MirrorLink connectivity is disabled in the diagnostic, then MirrorLink must NOT be available to the user disregarding of the availability of the SWAP ID.
MIB-2_RQ_TM_67	**2.1.2 MirrorLink Transport**
MIB-2_RQ_TM_335	**2.1.2.1 FEAT_TM_TRANSPORT**
MIB-2_RQ_TM_336	The system shall be able to use USB as transport layer.
MIB-2_RQ_TM_580	The system shall be able to manage the connectivity for MirrorLink, Digital iPod Out and Google Automotive Link devices on the same connection interface at the same time.
MIB-2_RQ_TM_581	The system shall be able to select a technology (MirrorLink, Digital iPod Out, Google Automotive Link) for an attached device.
MIB-2_RQ_TM_787	The system shall be able to manage connectivity for MirrorLink, Android Auto and Apple CarPlay devices on the same connection interface based on user preference in system settings.
MIB-2_RQ_TM_788	The system shall be able to use WiFi as a transport layer.
MIB-2_RQ_TM_789	The system shall use USB standard descriptors for black listing of known devices which shall not be displayed (e.g. D-Link, non-MirrorLink or devices like MP3-Player).
MIB-2_RQ_TM_582	**2.1.2.1.1 RQ_TM_TRANSPORT**
MIB-2_RQ_TM_583	The system shall be able to manage the connectivity for MirrorLink, Digital iPod Out and Google Automotive Link devices on the same connection interface at the same time.
MIB-2_RQ_TM_584	The system shall be able to select a technology (MirrorLink, Digital iPod Out, Google Automotive Link) for an attached device.
MIB-2_RQ_TM_585	In case the device provides both MirrorLink and Google Automotive Link, the system shall be able to configure the preference to choose one technology.
MIB-2_RQ_TM_912	The system shall use USB standard descriptors for black listing of known devices which shall not be displayed (e.g. D-Link, non-MirrorLink or devices like MP3-Player).
MIB-2_RQ_TM_913	The system shall be able to manage connectivity for MirrorLink, Android Auto and Apple CarPlay devices on the same connection interface based on user preference in system settings.
MIB-2_RQ_TM_68	**2.1.2.1.2 RQ_TM_TransportLayer_USB**
MIB-2_RQ_TM_69	The system shall send a specific identification message to the device, prior configuring the device, according the format defined in MirrorLink specification.
MIB-2_RQ_TM_586	Switching from MirrorLink context to another context and back again to MirrorLink context, shall not change the last state (e.g. a running app in foregroud will still displayed in foreground after switching).
MIB-2_RQ_TM_587	The system shall save persistent the last connected device as pre selected device in case of more than one available devices.
MIB-2_RQ_TM_588	The system shall save persistent the settings related to the device in the HMI setting screen.
MIB-2_RQ_TM_589	The system shall save persitent the settings independend from the conntected devices
MIB-2_RQ_TM_70	The system shall send the identification message set configuration, since the phone may have wrong personality loaded before that.
MIB-2_RQ_TM_590	The HMI shall initiate to send the identification message, when an user action applies to it.
MIB-2_RQ_TM_591	The system shall support multiple USB personalities.
MIB-2_RQ_TM_592	The systen shall be able to disconnect MirrorLink mode and switch to another USB class (e.g. MTP, mass-storage) without detaching the USB cable.
MIB-2_RQ_TM_593	The system shall be able to connect a MirrorLink device, even if it is already coupled as a MTP/mass-storage/NCM thethering device or in charge. If necessary, a new USB enumeration shall be done.
MIB-2_RQ_TM_594	The system shall be able to detect a connection error which can be part of the USB NCM device class, IP address ansigning or MirrorLink initial handshaking.
MIB-2_RQ_TM_595	The system shall terminate the MirrorLink connection safely if a fatal error occurs.
MIB-2_RQ_TM_596	The system shall inform the user in case a connection error occurs.
MIB-2_RQ_TM_71	The system shall support MTP device class.
MIB-2_RQ_TM_451	Additionally to the mandatory CDC/NCM device class, the system shall also support CDC/ECM device class.
MIB-2_RQ_TM_508	Additionally to the mandatory CDC/NCM device class, the system shall also support the Remote Network Driver Interface Specification (USB RNDIS).

MIB-2_RQ_TM_597	The system shall support for HSML a vendor specific device class as defined in the MirrorLink Specification.
MIB-2_RQ_TM_598	The system shall be able to handle both USB devices classes at the same time: USB HSML Client as a vendor specific device class and USB CDC/NCM, which is compliant with HSML. The HSML function is used for video transmission and the CDC/NCM is used for carrying MirrorLink traffic.
MIB-2_RQ_TM_599	To comply with MirrorLink specification, the system MUST NOT have another USB vendor-specific interface whose subclass field is 0xCC and protocol field is 0x01.
MIB-2_RQ_TM_72	**2.1.2.1.3 RQ_TM_TransportLayer_WLAN**
MIB-2_RQ_TM_73	The system shall support WLAN access point functionality.
MIB-2_RQ_TM_452	The system shall support WLANclient functionality.
MIB-2_RQ_TM_447	If the system provides internet connectivity, the system shall be configured as WLAN Access Point and the MirrorLink server shall be configured as WLAN Client.
MIB-2_RQ_TM_448	If the system does not provide internet connectivity and the MirrorLink Server supports WLAN AccessPoint functionality, the system shall be configured as WLAN Client and the MirrorLink server shall be configured as WLAN Access Point.
MIB-2_RQ_TM_449	If the MirrorLink Client does not provide internet connectivity and the MirrorLink Server does not support WLAN AccessPoint functionality, the system shall be configured as WLAN AccessPoint and the MirrorLink server shall be configured as WLAN Client. The MirrorLink client SHOULD inform the user that internet connectivity is not available and that functions of the MirrorLink server may be limited.
MIB-2_RQ_TM_450	If the system can not provide internet access itself and the MirrorLink server does not support WLAN AccessPoint functionality, the user shall be informed that due to MirrorLink server limitations, the functionality of the MirrorLink Server might be limited.
MIB-2_RQ_TM_74	**2.1.2.1.4 RQ_TM_TransportLayer_BT**
MIB-2_RQ_TM_75	The system shall be support PAN user functionality (PANU). The MirrorLink Server will take the PAN-NAP role.
MIB-2_RQ_TM_338	**2.1.2.2 FEAT_TM_PROTOCOLSTACK**
MIB-2_RQ_TM_340	The system shall support IP in versions 4 and 6, DHCP and ARP protocols
MIB-2_RQ_TM_76	**2.1.2.2.1 RQ_TM_ProtocolStack**
MIB-2_RQ_TM_77	The system shall support IPv6 additionally to the mandatory IPv4.
MIB-2_RQ_TM_78	The system shall support Maximum Transmission Unit (MTU) of up to 9000 bytes.
MIB-2_RQ_TM_79	The system shall support DHCP.
MIB-2_RQ_TM_80	The system shall support ARP to resolve address conflicts.
MIB-2_RQ_TM_81	The system shall indicate IP addresses already in use by sending a DHCPDECLINE message.
MIB-2_RQ_TM_339	**2.1.2.3 FEAT_TM_DEVICE_IDENTIFICATION**
MIB-2_RQ_TM_341	The system shall be able to identify mobile device type and manufacturer.
MIB-2_RQ_TM_790	The system shall handle different manufacturer names in the head unit for App certificate identification. The manufacturer names shall be configurable by free string input.
MIB-2_RQ_TM_82	**2.1.2.3.1 RQ_TM_Security_DeviceIdentification**
MIB-2_RQ_TM_83	The system shall use the USB standard descriptors to identify a mobile device.
MIB-2_RQ_TM_600	USB standard descriptors should be used for black listing of known devices which shall not be displayed (e.g. D-Link, known non MirrorLink, DIO or GAL devices like MP3-Player).
MIB-2_RQ_TM_84	The system shall use UPnP XML device description to identify a mobile device.
MIB-2_RQ_TM_85	The system shall be able to maintain a list of trusted device manufacturers and models.
MIB-2_RQ_TM_86	**2.1.3 MirrorLink VNC**
MIB-2_RQ_TM_342	**2.1.3.1 FEAT_TM_VNC**
MIB-2_RQ_TM_343	The system shall support the Remote Framebuffer protocol in version 3.8.
MIB-2_RQ_TM_344	The system shall support run length encoding and CopyRect encoding additionally to raw encoding.
MIB-2_RQ_TM_345	The system shall support colour conversion.
MIB-2_RQ_TM_346	The system shall support all VNC extensions ans pseudo encodings as specified in the MirrorLink specifications.
MIB-2_RQ_TM_791	The system shall use square pixel aspect ratio.
MIB-2_RQ_TM_87	**2.1.3.1.1 RQ_TM_VNC**
MIB-2_RQ_TM_88	The system shall support Remote Framebuffer Protocol 3.8.
MIB-2_RQ_TM_89	The system shall support Remote Framebuffer Protocol 3.7.
MIB-2_RQ_TM_90	The system shall support Remote Framebuffer Protocol 3.3.
MIB-2_RQ_TM_91	The system shall support CopyRect Encoding additionally to Raw Encoding.
MIB-2_RQ_TM_92	The system shall support ZRLE encoding additionally to Raw Encoding.
MIB-2_RQ_TM_93	The system shall support TRLE encoding additionally to Raw Encoding.
MIB-2_RQ_TM_94	The System shall not send Set Pixel Format message after first Framebuffer Update Request, e.g. the system shall use the pixel format information in the server init and server display configuration messages to determine the pixel format used for the connected device throughout the whole MirrorLink session.
MIB-2_RQ_TM_916	The system shall use square pixel aspect ratio to ensure that the displayed image is shaped well.
MIB-2_RQ_TM_228	**2.1.3.1.2 RQ_TM_VNC_EXTENSIONS_RUNLENGTH_ENCODING**
MIB-2_RQ_TM_229	The system shall support runlength encoding.
MIB-2_RQ_TM_102	**2.1.3.1.3 RQ_TM_VNC_FRAMEBUFFER_UPDATE**
MIB-2_RQ_TM_103	The system shall send only one Framebuffer Update Request at a time.
MIB-2_RQ_TM_104	The system shall maintain a copy of the server side framebuffer and request incremental updates.
MIB-2_RQ_TM_105	**2.1.3.1.4 RQ_TM_VNC_PSEUDOENCODING**
MIB-2_RQ_TM_106	The system shall support VNC pseudo enconding information content categories, application categories and trust level.
MIB-2_RQ_TM_111	**2.1.3.1.5 RQ_TM_VNC_EXTENSIONS**
MIB-2_RQ_TM_112	The system shall support all mandatory VNC extensions described in the MirrorLink specifications.
MIB-2_RQ_TM_462	**2.1.3.1.6 RQ_TM_VNC_ERROR_HANDLING**
MIB-2_RQ_TM_463	The system shall support VNC error handling as specified in the MirrorLink specifications.
MIB-2_RQ_TM_601	If an VNC error occurs it shall be infomed with an error message to the user.
MIB-2_RQ_TM_464	The system shall implement a mechanism to detect if the VNC connection was lost.
MIB-2_RQ_TM_792	**2.1.3.2 FEAT_ML_VNC_SteeringWheel_mapping**
MIB-2_RQ_TM_793	The system shall correctly use mapping of input commands from the steering wheel to the App control elements.
MIB-2_RQ_TM_919	**2.1.3.2.1 RQ_ML_VNC_SteeringWheel_mapping**
MIB-2_RQ_TM_920	The system shall correctly use mapping of input commands from the steering wheel to the corresponding key events defined in the MirrorLink VNC specification
MIB-2_RQ_TM_794	**2.1.3.3 FEAT_ML_VNC_RRE_mapping**
MIB-2_RQ_TM_795	The system shall correctly use mapping of hardware keys to the App control elements.
MIB-2_RQ_TM_347	**2.1.3.4 FEAT_TM_VNC_CONTENT_RULES**
MIB-2_RQ_TM_348	The system shall be able to block and permit applications depending on the content of an application.
MIB-2_RQ_TM_923	The system shall be able to switch back to the MirrorLink application list when instructed to do so by the MirrorLink server.
MIB-2_RQ_TM_107	**2.1.3.4.1 RQ_TM_VNC_CONTENT_RULES**
MIB-2_RQ_TM_108	The system shall be able to decide based on a set of content rules which content and/or applications to display
MIB-2_RQ_TM_109	The content rules shall take into account the pseudo encoding information (content categories, application categories, trust level), device type, application id and other boundary conditions (e.g. vehicle speed)
MIB-2_RQ_TM_110	It shall be possible to update the set of content rules at any time without updating the firmware.
MIB-2_RQ_TM_924	The system must switch back to the MirrorLink application list when content for the application category "Switch to MirrorLink Client native UI" (0xF000FFFF) is received.
MIB-2_RQ_TM_349	**2.1.3.5 FEAT_TM_VNC_DISPLAY_CONFIGURATIONS**
MIB-2_RQ_TM_350	The system shall support switching of display orientation and rotation.
MIB-2_RQ_TM_796	The system shall support switching of display orientation.
MIB-2_RQ_TM_351	The system shall support framebuffer up- and downscaling.
MIB-2_RQ_TM_797	The system shall support incremental and non-incremental FB updates
MIB-2_RQ_TM_352	The system shall support HW acceleration for scaling and colour conversion operations.
MIB-2_RQ_TM_113	**2.1.3.5.1 RQ_TM_VNC_EXTENSIONS_DISPLAY_CONFIGURATION**
MIB-2_RQ_TM_602	The system shall configure the display configuration with proper values that relates to the current system brand and model variant.
MIB-2_RQ_TM_114	The system shall support framebuffer orientation switching.
MIB-2_RQ_TM_115	The system shall support framebuffer rotation switching.
MIB-2_RQ_TM_116	The system shall support framebuffer upscaling.
MIB-2_RQ_TM_117	The system shall support framebuffer downscaling.
MIB-2_RQ_TM_118	The system shall support HW acceleration for scaling operations.
MIB-2_RQ_TM_119	**2.1.3.5.2 RQ_TM_VNC_DISPLAY_SIZE_LOW_END_SYSTEMS**
MIB-2_RQ_TM_120	The system shall configure the remote device to use a display resolution that fits to the system screen without the need to perform any scaling within the system.a
MIB-2_RQ_TM_121	If the MirrorLink Server device does not support scaling and does not support the display resolution requested by the system, the system shall inform the device can not be supported.
MIB-2_RQ_TM_95	**2.1.3.5.3 RQ_TM_VNC_COLOUR_CONVERSION**
MIB-2_RQ_TM_96	The system shall configure the remote device to use colour format ARGB888. [NOTE: MIB STD/HIGH use ARGB888 for MainUnit <-> ABT interface, thus no colour conversion on TM client side would be required]
MIB-2_RQ_TM_603	MIB STD/HIGH use ARGB888 for MainUnit <-> ABT interface, thus no colour conversion on TM client side would be required.
MIB-2_RQ_TM_97	The system shall be able to convert the colour format from RGB565 to ARGB888.
MIB-2_RQ_TM_98	The system shall be able to convert the colour format from RGB565 or ARGB888 to the colour format used internally.
MIB-2_RQ_TM_99	**2.1.3.5.4 RQ_TM_VNC_COLOUR_CONVERSION_LOW_END_SYSTEMS**
MIB-2_RQ_TM_100	The system shall configure the remote device to use ist native colour format
MIB-2_RQ_TM_101	If the MirrorLink Server device does not support colour conversion and does not support the colour format requested by the system, the system shall inform the device can not be supported.
MIB-2_RQ_TM_353	**2.1.3.6 FEAT_TM_VNC_EXTENSIONS_EVENT_CONFIGURATION**
MIB-2_RQ_TM_354	The system shall support key event listing.
MIB-2_RQ_TM_355	It shall be possible to configure support for the different key events depending on target brand and taregt system.
MIB-2_RQ_TM_122	**2.1.3.6.1 RQ_TM_VNC_EXTENSIONS_EVENT_CONFIGURATION**
MIB-2_RQ_TM_604	The system shall configure the event configuration with proper values that relates to the current system brand and model variant.
MIB-2_RQ_TM_123	The system shall support key event listing
MIB-2_RQ_TM_124	It shall be possible to configure usage of support key event listing depending on target brand and system.
MIB-2_RQ_TM_125	The system shall support event mapping.
MIB-2_RQ_TM_126	It shall be possible to configure usage of support event mapping depending on target brand and system.

MIB-2_RQ_TM_127	The system shall support virtual keyboard trigger
MIB-2_RQ_TM_128	It shall be possible to configure usage of virtual keyboard trigger depending on target brand and system.
MIB-2_RQ_TM_129	The system shall support device keys as specified in the MirrorLink specification.
MIB-2_RQ_TM_605	The system shall support multimedia keys for steering wheel control as specified in the MirrorLink specification.
MIB-2_RQ_TM_130	It shall be possible to configure usage of support ITU keyboards, Device Keys and Multimedia Keys depending on target brand and system.
MIB-2_RQ_TM_131	The system shall support touch events
MIB-2_RQ_TM_132	It shall be possible to configure usage of support touch events depending on target brand and system.
MIB-2_RQ_TM_133	The system shall support pointer events
MIB-2_RQ_TM_134	It shall be possible to configure usage of support pointer events depending on target brand and system.
MIB-2_RQ_TM_135	The system shall support simultaneous touch events
MIB-2_RQ_TM_136	It shall be possible to configure usage of touch events depending on target brand and system.
MIB-2_RQ_TM_137	The system shall support several pressure masks
MIB-2_RQ_TM_138	It shall be possible to configure usage of support several pressure masks depending on target brand and system.
MIB-2_RQ_TM_139	In the Standard and High systems, it shall be able to configure usage of the different configurations via GEM.
MIB-2_RQ_TM_140	**2.1.3.6.2 RQ_TM_VNC_EXTENSIONS_EVENT_MAPPING**
MIB-2_RQ_TM_141	The system shall support the event mapping procedure.
MIB-2_RQ_TM_142	**2.1.3.6.3 RQ_TM_VNC_EXTENSIONS_KEY_EVENT_LISTING**
MIB-2_RQ_TM_143	The system shall support the key event listing procedure.
MIB-2_RQ_TM_144	It shall be possible to define for each speller used by the MirrorLink application if key event listing shall be used.
MIB-2_RQ_TM_145	It shall be possible to define usage of key event listing on a case by case basis.
MIB-2_RQ_TM_146	If the device (MirrorLink Server) doesn't send key event listing message between two or several a key event listing request messages, the system (MirrorLink Client) shall use the default key event list.
MIB-2_RQ_TM_147	If the device (MirrorLink Server) doesn't respond with a key event listing messages to a key event listing requets messages with start event set to „1“, the system (MirroLink client) shall use the standard speller without using the key event listing feature.
MIB-2_RQ_TM_148	**2.1.3.6.4 RQ_TM_VNC_EXTENSIONS_VIRTUAL_KEYBOARD_TRIGGER**
MIB-2_RQ_TM_149	The system shall support the virtual keyboard trigger procedure.
MIB-2_RQ_TM_150	If usage is configured for the system and the device indicates support in the „Server Event Configuration“ message, the system shall send a Virtual Keyboard Trigger Request message with „enable trigger“ bit set to „1“ after sending the „Client Event Configuration“ message and before sending the first „Update Framebuffer Request“ message..
MIB-2_RQ_TM_356	**2.1.3.7 FEAT_TM_VNC_EXTENSION_DEVICE_STATUS**
MIB-2_RQ_TM_357	The system shall support the device status procedures.
MIB-2_RQ_TM_358	The system shall disable key-lock of the mobile device.
MIB-2_RQ_TM_359	The system shall disable the device lock of the mobile device.
MIB-2_RQ_TM_360	The system shall enable the screen saver of the mobile device.
MIB-2_RQ_TM_361	The system shall set the night mode according to its own current status.
MIB-2_RQ_TM_151	**2.1.3.7.1 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS**
MIB-2_RQ_TM_152	The system shall support the device status messages.
MIB-2_RQ_TM_153	The system shall send a „Device Status Request“ message to the device after sending the „Client Event Configuration“ message and before sending the first „Update Framebuffer Request“ message.
MIB-2_RQ_TM_154	**2.1.3.7.2 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_KEY_LOCK**
MIB-2_RQ_TM_155	The system shall set „key-lock“ bits to „ignore“.
MIB-2_RQ_TM_156	If the device sends a „Device Status“ message with „key-lock“ bits set „reserved“ or „unknown“, the system shall assume that the device can be controlled by the system.
MIB-2_RQ_TM_157	If the device sends a „Device Status“ message with „key-lock“ bits set to „enabled“ or "disabled" shall be ignored by the system and has no further affect to it.
MIB-2_RQ_TM_158	**2.1.3.7.3 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_DEVICE_LOCK**
MIB-2_RQ_TM_159	The system shall set the „device-Lock“ bits to „disabled“.
MIB-2_RQ_TM_160	If the device sends a „Device Status“ message with „device-lock“ bits set „reserved“ or „unknown“, the system shall assume that the device can not be controlled by the system.
MIB-2_RQ_TM_161	If the device sends a „Device Status“ message with „device-lock“ bits set to „enabled“ shall assume that the device can not be controlled by the system and the system shall send another „Device Status Request“ message with „device-lock“ bits set to „disabled“. If the device responds again with „device-lock“ bits set to „enabled“, the system shall inform the user that the device is locked.
MIB-2_RQ_TM_162	**2.1.3.7.4 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_SCREEN_SAVER**
MIB-2_RQ_TM_163	The system shall set the „Screen Saver“ bits to „enable“.
MIB-2_RQ_TM_164	If the device sends a „Device Status“ message with „Screen Saver“ bits set „reserved“ or „unknown“, the system shall assume that the device can be controlled by the system.
MIB-2_RQ_TM_165	If the device sends a „Device Status“ message with „Screen Saver“ bits set to „enabled“ or "disabled" shall be ignored by the system and has no further affect to it.
MIB-2_RQ_TM_166	**2.1.3.7.5 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_NIGHT_MODE**
MIB-2_RQ_TM_167	The system shall set the „Night Mode“ bits to „enabled“ if night mode is also used at that moment by the system.
MIB-2_RQ_TM_168	The system shall set the „Night Mode“ bits to „disabled“ if night mode is also not used at that moment by the system.
MIB-2_RQ_TM_169	If the system switches from night to day mode or vice versa, the system shall send another „Device Status Request“ message with the „Night Mode“ bits set accordingly at any time during MirrorLink connection.
MIB-2_RQ_TM_362	**2.1.3.8 FEAT_TM_VNC_DEVICE_STATUS_VOICE_INPUT**
MIB-2_RQ_TM_364	It shall be possible to configure voice input support depending on the target system and brand.
MIB-2_RQ_TM_170	**2.1.3.8.1 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_VOICE_INPUT**
MIB-2_RQ_TM_171	It shall be possible to configure voice input support depending on the target system and brand.
MIB-2_RQ_TM_172	In the Standard and High system voice input support shall be configurable via GEM.
MIB-2_RQ_TM_173	In the initial „Device Status“ Request message, the system shall set the „Voice Input“ bits to „disabled“.
MIB-2_RQ_TM_174	If the system is configured to support voice input and a push to talk button is pressed on the system HMI, the system shall send a „Device Status Request“ message with „Voice Input“ bits set to „enabled“ to the mobile device.
MIB-2_RQ_TM_606	If the device sends a „Device Status“ message with „Voice Input“ bits set to "enabled" the system shall start the RTP session.
MIB-2_RQ_TM_607	The RTP session may already be started earlier.
MIB-2_RQ_TM_175	If the device sends a „Device Status“ message with „Voice Input“ bits set to "disabled", „reserved“ or „unkown“, the system shall close the microphone and stop the RTP session with M flag = 1.
MIB-2_RQ_TM_176	If the system is configured not to support voice input, it shall set the „Voice Input“ bits to „disabled“.
MIB-2_RQ_TM_365	**2.1.3.9 FEAT_TM_VNC_EXTENSION_DEVICE_STATUS_MICROPHONE**
MIB-2_RQ_TM_366	The system shall be able to disable or enable microphone support depending on the BT connectivity status of the mobile device.
MIB-2_RQ_TM_798	The system shall be able trigger (enable and afterwards disable) microphone for voice input for MirrorLink apps.
MIB-2_RQ_TM_177	**2.1.3.9.1 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_MICROPHONE**
MIB-2_RQ_TM_178	If a HFP connection is established to the device, the system shall set the „Microphone“ bits always to „disabled“ for telephony. It shall be used only for RTP voice control.
MIB-2_RQ_TM_179	If no HFP connection is established to the device, establishing calls shall only be possible via the MirrorLink Applications. As the system does not know what happens within a certain application, it is expected that the device sends a „Device Status“ message mit „Microphone“ bits set to to „enabled“ in order to indicate that microphone audio shall be routed to the device.
MIB-2_RQ_TM_180	The system shall respond to a „Device Status“ message with „Microphone“ bits set to „enabled“ by sending a „Device Status Request“ message with „Microphone“ bits set to „enabled.
MIB-2_RQ_TM_367	**2.1.3.10 FEAT_TM_VNC_EXTENSION_DEVICE_STATUS_DRIVER_DISTRACTION**
MIB-2_RQ_TM_368	It shall be possible to configure usage of driver distraction mechanisms depending on target brand and system.
MIB-2_RQ_TM_181	**2.1.3.10.1 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_DRIVER_DISTRACTION**
MIB-2_RQ_TM_182	It shall be possible to configure usage of driver distraction mechanisms depending on target brand and system.
MIB-2_RQ_TM_183	If usage of driver distraction mechanisms is enabled the „Driver Distraction“ bits shall be set to „enabled“ in the „Device Status Request“ message.
MIB-2_RQ_TM_184	If usage of driver distraction mechanisms is disabled the „Driver Distraction“ bits shall be set to „disabled“ in the „Device Status Request“ message.
MIB-2_RQ_TM_185	If the device responds with „Driver Distraction“ bits set to „disabled“, „not used“ or „ignored“ in the „Device Status“ message, the system shall assume that the device does not make any arrangements to limit driver distraction problems on device side.
MIB-2_RQ_TM_369	**2.1.3.11 FEAT_TM_VNC_EXTENSION_DEVICE_STATUS_FRAMEBUFFER**
MIB-2_RQ_TM_370	It shall be possible to configure framebuffer rotation and orientation during runtime of the system.
MIB-2_RQ_TM_186	**2.1.3.11.1 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_FB_ROTATION**
MIB-2_RQ_TM_187	It shall be possible to configure framebuffer rotation via system HMI.
MIB-2_RQ_TM_188	**2.1.3.11.2 RQ_TM_VNC_EXTENSIONS_DEVICE_STATUS_FB_ORIENTATION**
MIB-2_RQ_TM_189	It shall be possible to configure framebuffer orientation via system HMI.
MIB-2_RQ_TM_371	**2.1.3.12 FEAT_TM_VNC_EXTENSION_CONTENT_ATTESTATION**
MIB-2_RQ_TM_372	The system shall support content attestation procedure.
MIB-2_RQ_TM_190	**2.1.3.12.1 RQ_TM_VNC_EXTENSIONS_CONTENT_ATTESTATION**
MIB-2_RQ_TM_191	The system shall support content attestation procedure.
MIB-2_RQ_TM_192	The system shall verify the content stream received from the MirrorLink server if defined in the set of content rules.
MIB-2_RQ_TM_193	The system shall block the content stream if the content attestation fails.
MIB-2_RQ_TM_194	If the MirrorLink server device responds with a content attestation response message with a different signature than requested by the system, the system shall use this signature for content attestation
MIB-2_RQ_TM_195	It shall be possible to configure the type of signature requested from the MirrorLink server device depending on the target system and brand.
MIB-2_RQ_TM_373	**2.1.3.13 FEAT_TM_VNC_EXTENSIONS_FRAMEBUFFER_BLOCKING**
MIB-2_RQ_TM_374	The system shall support the framebuffer blocking procedure.
MIB-2_RQ_TM_196	**2.1.3.13.1 RQ_TM_VNC_EXTENSIONS_FRAMEBUFFER_BLOCKING**
MIB-2_RQ_TM_197	The system shall support the framebuffer blocking procedure.
MIB-2_RQ_TM_608	The system shall use the framebuffer blocking reason "UI not visible on remote display" in case the framebuffer is not displayed in foreground.
MIB-2_RQ_TM_609	The system shall use framebuffer blocking reason "Not allowed application ID" when the framebuffer is blocked because of driver distraction reasons.
MIB-2_RQ_TM_610	If the connected device has the MirrorLink version 1.0, it should not send a framebuffer blocking notification to the device, in case the framebuffer is not displayed in foreground.
MIB-2_RQ_TM_198	It shall be possible to switch on/off framebuffer blocking notification during development.
MIB-2_RQ_TM_199	It shall be possible to switch on/off framebuffer blocking notification depending on the connected remote device.
MIB-2_RQ_TM_200	It shall be possible to switch on/off framebuffer blocking notification depending on the application is use.
MIB-2_RQ_TM_201	It shall be possible to switch on/off framebuffer blocking notification via HMI.
MIB-2_RQ_TM_375	**2.1.3.14 FEAT_TM_VNC_EXTENSION_AUDIO_BLOCKING**
MIB-2_RQ_TM_376	The system shall support the audio blocking procedure.
MIB-2_RQ_TM_202	**2.1.3.14.1 RQ_TM_VNC_EXTENSIONS_AUDIO_BLOCKING**
MIB-2_RQ_TM_203	The system shall support the audio blocking procedure.
MIB-2_RQ_TM_611	The system shall use the audio blocking reason "Audio stream, as given by application ID, muted", when the audio management mutes the MirrorLink audio connection to a certain priority.

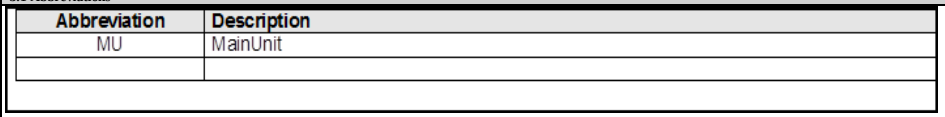
MIB-2_RQ_TM_928	The system shall use the audio blocking reason "Global audio muted" when entertainment audio is globally muted on the MIB. This does not exclude the audio blocking reason "Audio stream, as given by application ID, muted" (both can be specified at the same time).
MIB-2_RQ_TM_612	The system shall not send a audio blocking notification for diver distracting reasons.
MIB-2_RQ_TM_204	It shall be possible to switch on/off audio blocking notification during development.
MIB-2_RQ_TM_205	It shall be possible to switch on/off audio blocking notification depending on the connected remote device.
MIB-2_RQ_TM_206	It shall be possible to switch on/off audio blocking notification depending on the application is use.
MIB-2_RQ_TM_207	It shall be possible to switch on/off audio blocking notification via HMI.
MIB-2_RQ_TM_377	**2.1.3.15 FEAT_TM_VNC_EXTENSIONS_TOUCH_EVENT**
MIB-2_RQ_TM_378	It shall be possible to configure usage of support touch and pointer events depending on target brand and system.
MIB-2_RQ_TM_208	**2.1.3.15.1 RQ_TM_VNC_EXTENSIONS_TOUCH_EVENT**
MIB-2_RQ_TM_209	It shall be possible to configure usage of support touch and pointer events depending on target brand and system.
MIB-2_RQ_TM_489	If the MirrorLink server supports Touch event mecahnism, the system shall send touch events instead of pointer events.
MIB-2_RQ_TM_490	If the MirrorLink server does not support the Touch event mecahnism, the system shall send pointer events.
MIB-2_RQ_TM_379	**2.1.3.16 FEAT_TM_VNC_EXTENSION_ALTERNATVE_TEXT**
MIB-2_RQ_TM_380	The system shall support the alternative text VNC extension.
MIB-2_RQ_TM_381	It shall be possible to enable and disable alternative text support during runtime.
MIB-2_RQ_TM_210	**2.1.3.16.1 RQ_TM_VNC_EXTENSIONS_ALTERNATIVE_TEXT**
MIB-2_RQ_TM_211	It shall be possible to configure usage of alternative text events depending on target brand and system.
MIB-2_RQ_TM_212	It shall be possible to switch on/off alternative text during development.
MIB-2_RQ_TM_213	It shall be possible to switch on/off alternative text depending on the connected remote device.
MIB-2_RQ_TM_214	It shall be possible to switch on/off alternative text depending on the application is use.
MIB-2_RQ_TM_215	It shall be possible to switch on/off alternative text via HMI.
MIB-2_RQ_TM_382	**2.1.3.17 FEAT_TM_VNC_ACCESS_RESTRICTION**
MIB-2_RQ_TM_383	It shall be possible to block and permit applications depending on the pseudo encoding informations.
MIB-2_RQ_TM_384	It shall be possible to configure the rules for blocking and permitting applications during runtime.
MIB-2_RQ_TM_216	**2.1.3.17.1 RQ_TM_VNC_EXTENSIONS_CONTEXT_INFO_PSEUDO_ENCODING**
MIB-2_RQ_TM_217	The system shall offer configuration options to define which rules shall be applied.
MIB-2_RQ_TM_218	It shall be possible to configure if the entire display or individual rectangular areas shall be hidden, in case one application violates the restricted mode.
MIB-2_RQ_TM_219	It shall be possible to configure a set of rules depending on target system and brand.
MIB-2_RQ_TM_220	It shall be possible to use individual required trust levels for different devices.
MIB-2_RQ_TM_221	It shall be possible to use individual required trust levels for different applications.
MIB-2_RQ_TM_222	It shall be possible to allow individual application categories for different devices.
MIB-2_RQ_TM_223	It shall be possible to allow inidividual application categories for different applications.
MIB-2_RQ_TM_224	It shall be possible to allow individual content categories for different devices.
MIB-2_RQ_TM_225	It shall be possible to allow inidividual content categories for different applications.
MIB-2_RQ_TM_226	It shall be possible to allow individual driver distraction rules for different devices.
MIB-2_RQ_TM_227	It shall be possible to allow inidividual driver distraction rules for different applications.
MIB-2_RQ_TM_613	**2.1.4 MirrorLink HSML**
MIB-2_RQ_TM_614	**2.1.4.1 FEAT_TM_HSML**
MIB-2_RQ_TM_615	The system shall support HSML as specified in the MirrorLink specification.
MIB-2_RQ_TM_616	If a HSML capable device is connected to the system and it supports at least MirrorLink 1.2, it shall be used HSML as preferred video transmission technology, otherwise it shall use VNC.
MIB-2_RQ_TM_617	**2.1.4.1.1 RQ_TM_HSML**
MIB-2_RQ_TM_618	The system shall support HSML as specified in the MirrorLink specification.
MIB-2_RQ_TM_619	The system shall support at least MirrorLink version 1.2.x to be fully compatible for HSML support, whereas "x" defines the latest available minor version of 1.2 by starting implementation.
MIB-2_RQ_TM_620	If a HSML capable device is connected to the system and it supports at least MirrorLink 1.2.0, it shall be used HSML as preferred video transmission technology, otherwise it shall use VNC.
MIB-2_RQ_TM_621	**2.1.4.1.2 RQ_TM_HSML_ERROR_HANDLING**
MIB-2_RQ_TM_622	The system shall support HSML error handling as specified in the MirrorLink specifications.
MIB-2_RQ_TM_623	In case a HSML error occurs, the system shall inform the user (e.g. by showing a error popup).
MIB-2_RQ_TM_624	**2.1.4.2 FEAT_TM_HSML_USB**
MIB-2_RQ_TM_625	The system shall support the HSML USB architecture for the role of the HSML Client.
MIB-2_RQ_TM_626	**2.1.4.2.1 RQ_TM_HSML_USB**
MIB-2_RQ_TM_627	The system shall support the HSML USB architecture for the role of the HSML Client.
MIB-2_RQ_TM_628	The system shall set the FBUpdateOnChange bit to '1', to avoid unnecessary USB bandwidth usage, if the mobile device supports it.
MIB-2_RQ_TM_629	The system shall support HSML framebuffer pixel format ARGB888.
MIB-2_RQ_TM_630	The system shall support HSML framebuffer pixel format RGB888.
MIB-2_RQ_TM_631	The system shall support HSML framebuffer pixel format RGB565.
MIB-2_RQ_TM_632	The system shall use ARGB888 as default pixel format.
MIB-2_RQ_TM_633	The default pixel format shall be configurable in the GEM settings.
MIB-2_RQ_TM_634	The system shall be able to change the pixel format during an active running HSML session, if it improves quality or performance issues from case to case (e.g. if the current display content is a pure UI, then use pixelformat ARGB888. If the content is a movie, then use RGB565.)
MIB-2_RQ_TM_635	The system shall support HSML framebuffer encoding RLE. If the HSML device supports RLE, it shall be used as default encoding type.
MIB-2_RQ_TM_636	The system shall be able to change the encoding between RAW and RLE during an active running HSML session, if it improves quality or performance issues from case to case (e.g. if the current display content is a pure UI, then encode the framebuffer with RLE. If the content is a movie, then use RAW encoding.)
MIB-2_RQ_TM_637	**2.1.4.3 FEAT_TM_HSML_FRAMEBUFFER_TRANSMISSION**
MIB-2_RQ_TM_638	The system shall be configured to reach the highest frambebuffer transmission possible without losing qualitiy on other components (e.g. RTP audio streaming).
MIB-2_RQ_TM_639	**2.1.4.3.1 RQ_TM_HSML_FRAMEBUFFER_TRANSMISSION**
MIB-2_RQ_TM_640	The system shall be configured to reach the highest frambebuffer transmission possible without losing qualitiy on other components (e.g. RTP audio streaming).
MIB-2_RQ_TM_641	The system shall send GetParameters request after receives the reply of GetVersion request to get all necessary information of devices configuration.
MIB-2_RQ_TM_642	The system shall support HSML streaming mode.
MIB-2_RQ_TM_643	The system shall support handling of frame rate adjustment by using "SetMaxFrameRate".
MIB-2_RQ_TM_644	In case of sending a VNC framebuffer blocking notification, the HSML Client shall pause the framebuffer streaming by using "PauseFramebufferTransmission" until streaming is resumed.
MIB-2_RQ_TM_230	**2.1.5 MirrorLink Audio**
MIB-2_RQ_TM_385	**2.1.5.1 FEAT_TM_AUDIO**
MIB-2_RQ_TM_386	It shall be possible to use audio and voice control functionality according to MirrorLink specification over RTP.
MIB-2_RQ_TM_387	It shall be possible to use bluetooth functionality for audio and voice control functionality as specified in the Bluetooth specifications of this RFQ.
MIB-2_RQ_TM_929	The system shall implement RTP client functionality.
MIB-2_RQ_TM_930	The system shall implement RTP server functionality.
MIB-2_RQ_TM_931	It shall be possible to use bluetooth HFP for phone functionality as default.
MIB-2_RQ_TM_932	It shall be possible to use RTP for phone functionality as secondary transport.
MIB-2_RQ_TM_933	The system shall support echo cancelation and noise reduction for voice transfer from the car microphone to the smartphone (e.g. calling via RTP).
MIB-2_RQ_TM_934	The system shall be able to mix MIB audio ENT sources with ML navigation guidance announcements.
MIB-2_RQ_TM_935	The system shall be able to mix audio from the smartphone with internal audio sources in the head unit.
MIB-2_RQ_TM_936	The system must use signalizing to the smartphone in which audio state it currently is.
MIB-2_RQ_TM_388	It shall be possible to prioritise between audio transfer mechanisms.
MIB-2_RQ_TM_1037	The system shall support the Audio Control mechanism as specified in chapter 5.15 of CCC-TS-069_ VNC.
MIB-2_RQ_TM_1038	**2.1.5.1.1 RQ_TM_Audio_Control**
MIB-2_RQ_TM_1047	The Audio Control mechanism specified in the chapter 5.15 of CCC-TS-069_ VNC shall be implemented in the system.
MIB-2_RQ_TM_231	**2.1.5.1.2 RQ_TM_AUDIO_RTP_CLIENT**
MIB-2_RQ_TM_232	The system shall support RTP client functionality.
MIB-2_RQ_TM_645	The MirrorLink client shall perform all audio signal processing functions in the system for conversational audio.
MIB-2_RQ_TM_937	The system shall be able to provide audio mixing feature. It shall be possible to mix internal MIB audio sources (e.g. FM Radio/SD) source with MirrorLink navi App guidance.
MIB-2_RQ_TM_938	The system shall apply audio lowering/ducking on the entertainment audio source during audio mixing.
MIB-2_RQ_TM_233	**2.1.5.1.3 RQ_TM_AUDIO_RTP_SERVER**
MIB-2_RQ_TM_234	The system shall support RTP server functionality.
MIB-2_RQ_TM_235	**2.1.5.1.4 RQ_TM_AUDIO_RTP_SERVER_TELEPHONY**
MIB-2_RQ_TM_236	The system shall be able to use RTP server functionality for telephone functionality.
MIB-2_RQ_TM_646	The system shall apply EC/NR to audio for telephone functionality received from the microphone in the same way as if BT HFP telephony is used.
MIB-2_RQ_TM_237	It shall be possible to switch on/off RTP server functionality for telephony functionality depending on target system and brand.
MIB-2_RQ_TM_238	It shall be possible to switch on/off RTP server functionality for telephony depending on the connected remote device
MIB-2_RQ_TM_239	It shall be possible to switch on/off RTP server functionality for telephony via user HMI.
MIB-2_RQ_TM_240	**2.1.5.1.5 RQ_TM_AUDIO_RTP_SERVER_VOICE_CONTROL**
MIB-2_RQ_TM_241	The system shall be able to use RTP server functionality for voice controlling the remote device.
MIB-2_RQ_TM_647	The system shall apply EC/NR to audio for voice control functionality received from the microphone in the same way as if BT HFP telephony is used.
MIB-2_RQ_TM_242	It shall be possible to switch on/off RTP server functionality for voice control functionality depending on target system and brand.
MIB-2_RQ_TM_243	It shall be possible to switch on/off RTP server functionality for voice control depending on the connected remote device
MIB-2_RQ_TM_244	It shall be possible to switch on/off RTP server functionality voice control via user HMI.
MIB-2_RQ_TM_245	**2.1.5.1.6 RQ_TM_AUDIO_BT_INTEROPERABILITY**
MIB-2_RQ_TM_246	It shall be possible to modify the preferences for audio transmission depending on the connected remote device.
MIB-2_RQ_TM_247	It shall be possible to modify the preferences for audio transmission via GEM.
MIB-2_RQ_TM_248	If the connected device has an active HFP connection, it must not disconnect HFP and shall use HFP for telephony audio.
MIB-2_RQ_TM_249	If the connected device has an active A2DP connection, it shall disconnect A2DP and inform the user about the disconnection. A MirrorLink connected device shall use RTP for application audio.
MIB-2_RQ_TM_250	If the connected device has an active HFP connection, it must not disconnect HFP. A MirrorLink connected device shall use RTP for voice controls.

MIB-2_RQ_TM_648	If the connected device has no active HFP connection, it shall use RTP for voice control.
MIB-2_RQ_TM_649	If the user initate to connect BT HFP to the same device that uses RTP for phone call, it shall disconnect RTP only for phone call, but not for voice control, and establish the BT HFP connection. If BT HFP could not be established, it shall keep RTP for phone call and voice control.
MIB-2_RQ_TM_939	Mirror-Link connection shall trigger a HFP connection/OOB pairing as described in the Bluetooth requirements list [1] in requirement group RQ_BT_Automatic_Pairing_For_ML-HFP (SB_1442).
MIB-2_RQ_TM_940	If the system already has active HFP connection to another phone (non-ML phone) before MirrorLink connection, the system shall ask user to keep the current HFP connection or replace by a new one (newly connected ML device).
MIB-2_RQ_TM_807	Mirror-Link connection shall trigger a HFP connection/OOB pairing as described in the Bluetooth requirements list [1] in requirement group RQ_BT_Automatic_Pairing_For_ML-HFP (SB_1442).
MIB-2_RQ_TM_251	**2.1.5.1.7 RQ_TM_AUDIO_RTP_PACKETS**
MIB-2_RQ_TM_252	The system shall shall not assume fixed length RTP packets.
MIB-2_RQ_TM_253	**2.1.5.1.8 RQ_TM_AUDIO_SOURCE_DISTINCTION**
MIB-2_RQ_TM_254	The system shall analyse RTP header extension information of the RTP header to determine application id and category of the source.
MIB-2_RQ_TM_465	**2.1.5.1.9 RQ_TM_AUDIO_ERROR_HANDLING**
MIB-2_RQ_TM_467	The system shall support audio/RTP error handling as specified in the MirrorLink specifications.
MIB-2_RQ_TM_650	If the system detects an audio error it shall be informed to the user.
MIB-2_RQ_TM_468	The system shall implement a mechanism to detect if the audio connection was lost (e.g. RTP server of the remote device crashed).
MIB-2_RQ_TM_651	If the audio connection gets lost, the system shall reconnect the audio connection. If the reconnection could not succeed the user shall be informt with an error message.
MIB-2_RQ_TM_495	**2.1.5.1.10 RQ_TM_AUDIO_MANAGEMENT**
MIB-2_RQ_TM_496	If the TerminalMode Server is connected via Bluetooth A2DP and A2DP was configured to have higher priority with regards to TerminalMode than RTP and the user has selected the A2DP device as active source, any media audio provided by the TerminalMode server will be played back via the infotainment system.
MIB-2_RQ_TM_497	If the MirrorLink Server is connected via Bluetooth HFP and HFP was configured to have higher priority with regards to MirrorLink than RTP , audio management will be done as specified for the normal HFP telephony.
MIB-2_RQ_TM_498	If the MirrorLink Server is connected via IP/RTP and RTP was configured to have higher priority than BT HFP/A2DP with regards to MirrorLink and the MirrorLink application becomes the active context, the previously selected audio source shall be continued when the RTP audio is stopped or interrupted streaming until it resumes to stream the RTP audio signal. If another active audio connection has a higher priority than the RTP audio connection, the RTP audio streaming shall be interrupted or turned down until it gets the highest priority. If the RTP audio streaming is interrupted the system shall send an audio blocking information to the device.
MIB-2_RQ_TM_499	If the MirrorLink Server is connected via IP/RTP and RTP was configured to have higher priority than BT HFP/A2DP with regards to MirrorLink and the RTP Stream source belongs to the audio entertainment connection and the MirrorLink application becomes the active context, the audio from the MirrorLink server shall be played back. The system shall use the application category from the RTP header to map the proper audio connection.
MIB-2_RQ_TM_500	If the MirrorLink Server is connected via IP/RTP and RTP was configured to have higher priority than BT HFP/A2DP with regards to MirrorLink and the RTP Stream source belongs to one of following audio announcement connection, the system shall play back the MirrorLink server audio and afterwards switch back to the previous source: Phone connection, Voice connection, Navigation connection, Annoucement connection. The system shall use the application category from the RTP header to map the proper audio connection.
MIB-2_RQ_TM_501	If the MirrorLink Server is connected via IP/RTP and RTP was configured to have higher priority than BT HFP/A2DP with regards to MirrorLink and the RTP Stream source is currently active and belongs to the audio entertainment connection and another infotainment system content that has no audio entertainment connection (e.g. Menue, Traffic, Map) becomes the active context, playback of the MirrorLink audio stream shall be continued. The system shall use the application category from the RTP header to map the proper audio connection.
MIB-2_RQ_TM_502	If the MirrorLink Server is connected via IP/RTP and RTP was configured to have higher priority than BT HFP/A2DP with regards to MirrorLink and the RTP Stream source is currently active and belongs to the audio entertainment connection and another infotainment system content that has an audio entertainment connection (e.g. FM/AM Radio, Media/CD/SD etc) becomes the active context, playback of the MirrorLink audio stream shall be interrupted until it gets the active content back. The system shall use the application category from the RTP header to map the proper audio connection.
MIB-2_RQ_TM_503	If the MirrorLink Server is connected via IP/RTP and RTP was configured to have higher priority than BT HFP/A2DP with regards to MirrorLink audio from another infotainment system context (e.g. AM/FM Radio, Media/SD/CD ect.) is active, and an audio stream from one of the following audio announcement connection is received, the system shall play back the MirrorLink audio and afterwards switch back to the previously active audio source: Phone connection, Voice connection, Navigation connection, Annoucement connection. The system shall use the application category from the RTP header to map the proper audio connection.
MIB-2_RQ_TM_652	The mapping is between defined audio priorities and the application categories from the audio source. The audio mapping for the application categories is defined in the document [2].
MIB-2_RQ_TM_255	**2.1.6 MirrorLink UPnP**
MIB-2_RQ_TM_389	**2.1.6.1 FEAT_TM_UPNP**
MIB-2_RQ_TM_390	The system shall support MirrorLink control point and client device role.
MIB-2_RQ_TM_941	The system shall support AppList and TerminateList auto update.
MIB-2_RQ_TM_808	The system shall support Applist auto update.
MIB-2_RQ_TM_256	**2.1.6.1.1 RQ_TM_UPNP**
MIB-2_RQ_TM_257	The system shall implement a TMServerDevice:1 ControlPoint
MIB-2_RQ_TM_258	
MIB-2_RQ_TM_259	MirrorLink client MAY implement a TmClientDevice:1 device
MIB-2_RQ_TM_260	
MIB-2_RQ_TM_261	**2.1.6.1.2 RQ_TM_UPNP_TmServerDevice_TmApplicationServer**
MIB-2_RQ_TM_262	The system shall support the LaunchApplications action.
MIB-2_RQ_TM_263	The system shall support the TerminateApplications action.
MIB-2_RQ_TM_264	The system shall support the GetApplicationStatus, GetAppCertificationStatus and GetApplicationCertificateInfo actions.
MIB-2_RQ_TM_265	The system shall support the GetApplicationList and GetCertifiedApplicationsList action.
MIB-2_RQ_TM_266	The system shall request the list of applications that are compatible to the clients profile by sending a GetApplicationList action.
MIB-2_RQ_TM_653	The system shall request the list of certified applications that are compatible to the clients profile by sending a GetCertifiedApplicationList action.
MIB-2_RQ_TM_267	The system shall be able to subscribe to receive notifications (AppStatusUpdate messages) every time about the applications, whose status have changed since the last time an event notification was sent.
MIB-2_RQ_TM_268	On receiving an AppStatusUpdate event, the UPnP Control Point shall query the application status of specific applications in the list by invoking the GetApplicationStatus or GetAppCertificationStatus action.
MIB-2_RQ_TM_269	The system shall be able to subscribe to receive notifications (AppListUpdate messages) every time about the applications, whose status have changed since the last time an event notification was sent.
MIB-2_RQ_TM_270	On receiving an AppListUpdate event, the UPnP Control Point shall query the application status of specific applications in the list by invoking the GetApplicationList or GetAppCertificationList action.
MIB-2_RQ_TM_271	**2.1.6.1.3 RQ_TM_UPNP_TmServerDevice_TmClientProfile**
MIB-2_RQ_TM_272	The system shall support TmClientProfile:service.
MIB-2_RQ_TM_273	The system shall provide its capabilities within the A_ARG_TYPE_ClientProfile parameter.
MIB-2_RQ_TM_274	The system shall set clientProfile information within the SetClientProfile action when a MirrorLink Server is detected.
MIB-2_RQ_TM_275	It shall be possible to configure the clientProfile information of the system depending on target system and brand. The supplier must fill the following fields: - friendlyName: as provided by the HMI - manufacturer: must be set to "Volkswagen Group" - modelName: as provided by VW (e.g., "Standard Platform X", where X denotes the supplier) - modelNumber: must uniquely represent the MirrorLink implementation in the MIB (e.g., MirrorLink stack revision)
MIB-2_RQ_TM_276	The system shall set ist iconPreference as configured for the system within the SetClientProfile action.
MIB-2_RQ_TM_277	It shall be possible to configure the iconPreference of the system depending on target system and brand.
MIB-2_RQ_TM_278	The system shall set the bluetooth capabilities depending on the Bluetooth capabilities of the target system the SetClientProfile action.
MIB-2_RQ_TM_279	The system shall set the content rules applied by the system the SetClientProfile action.
MIB-2_RQ_TM_280	It shall be possible to configure the content rules and values of the system depending on the target system and brand.
MIB-2_RQ_TM_654	The system shall provide the list of supported presentation protocols.
MIB-2_RQ_TM_281	The system takes the control point and client device role. Therefore only one profile is supported by the system and the GetClientProfile action is in internal action.
MIB-2_RQ_TM_282	**2.1.6.1.4 RQ_TM_UPNP_TmApplicationClient**
MIB-2_RQ_TM_283	The system takes the control point and client device role. Therefore the AddApplicationList, RemoveApplicationList and GetApplicationList action to add, remove and get applications from MirrorLink Client device are internal actions.
MIB-2_RQ_TM_284	**2.1.6.1.5 RQ_TM_UPNP_TmConnectionManagerService**
MIB-2_RQ_TM_285	The system takes the control point and client device role. Therefore the GetRemotingProfile, Connect, Disconnect and GetCurrentConnections actions are internal actions.
MIB-2_RQ_TM_469	**2.1.6.1.6 RQ_TM_UPNP_ERROR_HANDLING**
MIB-2_RQ_TM_470	The system shall support UPnP error handling as specified in the MirrorLink specifications.
MIB-2_RQ_TM_655	If an occured UPnP error limits the user experience it shall be informed to the user.
MIB-2_RQ_TM_471	The system shall implement a mechanism to detect if the UPnP MirrorLink control point is not working correctly.
MIB-2_RQ_TM_472	The system shall ensure that the audio and VNC connections are not interrupted in case of UPnP errors.
MIB-2_RQ_TM_391	**2.1.6.2 FEAT_TM_UPNP_AUDIOLINK_SELECTION**
MIB-2_RQ_TM_392	The system shall launch the audio applications taking into account the audio priorisation and current Bluetooth connection status.
MIB-2_RQ_TM_286	**2.1.6.2.1 RQ_TM_UPNP_AUDIOLINK_SELECTION**

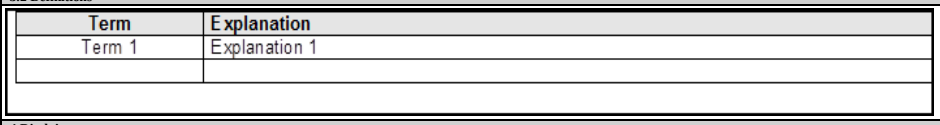
MIB-2_RQ_TM_287	The system shall launch the audio applications taking into account the audio priorisation and current Bluetooth connection status.
MIB-2_RQ_TM_656	Need to consider the bluetooth connection status only as default behaviour, because we are handling bluetooth out of scope from MirrorLink.
MIB-2_RQ_TM_460	**2.1.6.2.2 RQ_TM_UPNP_RTP_CONFIGURATION**
MIB-2_RQ_TM_461	The MirrorLink client shall provide the RTP streaming parameters IPL (Initial Playback Latency) and MPL (Maximum Playback Latency) within the TmClientProfile service as defined in the MirrorLink specifications.
MIB-2_RQ_TM_810	**2.1.6.3 FEAT_TM_UPNP_NOTIFICATION**
MIB-2_RQ_TM_811	The system shall support the UPnP Notification Server Service as specified in the MirrorLink specification.
MIB-2_RQ_TM_812	A notification popup shall provide a generic popup message with a text block and generic buttons related to the messages' request.
MIB-2_RQ_TM_813	The system shall be able to switch to the MirrorLink view and open the notified MirrorLink app by pressing a button on the notification button.
MIB-2_RQ_TM_814	The system shall be able to cancel the notification popup by pressing the "Cancel" button.
MIB-2_RQ_TM_815	**2.1.6.3.1 RQ_TM_UPNP_NOTIFICATION**
MIB-2_RQ_TM_816	The system must support the UPnP Notification Server Service as described in "CCC-TS-028_ UPnP Notification Server Service".
MIB-2_RQ_TM_817	the HMI is informed about a new Notification via the DSI.
MIB-2_RQ_TM_818	The DSI message contains the following information: app-icon, app-id, app-name, notification-title, notification-id, notification-text, list of possible actions. A possible action is described by: action-id, action-name, launch-app (bool), action-icon (optional)
MIB-2_RQ_TM_819	A notification popup contains the following information visible app-name, notification-title, notification-text, action-button "cancle". Optional: notification-icon, other action-buttons (max.2)
MIB-2_RQ_TM_820	Should an action button request an application to be launched, the HMI uses DSI launchApplication to do so.
MIB-2_RQ_TM_821	The response of the pressed button is send to the south side via DSI to execute and calls InvokeNotiAction with the necessary information.
MIB-2_RQ_TM_822	A notificiation must be show in the HMI as a popup if no other critical information is shown.
MIB-2_RQ_TM_823	Popups should not be cancled automatically and have to be shown stacked one after the other.
MIB-2_RQ_TM_824	Errors after sending a notifications request answer must be made visible to the user.
MIB-2_RQ_TM_958	The MirrorLink client must indicate support for notifications in the UPnP TmClientProfile and specify its limitations (maximum number of actions, maximum length of action names, maximum notification title length, maximum notification body length). The values for these limitations have to be provided by the HMI.
MIB-2_RQ_TM_959	If the MirrorLink Notification feature is disabled by the user, no notifications from MirrorLink applications must be shown. If the MirrorLink Notification feature is enabled, the MirrorLink notifications from the drive-certified applications available on the MirrorLink server must be shown.
MIB-2_RQ_TM_943	**2.1.6.4 FEAT_TM_UPNP_NOTIFICATION**
MIB-2_RQ_TM_944	The system shall support the UPnP Notification Server Service as specified in the MirrorLink specification.
MIB-2_RQ_TM_945	A notification popup shall provide a generic popup message with a text block and generic buttons related to the messages' request.
MIB-2_RQ_TM_946	The system shall be able to switch to the MirrorLink view and open the notified MirrorLink app by pressing a button on the notification button.
MIB-2_RQ_TM_947	The system shall be able to cancel the notification popup by pressing the "Cancel" button.
MIB-2_RQ_TM_948	**2.1.6.4.1 RQ_TM_UPNP_NOTIFICATION**
MIB-2_RQ_TM_949	The system must support the UPnP Notification Server Service as described in "CCC-TS-028_ UPnP Notification Server Service".
MIB-2_RQ_TM_950	The HMI is informed about a new Notification from the MirrorLink stack.
MIB-2_RQ_TM_951	The notification message to the HMI contains the following information: app-icon, app-id, app-name, notification-title, notification-id, notification-text, list of possible actions. A possible action is described by: action-id, action-name, launch-app (bool), action-icon (optional)
MIB-2_RQ_TM_952	A notification popup contains the following information visible app-name, notification-title, notification-text, action-button "cancle". Optional: notification-icon, other action-buttons (max.2)
MIB-2_RQ_TM_953	Should an action button request an application to be launched, the HMI triggers the launch of the application.
MIB-2_RQ_TM_954	The response of the pressed button is sent to the MirrorLink stack from the HMI to execute and call InvokeNotiAction with the necessary information.
MIB-2_RQ_TM_955	A notificiation must be show in the HMI as a popup if no other critical information is shown.
MIB-2_RQ_TM_956	Popups should automatically be dismissed after a timeout.
MIB-2_RQ_TM_957	Errors after sending a notifications request answer must be made visible to the user.
MIB-2_RQ_TM_288	**2.1.7 MirrorLink Device Attestation**
MIB-2_RQ_TM_393	**2.1.7.1 FEAT_TM_DEVICE_ATTESTATION**
MIB-2_RQ_TM_394	The system shall support the device attestation protocol.
MIB-2_RQ_TM_395	It shall be possible to configure device attestation usage.
MIB-2_RQ_TM_396	The system shall trust all CCC certified devices with a valid device certificate.
MIB-2_RQ_TM_825	It shall be possible to configure different DAP certificates (CTS, CCC certificates) during development.
MIB-2_RQ_TM_826	The system shall allocate memory for both DAP certificates (CTS, CCC) and provide switching functionality between them without need of flashing SW.
MIB-2_RQ_TM_397	The system shall maintain a list of device certificates for each manufacturer.
MIB-2_RQ_TM_416	The system shall allow all CCC Drive-level and Volkswagen AG OEM certified applications while driving.
MIB-2_RQ_TM_412	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via USB.
MIB-2_RQ_TM_413	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via SD.
MIB-2_RQ_TM_414	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via Bluetooth.
MIB-2_RQ_TM_415	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via WLAN.
MIB-2_RQ_TM_432	The system shall be prepared to receive updates of the list of mobile device manufacturers, the mobile device models and allowed applications via Online Services.
MIB-2_RQ_TM_289	**2.1.7.1.1 RQ_TM_DEVICE_ATTESTATION**
MIB-2_RQ_TM_290	The system shall support the device attestation protocol.
MIB-2_RQ_TM_291	If the system detetects a MirrorLink server device that supports the device attestation protocol, the system shall apply device attestation as defined for the system.
MIB-2_RQ_TM_657	If the system detetects a MirrorLink server device that does not support the device attestation protocol or the device attestion procedure fails, the system shall allow using the device only in non-restricted mode. The user shall be informed for this restricted access to the device. The validity period of the certificate must not be taken into account when checking the validity of the device certificate.
MIB-2_RQ_TM_292	It shall be possible to configure device attestation usage depending on system, brand.
MIB-2_RQ_TM_293	It shall be possible to configure device attestation usage depending on device manufacturer and device type.
MIB-2_RQ_TM_294	The system shall be able to install the public key of the trust root in a secure manner during the manufacturing.
MIB-2_RQ_TM_295	The system shall maintain a list of device certificates for each manufacturer.
MIB-2_RQ_TM_961	The system shall allocate memory for both DAP certificates (CTS, CCC) and provide switching functionality between them without need of flashing SW.
MIB-2_RQ_TM_296	The system shall attest the VNC server if configured for the manufacturer and device.
MIB-2_RQ_TM_297	The system shall attest the UPnP server if configured for the manufacturer and device.
MIB-2_RQ_TM_298	The system shall attest the RTP server and RTP client if configured for the manufacturer and device.
MIB-2_RQ_TM_658	The system shall attest HSML Server if supported by the connected device.
MIB-2_RQ_TM_299	To verify quoteSignature a MirrorLink client shall perform following steps: 1. Calculate hash H1 as SHA1(applicationPublicKey) if attestationResponse message in-cluded applicationPublicKey element 2. Calculate hash H2 as SHA1(oldValue || SHA1(componentID || URL || H1)). Include H1 if attestationResponse message included applicationPublicKey element. 3. Create TPM_PCR_COMPOSITE structure C 4. Set C->select to 10! 5. Set C->valueSize to 20 6. Set C->pcrValue to H2 7. Caluculate hash H3 as SHA1(C) 8. Verify that digestValue in quoteInfo equals to H3 9. Verify that externalData in quoteInfo equals to nonce in AttestationRequest10. Verify that received quoteSignature is valid RSA-SHA1 PKCS#1 v1.5 signature over re-ceived quoteInfo using public part of device key extracted from deviceCertificate
MIB-2_RQ_TM_300	The system shall check that it has active (TCP) connection with the attested software component that matches the attested IP address and port number.
MIB-2_RQ_TM_301	Once the active (TCP) connection breaks, the system shall run the attestation protocol again for the same component (if mandated by the client).
MIB-2_RQ_TM_302	After the system has attested all components as configured for the system, the system shall terminate the device attestation protocol.
MIB-2_RQ_TM_473	**2.1.7.1.2 RQ_TM_DEVICE_AND_APPLICATION_AUTHORISATION**
MIB-2_RQ_TM_474	It shall be possible to configure which certified applications, depending on what market and OEMs it is certified for, are allowed while driving.
MIB-2_RQ_TM_659	It shall be possible to allow specific applications while driving besides certified applications.
MIB-2_RQ_TM_660	Compliant certificate OEM labels depending on target and system brand are: CCC VWAG_ AUDI VWAG_ BENTLEY VWAG_ BUGATTI VWAG_ DUCATI VWAG_ MAN VWAG_ LAMBORGHINI VWAG_ PORSCHE VWAG_ SCANIA VWAG_ SEAT VWAG_ SKODA VWAG_ VOLKSWAGEN VWAG_ VOLKSWAGEN_NUTZFAHRZEUGE
MIB-2_RQ_TM_661	A certificate shall checked for the following three properties: DDS – System must support DDS for MirrorLink to allow the certified app. TOUCH – System must support touch events for MirrorLink to allow the certified app. SPEECH – System must support audio back channel and a microphone for MirrorLink to allow the certified app.
MIB-2_RQ_TM_475	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via USB.
MIB-2_RQ_TM_476	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via SD.
MIB-2_RQ_TM_477	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via Bluetooth.
MIB-2_RQ_TM_478	It shall be possible to update the list of mobile device manufacturers, the mobile device models and allowed applications via WLAN.
MIB-2_RQ_TM_479	The system shall be prepared to receive updates of the list of mobile device manufacturers, the mobile device models and allowed applications via Online Services.
MIB-2_RQ_TM_480	The system shall provide a setup menu for updating the list of authorized mobile device manufacturers, mobile device models and .applications.
MIB-2_RQ_TM_492	The system shall ensure that the user can not modidy the list of authorized mobile device manufactureres, mobile device models and applications.
MIB-2_RQ_TM_493	The system shall use SW Download mechanisms to update the list of authorized mobile device manufactureres, mobile device models and applications..

MIB-2_RQ_TM_494	The system shall use security mechanisms as used for SW as Product to verify that the list of authorized mobile device manufactureres, mobile device models and applications is not modified.
MIB-2_RQ_TM_303	**2.1.8 MirrorLink HMI**
MIB-2_RQ_TM_662	**2.1.8.1 FEAT_TM_HMI_MAIN**
MIB-2_RQ_TM_663	The system shall provide a entry point to start MirrorLink.
MIB-2_RQ_TM_962	The system shall provide a mechanims for taking screenshots of all layers of HMI (incl. MirrorLink FrameBuffer).
MIB-2_RQ_TM_664	**2.1.8.1.1 RQ_TM_HMI_MAIN**
MIB-2_RQ_TM_665	The system shall provide a Softkey in the Menu HMI to start MirrorLink.
MIB-2_RQ_TM_666	The system shall be able to configure to provide a Softkey in the Media context to switch to MirrorLink.
MIB-2_RQ_TM_963	The system shall provide a mechanims for taking screenshots of all layers of HMI (incl. MirrorLink FrameBuffer). This is typically done by pressing a HK.
MIB-2_RQ_TM_964	**2.1.8.2 FEAT_TM_MirrorLink Persistance**
MIB-2_RQ_TM_965	The system shall be able to permanently keep values for items relevant to Mirrorlink.
MIB-2_RQ_TM_667	**2.1.8.3 FEAT_TM_HMI_CLUSTER**
MIB-2_RQ_TM_668	The system shall show "MirrorLink" or similar in the Media Context of the instrument cluster when MirrorLink is the active context
MIB-2_RQ_TM_669	**2.1.8.3.1 RQ_TM_HMI_CLUSTER**
MIB-2_RQ_TM_670	The system shall show "MirrorLink" or similar in the Media Context of the instrument cluster when MirrorLink is the active context
MIB-2_RQ_TM_418	**2.1.8.4 FEAT_TM_HMI_CONTROL_ELEMENTS**
MIB-2_RQ_TM_419	The system shall be able to handle brand specific control elements for controlling the MirrorLink server.
MIB-2_RQ_TM_829	The system shall be able to handle brand specific control elements for controlling the native head unit screens (e.g. "go back to Applist", "Go to settings")
MIB-2_RQ_TM_830	The system shall be able to initiate a phone call via a MirrorLink phone app and support handsfree telephony via MirrorLink-Connection.
MIB-2_RQ_TM_671	The system shall take into account phone and media status to decide when to switch to MirrorLink in case the Phone HK was pressed
MIB-2_RQ_TM_672	The system shall be able to trigger voice input to the device by its car HMI.
MIB-2_RQ_TM_831	The system shall be able to initiate voice input via MirrorLink by pressing one of the systems Push-To-Talk buttons.
MIB-2_RQ_TM_673	The system shall support multimedia keys from the steering wheel to control the connected device.
MIB-2_RQ_TM_481	**2.1.8.4.1 RQ_TM_HMI_CONTROL_ELEMENTS**
MIB-2_RQ_TM_482	The system shall display softkeys for the mandatory hardkeys required by the MirrorLink server as indicated in TmServerDevice XML.
MIB-2_RQ_TM_483	The system shall display a softkeys for triggering the virtual keyboard.
MIB-2_RQ_TM_484	The system shall display a softkeys for triggering voice input.
MIB-2_RQ_TM_674	The system shall be able to trigger voice input to the device by its car HMI and bring the phone view to the foreground of the display.
MIB-2_RQ_TM_485	The system shall display a softkeys for triggering display orientation switch.
MIB-2_RQ_TM_486	The system shall display a softkeys for triggering display rotation switch.
MIB-2_RQ_TM_487	The system shall display a softkeys for switching to full screen where no HMI softkeys are shown.
MIB-2_RQ_TM_491	The system shall provide a separate screen for showing alternative text if enabled in the system.
MIB-2_RQ_TM_675	If no BT HFP device is connected and MirrorLink was activated earlier, the system shall switch to MirrorLink and bring the phone application to foreground when the phone hardkey is pressed.
MIB-2_RQ_TM_676	If no BT HFP device is connected and MirrorLink was not activated earlier and Media/MDI audio is not active, the system shall switch to MirrorLink and bring the phone application to foreground when the phone hardkey is pressed
MIB-2_RQ_TM_677	If no BT HFP device is connected and MirrorLink was not activated earlier and Media/MDI audio is active, the user shall be asked if audio playback via MDI shall be stopped and MirrorLink started.
MIB-2_RQ_TM_678	If a BT HFP device is connected and the phone hardkey is pressed, the system shall always switch to the internal phone menu.
MIB-2_RQ_TM_679	The system shall support multimedia keys from the steering wheel to the connected device.
MIB-2_RQ_TM_1048	The system shall support the activation of the voice control of the mirrorlink device like described in CCC_TS_069_VNC & CCC_TS_070_Audio.
MIB-2_RQ_TM_1049	Long press > 600ms on any of the car's PTT buttons shall start theVoice control of the Mirrorlink device unless there is a non-idle phone call in the system. (The system shall not wait for the button release but shall start Voice control after the expiry of the 600ms timer).
MIB-2_RQ_TM_1050	The system shall switch current HMI display context to an active MirrorLink session when a MirrorLink voice recognition has been triggered and the MirrorLink server's RTP Client has been connected successfully.
MIB-2_RQ_TM_1051	At the end of a voice control session which was initited via one of the car's PTT Buttons Mirrorlink shall stay as active context, the system shall not switch back to the context which was active before the voice control session.
MIB-2_RQ_TM_507	**2.1.8.4.2 RQ_TM_HMI_CONTROL_ELEMENTS_LOCAL_ZOOM**
MIB-2_RQ_TM_504	The system shall provide a possibility to perform a local zoom of the mobile device screen.
MIB-2_RQ_TM_505	Local zooming in and out of the mobile device screen shall be performed by the applications ("south side" of the system)
MIB-2_RQ_TM_506	The HMI shall provide a button to activate/deactivate local zooming or provide a separate button (e.g. DDS) for local zooming
MIB-2_RQ_TM_398	**2.1.8.5 FEAT_TM_HMI_GENEREL_ACCESS_MODE**
MIB-2_RQ_TM_399	The system shall support a generel access mode where the complete HMI of the mobile device is available to the user.
MIB-2_RQ_TM_832	The system shall support general access mode where base and drive certified apps are fully launchable and operable.
MIB-2_RQ_TM_304	**2.1.8.5.1 RQ_TM_HMI_GENEREL_ACCESS_MODE**
MIB-2_RQ_TM_305	In generel access mode the system shall provide a function "full access view" to access the complete device HMI to the user and the user can control any application on the MirrorLink Server by using the native HMI of the device if this funcion is provided by the device.
MIB-2_RQ_TM_680	In generel access mode the system shall show any content provided by the MirrorLink server device.
MIB-2_RQ_TM_681	The system shall provide a list of applications anounced by the MirrorLink server device via UpnP that are launchable and are not part of the system modules.
MIB-2_RQ_TM_682	The AppList may contain entries which cannot be launched or rather the app icon cannot be displayed in the MainScreen. Those apps are either SW modules like the RTP Server, VNC Server, etc. (being identified by the ProtocolID or by the AppCategory in case of the VNC Server), Apps with following App categories (0xF000XXXX) or Apps which contains the value "-1" for the entry "allowedProfileIDs" or "NA" for the entry "ressourceStatus" in the UPnP AppList.
MIB-2_RQ_TM_400	**2.1.8.6 FEAT_TM_HMI_RESTRICTED_ACCESS_MODE**
MIB-2_RQ_TM_401	The system shall support a restricted access mode where only dedicated applications are available to the user.
MIB-2_RQ_TM_833	The system shall support a restricted access mode where only drive-certified applications are available to the user.
MIB-2_RQ_TM_402	It shall be possible to configure a speed threshold when generel access to the MirrorLink server device is blocked.
MIB-2_RQ_TM_306	**2.1.8.6.1 RQ_TM_HMI_RESTRICTED_ACCESS_MODE**
MIB-2_RQ_TM_307	In restricted access mode the system shall only show the certified applications having regard to the market and OEM anounced by the MirrorLink server device via UPnP. If the shown application is certified but not compatible for the following reasons, the system shall not show the application and shall inform the user what is the reason for: not certified for system region not certified for system control elemens (e.g. touchscreen) not certified for system display class missing system car data service application is black listed This list specifies the set of accepted application certificate regions depending on the HW variant of the MIB: MIB_EU -> "EU", "USA", "WORLD" MIB_NAR -> "CAN", "USA", "WORLD" MIB_JP -> "JPN", "WORLD" MIB_CHN -> "CHN", "EU", "USA", "WORLD" MIB_KOR -> "KOR", "EU", "USA", "WORLD" MIB_TWN -> "TPE", "EU", "USA", "WORLD" MIB_RdW/RoW -> "EU", "USA", "WORLD" For MIB_RoA, the diagnosis value Dia_Anp_11052 should be considered to determine the set of application certificate regions as follows: o CN -> "CHN", "EU", "USA", "WORLD" (same as MIB_CHN) o KR -> "KOR", "EU", "USA", "WORLD" (same as MIB_KOR) o TW -> "TPE", "EU", "USA", "WORLD" (same as MIB_TWN) o HK -> "HKG", "EU", "USA", "WORLD" o MO -> "CHN", "EU", "USA", "WORLD" o Anything else: "JPN", "WORLD"
MIB-2_RQ_TM_308	In restricted access mode, the system shall indicate for each applicaton in the list of certified applications if the applications complies to the certificate regulations (brand, market, not compatible reasons) defined for the system or not.
MIB-2_RQ_TM_309	The system shall be able to decide based on the application info (app category, app trust level) which applications and how applications are represented.
MIB-2_RQ_TM_683	The system shall be able to decide based on the display info (content category, content rules, display trust level, orientation) which applications and how applications are represented.
MIB-2_RQ_TM_684	The system shall be able to decide based on the audio info (content category, content rules, display trust level, audioType) which applications and how applications are represented.
MIB-2_RQ_TM_310	**2.1.8.6.2 RQ_TM_HMI_SPEED_THRESHOLD**
MIB-2_RQ_TM_311	It shall be possible to configure a speed threshold when generel access to the MirrorLink server device is blocked.
MIB-2_RQ_TM_312	The default threshold shall be 6km/h.
MIB-2_RQ_TM_313	The system shall implement a hysteresis for the threshold in order to avoid toggling.
MIB-2_RQ_TM_314	When the vehicle exceeds the defined speed threshold, the system shall switch to restricted access mode.
MIB-2_RQ_TM_315	When the vehicle falls below the defined speed threshold and the system currently shows the application list in restricted mode, the system shall provide any application from the list to the user and allows to use the function "full access view".
MIB-2_RQ_TM_316	When the vehicle falls below the defined speed threshold and the system currently shows a specific application in restricted access mode, the system shall not switch to another view.
MIB-2_RQ_TM_403	**2.1.8.7 FEAT_TM_HMI_SETTINGS**
MIB-2_RQ_TM_404	It shall be possible to set priorities for audio connections and voice control.
MIB-2_RQ_TM_834	It shall be possible to handle defined MirrorLink settings (e.g. Technology preference - Android Auto vs. MirrorLink).
MIB-2_RQ_TM_405	It shall be possible to switch on/off alternative text functionality.
MIB-2_RQ_TM_406	It shall be possible to switch on/off framebuffer and audio blocking notification.
MIB-2_RQ_TM_972	It shall be possible to control whether or not notifications from MirrorLink applications are shown (global setting for all MirrorLink applications).
MIB-2_RQ_TM_317	**2.1.8.7.1 RQ_TM_HMI_SETTINGS**
MIB-2_RQ_TM_318	It shall be possible to set the priorities for audio connections via system HMI.
MIB-2_RQ_TM_319	It shall be possible to switch on/off alternative text via system HMI.
MIB-2_RQ_TM_320	It shall be possible to switch on/off RTP server functionality for voice control via user HMI.
MIB-2_RQ_TM_321	It shall be possible to set framebuffer rotation on/off via system HMI.
MIB-2_RQ_TM_488	It shall be possible to set framebuffer orientation on/off via system HMI.
MIB-2_RQ_TM_322	It shall be possible to switch on/off framebuffer blocking notification via system HMI.
MIB-2_RQ_TM_323	It shall be possible to switch on/off audio blocking notification via system HMI.

MIB-2_RQ_TM_973	The user must be able to enable and disable the MirrorLink Notification feature in the setup. The MirrorLink Notification feature is enabled by default. The setting must be persisted.
MIB-2_RQ_TM_974	**2.1.8.8 FEAT_TM_APPLIST**
MIB-2_RQ_TM_975	The system shall be able to display list of MirrorLink certified Apps (ML aware, ML base certified, ML drive certified).
MIB-2_RQ_TM_976	The system shall be able to configure if the MirrorLink aware Apps will be displayed or not.
MIB-2_RQ_TM_977	**2.1.8.8.1 RQ_TM_APPLIST**
MIB-2_RQ_TM_978	The system shall display MirrorLink certified Apps in the AppList (MirrorLink aware Apps, based-certified Apps, drive-certified Apps).
MIB-2_RQ_TM_979	The system shall display and handle correctly CCC certified Apps and OEM brand-related Apps.
MIB-2_RQ_TM_838	**2.1.8.9 FEAT_TM_HMI_NO_ICON**
MIB-2_RQ_TM_839	The MirrorLink icon should be deactivateable by diagnostic.
MIB-2_RQ_TM_840	**2.1.8.9.1 RQ_TM_HMI_NO_ICON**
MIB-2_RQ_TM_841	If the icon is deactivated AppConnect shall behave towards the user as if MirrorLink is not available.
MIB-2_RQ_TM_842	Activating/Deactivating the icon shall be done via diagnostic.
MIB-2_RQ_TM_843	A USB device id can be inserted via diagnostic. This device id will be automatically launched as a MirrorLink device if seen by the system.
MIB-2_RQ_TM_844	**2.1.8.10 FEAT_TM_HMI_ACTIVATE_REMOTELY**
MIB-2_RQ_TM_845	It shall be possible to activate the MirrorLink context remotely.
MIB-2_RQ_TM_846	**2.1.8.10.1 RQ_TM_HMI_ACTIVATE_REMOTELY**
MIB-2_RQ_TM_847	If the context is activated for the first time the application listing must be shown. If only one application is available this application must be launched.
MIB-2_RQ_TM_848	The system must react to a SAI/EXLAP call to activate the MirrorLink screen remotely.
MIB-2_RQ_TM_849	**2.1.9 MirrorLink H.264**
MIB-2_RQ_TM_850	**2.1.9.1 FEAT_TM_H.264**
MIB-2_RQ_TM_851	The system shall support hardware accelerated H.264 over USB for better MirrorLink performance.
MIB-2_RQ_TM_1052	This feature shall be implemented as defined in CCC-TS-080_ MirrorLink over Wi-Fi Display.pdf
MIB-2_RQ_TM_1053	**2.1.9.1.1 RQ_TM_H.264**
MIB-2_RQ_TM_1054	Wi-Fi Display over USB shall be implmented as defined in CCC-TS-080_ MirrorLink over Wi-Fi Display.pdf
MIB-2_RQ_TM_1055	The system shall use a hardware H264 video decoder
MIB-2_RQ_TM_1056	If the Mirrorlink device is not able to deliver the requested video resolution of the HMI the south side shall scale the highest available video resolution of the smartphone up or down to the resolution request by the HMI.
MIB-2_RQ_TM_1057	The video stream shall be requested from the mirrorlink device & scaled up or down in such a way that i) the video stream covers as much of the available space as possible, ii) the video stream is not cropped and iii) the video stream's aspect ratio is preserved.
MIB-2_RQ_TM_1058	The aspect ratio of the video stream shall not be changed while scaling the video, the scaled videostream shall not be wider or higher than the resolution requested by the HMI.
MIB-2_RQ_TM_852	**2.1.10 MirrorLink Services**
MIB-2_RQ_TM_853	**2.1.10.1 FEAT_TM_CDB_SBP**
MIB-2_RQ_TM_854	The system shall support the MirrorLink Common Data Bus as specified in the MirrorLink specification.
MIB-2_RQ_TM_855	The system shall support the MirrorLink Service Binary Protocol as specified in the MirrorLink specification.
MIB-2_RQ_TM_856	**2.1.10.1.1 RQ_TM_CDP_SBP**
MIB-2_RQ_TM_857	The data bus must be implemented as described in "CCC-TS-016_ Common Data Bus"
MIB-2_RQ_TM_858	The service must be implemented as described in "CCC-TS-018_ Service Binary Protocol"
MIB-2_RQ_TM_859	**2.1.10.2 FEAT_TM_LOCATION_DATA_SERVICE**
MIB-2_RQ_TM_860	The system shall support the MirrorLink LOCATION DATA SERVICE as specified in the MirrorLink specification.
MIB-2_RQ_TM_861	**2.1.10.2.1 RQ_TM_LOCATION_DATA_SERVICE**
MIB-2_RQ_TM_862	To be implemented as described in "CCC-TS-022_ Location Data Service"
MIB-2_RQ_TM_863	Speed must not be implemented.
MIB-2_RQ_TM_864	Accuracy and altitudeAccuracy must be implemented if available.
MIB-2_RQ_TM_865	Heading, Longitude, Latitude and Altitude must be implemented.
MIB-2_RQ_TM_866	The user must be able to deactivate the LOCATION_DATA_SERVICE within the MirrorLink setup screen.
MIB-2_RQ_TM_867	**2.1.10.3 FEAT_TM_GPS_DATA_SERVICE**
MIB-2_RQ_TM_868	The system shall support the MirrorLink GPS DATA SERVICE as specified in the MirrorLink specification.
MIB-2_RQ_TM_869	**2.1.10.3.1 RQ_TM_GPS_DATA_SERVICE**
MIB-2_RQ_TM_870	To be implemented as described in "CCC-TS-020_ GPS Data Service"
MIB-2_RQ_TM_871	Only GLL NMEA sentence (Longitude/Latitude) must be implemented. The other NMEA sentences listed in "CCC-TS-020_GPS Data Service" are optional.
MIB-2_RQ_TM_872	The user must be able to deactivate the GPS_DATA_SERVICE within the MirrorLink setup screen. This can be implemented as a joint setting with LOCATION_DATA_SERVICE; i.e., there is only one setup item presented to the user that switches both GPS_DATA_SERVICE and LOCATION_DATA_SERVICE on or off.
MIB-2_RQ_TM_1039	**2.1.10.4 FEAT_TM_BLUETOOTH_OUT_OF_BAND_PAIRING_DATA_SERVICE**
MIB-2_RQ_TM_1059	The system shall support the Bluetooth Out-of-Band Pairing Data Service as described in "CCC-TS-076_ Bluetooth Out-of-Band Pairing Data Service"
MIB-2_RQ_TM_1060	The Bluetooth HFP, PBAP and MAP connections shall be established upon start of a MirrorLink session.
MIB-2_RQ_TM_1061	**2.1.10.4.1 RQ_TM_BT_Pairing**
MIB-2_RQ_TM_1062	If the ML device is not a trusted device, the system shall trigger a pairing procedure with that device when setting up the HFP connection.
MIB-2_RQ_TM_1063	If supported by the ML device, the system shall do an "Out-Of-Band"-Pairing via the MirrorLink functionality as specified in CCC-TS-076_ Bluetooth Out-of-Band Pairing Data Service.pdf.
MIB-2_RQ_TM_1064	If the ML device does not support OOB Pairing, an normal pairing procedure shall be started (user interaction required)
MIB-2_RQ_TM_1065	**2.1.10.4.2 RQ_TM_BT_Connection**
MIB-2_RQ_TM_1066	When a MirrorLink device gets connected, the system shall check if a HFP connection to the connected ML device already exists.
MIB-2_RQ_TM_1067	If a HFP connection to the connected ML device already exists, the HFP connection must be kept (no BT connection changes required)
MIB-2_RQ_TM_1068	If no HFP connection to the connected ML device exists and if there is no other device connected via HFP, the system shall initiate a connection request for HFP to the MirrorLink device.
MIB-2_RQ_TM_1069	If no HFP connection to the connected ML device exists and if there is one other device connected via HFP, the system shall initiated a connection request for HFP to the MirrorLink device, in order to connect it as an additional (second) phone.
MIB-2_RQ_TM_1070	If no HFP connection to the connected ML device exists and if there is already one devics connected via HFP and the internal SIM-card ist used as additional (second) phone with a "Voice & Data" connection, the internal SIM-card shall fall back to "Data only" and be replaced by the ML device as additional (second) phone. The user shall be informed about the mode change.
MIB-2_RQ_TM_1071	If no HFP connection to the connected ML device exists and if there are already two devices connected via HFP, the system shall replace the additional (second) phone with the MirrorLink device. In case the second phone was also connect via A2DP, A2DP also needs to be disconnected when replacing the second phone.
MIB-2_RQ_TM_994	**2.1.11 MirrorLink Services**
MIB-2_RQ_TM_995	**2.1.11.1 FEAT_TM_CDB_SBP**
MIB-2_RQ_TM_996	The system shall support the MirrorLink Common Data Bus as specified in the MirrorLink specification.
MIB-2_RQ_TM_997	The system shall support the MirrorLink Service Binary Protocol as specified in the MirrorLink specification.
MIB-2_RQ_TM_998	**2.1.11.1.1 RQ_TM_CDP_SBP**
MIB-2_RQ_TM_999	The data bus must be implemented as described in "CCC-TS-016_ Common Data Bus"
MIB-2_RQ_TM_1000	The service must be implemented as described in "CCC-TS-018_ Service Binary Protocol"
MIB-2_RQ_TM_1001	**2.1.11.2 FEAT_TM_LOCATION_DATA_SERVICE**
MIB-2_RQ_TM_1002	The system shall support the MirrorLink LOCATION DATA SERVICE as specified in the MirrorLink specification.
MIB-2_RQ_TM_1003	**2.1.11.2.1 RQ_TM_LOCATION_DATA_SERVICE**
MIB-2_RQ_TM_1004	To be implemented as described in "CCC-TS-022_ Location Data Service"
MIB-2_RQ_TM_1005	Speed must not be implemented.
MIB-2_RQ_TM_1006	Accuracy and altitudeAccuracy must be implemented if available.
MIB-2_RQ_TM_1007	Heading, Longitude, Latitude and Altitude must be implemented.
MIB-2_RQ_TM_1008	The user must be able to deactivate the LOCATION_DATA_SERVICE within the MirrorLink setup screen.
MIB-2_RQ_TM_1009	**2.1.11.3 FEAT_TM_GPS_DATA_SERVICE**
MIB-2_RQ_TM_1010	The system shall support the MirrorLink GPS DATA SERVICE as specified in the MirrorLink specification.
MIB-2_RQ_TM_1011	**2.1.11.3.1 RQ_TM_GPS_DATA_SERVICE**
MIB-2_RQ_TM_1012	To be implemented as described in "CCC-TS-020_ GPS Data Service"
MIB-2_RQ_TM_1013	Only GLL NMEA sentence (Longitude/Latitude) must be implemented. The other NMEA sentences listed in "CCC-TS-020_GPS Data Service" are optional.
MIB-2_RQ_TM_1014	The user must be able to deactivate the GPS_DATA_SERVICE within the MirrorLink setup screen. This can be implemented as a joint setting with LOCATION_DATA_SERVICE; i.e., there is only one setup item presented to the user that switches both GPS_DATA_SERVICE and LOCATION_DATA_SERVICE on or off.
MIB-2_RQ_TM_1015	**2.1.12 MirrorLink Diagnosis**
MIB-2_RQ_TM_1016	**2.1.12.1 FEAT_TM_DIAGNOSIS**
MIB-2_RQ_TM_1017	The system shall handle different configuration according to the coding.
MIB-2_RQ_TM_1018	The system shall provide defined MirrorLink-related items in diagnosis and coding
MIB-2_RQ_TM_1019	**2.1.12.1.1 RQ_TM_DIAGNOSIS**
MIB-2_RQ_TM_1020	The system shall handle configuration according to the diagnosis and coding functionality.
MIB-2_RQ_TM_324	**2.2 Ipod Out Requirements**
MIB-2_RQ_TM_407	**2.2.1 FEAT_TM_IPOD_GENEREL**
MIB-2_RQ_TM_408	The system shall support iPod-Out functionality as an accessory device as defined by Apple.
MIB-2_RQ_TM_409	The system shall be able to scale the iPod Video Output to the display size defined for the system.
MIB-2_RQ_TM_410	It shall be possible to switch on/off support of the telephony and messaging functionality for iPod Out.
MIB-2_RQ_TM_411	The system shall support the Simple Remote and Display Remote commands to control the iPod device.
MIB-2_RQ_TM_325	**2.2.1.1 RQ_TM_IPOD_GENEREL**
MIB-2_RQ_TM_326	The system shall support iPod-Out functionality as an accessory device as defined by Apple.
MIB-2_RQ_TM_327	**2.2.1.2 RQ_TM_IPOD_SCALING**
MIB-2_RQ_TM_328	The system shall be able to scale the iPod Video Output to the display size defined for the system.
MIB-2_RQ_TM_329	**2.2.1.3 RQ_TM_IPOD_SETTINGS**
MIB-2_RQ_TM_330	It shall be possible to switch on/off support of telephony functionality using iPod Out via system HMI.
MIB-2_RQ_TM_331	It shall be possible to switch on/off support of messaging functionality using iPod Out via system HMI.

MIB-2_RQ_TM_332	**2.2.1.4 RQ_TM_IPOD_CONTROL**
MIB-2_RQ_TM_333	The system shall support the Simple Remote and Display Remote commands to control the iPod device.
MIB-2_RQ_TM_445	**2.2.2 FEAT_TM_IPOD_SW_AS_PRODUCT**
MIB-2_RQ_TM_446	It shall be possible to activate iPod-Out via SW as Product mechanisms
MIB-2_RQ_TM_564	**2.2.2.1 RQ_TM_IPOD_SW_AS_PRODUCT**
MIB-2_RQ_TM_565	It shall be possible to activate iPod-Out via SW as Product mechanisms
MIB-2_RQ_TM_433	**2.2.3 FEAT_TM_IPOD_REMOTE_START_APPLICATIONS**
MIB-2_RQ_TM_434	The system shall maintain a list of applications that can be started by the system via iAP protocol.
MIB-2_RQ_TM_435	It shall be possible to update the list of applications that can be started by the system via USB.
MIB-2_RQ_TM_436	It shall be possible to update the list of applications that can be started by the system via SD.
MIB-2_RQ_TM_437	It shall be possible to update the list of applications that can be started by the system via Bluetooth.
MIB-2_RQ_TM_438	It shall be possible to update the list of applications that can be started by the system via WLAN.
MIB-2_RQ_TM_439	It shall be possible to update the list of applications that can be started by the system via Online Services.
MIB-2_RQ_TM_566	**2.2.3.1 RQ_TM_IPOD_REMOTE_START_APPLICATIONS**
MIB-2_RQ_TM_567	The system shall maintain a list of applications that can be started by the system via iAP protocol.
MIB-2_RQ_TM_568	It shall be possible to update the list of applications that can be started by the system via USB.
MIB-2_RQ_TM_569	It shall be possible to update the list of applications that can be started by the system via SD.
MIB-2_RQ_TM_570	It shall be possible to update the list of applications that can be started by the system via Bluetooth.
MIB-2_RQ_TM_571	It shall be possible to update the list of applications that can be started by the system via WLAN.
MIB-2_RQ_TM_572	It shall be possible to update the list of applications that can be started by the system via Online Services.
MIB-2_RQ_TM_441	**2.2.4 FEAT_TM_IPOD_HMI**
MIB-2_RQ_TM_442	The system shall display a list of applications that can be started by the system.
MIB-2_RQ_TM_573	**2.2.4.1 RQ_TM_IPOD_HMI**
MIB-2_RQ_TM_574	The system shall display a list of applications that can be started by the system.
MIB-2_RQ_TM_575	**2.3 MirrorLink Diagnostic**
MIB-2_RQ_TM_685	**2.3.1 FEAT_TM_DIAGNOSTIC**
MIB-2_RQ_TM_686	The system shall be able to configure the MirrorLink connectivity in diagnostic.
MIB-2_RQ_TM_1021	The system shall offer a diagnostic configuration item to switch between RGB565 and RGB888.
MIB-2_RQ_TM_687	**2.3.1.1 RQ_TM_DIAGNOSTIC**
MIB-2_RQ_TM_688	The system shall be able to configure the MirrorLink connectivity in diagnostic.
MIB-2_RQ_TM_689	The system shall be able to deactivate MirrorLink in diagnostic.
MIB-2_RQ_TM_690	The system shall be able to activate MirrorLink for both USB and WLAN in diagnostic.
MIB-2_RQ_TM_691	The system shall be able to activate MirrorLink only for USB in diagnostic.
MIB-2_RQ_TM_692	The system shall be able to activate MirrorLink only for WLAN in diagnostic.
MIB-2_RQ_TM_1022	**2.3.1.2 RQ_TM_DIAGNOSTIC_PIXELFORMAT**
MIB-2_RQ_TM_1023	The system shall offer a diagnostic configuration item to switch between RGB565 and RGB888. The default must be RGB565.
MIB-2_RQ_TM_1024	**2.4 MirrorLink affected modules**
MIB-2_RQ_TM_1025	**2.4.1 Touchscreen**
MIB-2_RQ_TM_1026	The Touchscreen displays the MirrorLink framebuffer and the system sends touch events and other input controls to the MirrorLink device.
MIB-2_RQ_TM_1027	**2.4.2 MFL**
MIB-2_RQ_TM_1028	Steering wheel button pushes will be transfered to the mobile device (e.g. MFL multimedia keys for track skipping)
MIB-2_RQ_TM_1029	**2.4.3 Instrument cluster**
MIB-2_RQ_TM_1030	Instrument cluster displays an information that MirrorLink source is audible.
MIB-2_RQ_TM_1031	**2.4.4 Microphone**
MIB-2_RQ_TM_1032	Audio stream from the microphone will be transfered to the mobile device.
MIB-2_RQ_TM_1033	**2.4.5 ABT hardkeys**
MIB-2_RQ_TM_1034	The MirrorLink implementation uses free unmapped hardkeys (e.g. RRE/DDS) to interaction with a MirrorLink application.
MIB-2_RQ_TM_1035	**2.4.6 Sensor data/Car information**
MIB-2_RQ_TM_1036	The MirrorLink implementation provides certain vehicle data to a MirrorLink application (e.g. location data).
MIB-2_RQ_TM_36	**3 Appendix**
MIB-2_RQ_TM_37	**3.1 Abbreviations**
MIB-2_RQ_TM_38	

Abbreviation	Description
MU	MainUnit

MIB-2_RQ_TM_42	**3.2 Definitions**
MIB-2_RQ_TM_45	

Term	Explanation
Term 1	Explanation 1

MIB-2_RQ_TM_48	**4 Disclaimer**
MIB-2_RQ_TM_49	Vertraulich. Alle Rechte vorbehalten. Weitergabe oder Vervielfältigung ohne vorherige schriftliche Zustimmung des Fachbereiches der Volkswagen AG verboten. Vertragspartner erhalten dieses Dokument nur über die zuständige Beschaffungsabteilung. Alle Rechte, insbesondere für den Fall der Patenterteilung, liegen bei der Volkswagen AG und ihren Konzern- und Beteiligungsgesellschaften. Only applies to English translation: The English translation is believed to be accurate. In case of discrepancies the German version shall govern. © Volkswagen Aktiengesellschaft

Appendix C – Specification of CarPlay

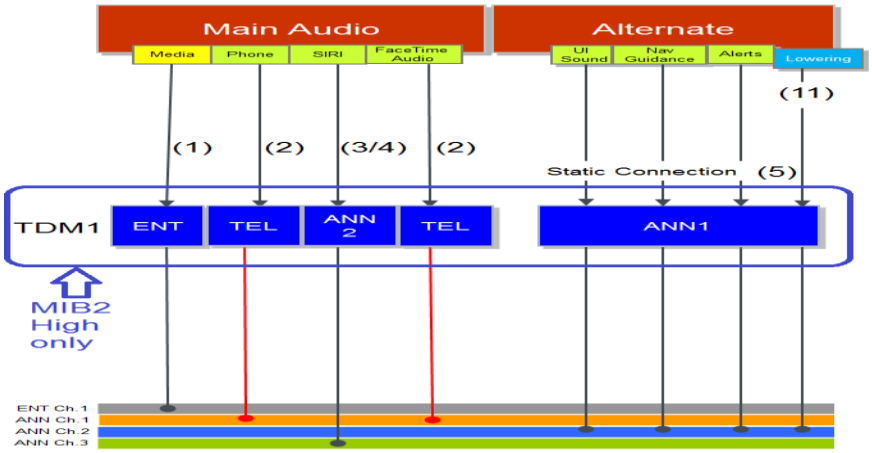
ID	Responsible: AU: Felbermeir, Christian; SE: Collado, Belén; SK: Houštěk, Josef; VW:Sand, Peter
MIB-2_RQ_DPO_1	**1 Document**
MIB-2_RQ_DPO_2	**1.1 History of changes**
MIB-2_RQ_DPO_3	

Date	Requirement/Section	new Vers.	Description of change	Author
22.11.13	all	0.1	Initial version	
12.02.14	all	0.2	Reworked version	
30.06.14	2.1 and 2.2	0.3	Sections added	PSa
31.07.14	all	0.4	Reworked version	
28.04.15	2.1.2, 2.1.4, 2.1.6, 2.1.7	2.0	Rework for 22/16	PSa

MIB-2_RQ_DPO_7	**1.2 Related documents**	
MIB-2_RQ_DPO_8		

Ref.Id	Documentname/ Description	Version	Filename
[1]	Software as a Product RQ list	4.2	MIB_2_RQ_LIST_SW_As_Product
[2]	Diagnostic coding		Codierung
[3]	MIB SWDL specification		MIB_2_RQ_LIST_Download
[4]	MFi Accessory Interface Specification with Apple CarPlay (only available directly from Apple under the MFI license)		
[5]	Touch Coordinate Interpolation Concept		Touch_Coordinate_Interpolation_Concept_v1.pdf
[6]	Flowchart connection handling SmartphoneIntegration	1.0	MIB2_ConnectionHandling_SmartphoneIntegration_Flowcharts_v0_1_0.pdf
[7]	Concept of Deviation Management		
[8]	CarPlay CallStates mapping to BAP CallStates	1.0	CallStates_BAP_15042015_PSA.xlsx

MIB-2_RQ_DPO_21	**1.3 Purpose of document**
MIB-2_RQ_DPO_22	This document describes the integration of Apple's "CarPlay" features and requirements into the MIB.
MIB-2_RQ_DPO_32	**2 Functional Requirements**
MIB-2_RQ_DPO_186	**2.1 CarPlay Requirements**
MIB-2_RQ_DPO_279	**2.1.1 General**
MIB-2_RQ_DPO_830	**2.1.1.1 FEAT_DPO_CarPlay_Support**
MIB-2_RQ_DPO_280	The system shall support CarPlay functionality as an accessory device as defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_1196	**2.1.1.1.1 RQ_DPO_CarPlay_Support**
MIB-2_RQ_DPO_1302	The system shall support CarPlay functionality as an accessory device as defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_801	To be able to access the MFI Specification including CarPlay the MIB supplier must join the MFI program, and all (subcontracted) software developers must become MFI Development Licensees.
MIB-2_RQ_DPO_803	A Customer Update package for the CarPlay software component of the MIB shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_DPO_802	In the case, that an incompatibility to an CarPlay device is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency" update within 30 days after notice of the failure.
MIB-2_RQ_DPO_517	CarPlay function should be rolled out by Apple in all the regions where Siri and turn-by-turn navigation is available. A list of the currently supported countries is located here: http://www.apple.com/ios/feature-availability/#applecarplay-applecarplay
MIB-2_RQ_DPO_518	MIB generally supports CarPlay in all regions of the world; via EOL coding it can be restricted.
MIB-2_RQ_DPO_187	**2.1.2 Affected Modules**
MIB-2_RQ_DPO_188	**2.1.2.1 Touchscreen**
MIB-2_RQ_DPO_824	**2.1.2.1.1 FEAT_DPO_Display_TouchEvents_DDS**
MIB-2_RQ_DPO_825	The Touchscreen shall display the CarPlay screen and the system shall send touch events and DDS actions to the CarPlay device.
MIB-2_RQ_DPO_826	**2.1.2.1.1.1 RQ_DPO_Touchscreen**
MIB-2_RQ_DPO_827	The CarPlay device streams the CarPlay screen as a H264 stream from the CarPlay device to the MIB.
MIB-2_RQ_DPO_191	The MIB shall decode the H264 stream received from the CarPlay device and shall display the content on the car's screen.
MIB-2_RQ_DPO_192	Touch events on the Touchscreen shall be sent to the CarPlay device.
MIB-2_RQ_DPO_578	There is no multi-touch gesture support in CarPlay.
MIB-2_RQ_DPO_196	**2.1.2.1.1.2 RQ_DPO_DDS**
MIB-2_RQ_DPO_197	The rotary button control mode for CarPlay shall also be activated for enabling the usage (rotating or pressing) the DDS. (Note: This will lead to highlighted SKs or list position.)
MIB-2_RQ_DPO_198	The user shall be able to navigate across SKs or lists via the rotary knob function
MIB-2_RQ_DPO_199	Pressing the DDS shall activate the highlighted object
MIB-2_RQ_DPO_200	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)
MIB-2_RQ_DPO_203	**2.1.2.1.1.3 RQ_DPO_Algorithm_Dead_Touch_Areas**
MIB-2_RQ_DPO_579	The current MIB ABTs from Alpine have the hardware restriction, that areas at the borders of the touchscreen do not generate touch events with the correct coordinates. CarPlay uses the full display screen. Therefore a concept for a touchable area of the full display size is necessary.
MIB-2_RQ_DPO_205	The touch coordinates from the border shall be interpolated from the touchable frame to the full display screen size. An interpolation algorithm shall be implemented for all MIB ABT to fix the described deficiencies. [5]
MIB-2_RQ_DPO_206	**2.1.2.2 MFL**
MIB-2_RQ_DPO_820	**2.1.2.2.1 FEAT_DPO_CarPlay _Controll_via_MFL**
MIB-2_RQ_DPO_823	There shall be MFL button support to controll CarPlay
MIB-2_RQ_DPO_207	Button functionality shall be realized as described in: MFi Interface Specification with Apple CarPlay [4], chapter "Buttons"
MIB-2_RQ_DPO_822	**2.1.2.2.1.1 RQ_DPO_Volume**
MIB-2_RQ_DPO_213	The MFL volume buttons shall control the volume of the car's amplifier.
MIB-2_RQ_DPO_580	The volume of the CarPlay device cannot be controlled via buttons on the car side as the audio out of the CarPlay device is a constant line signal
MIB-2_RQ_DPO_821	**2.1.2.2.1.2 RQ_DPO_Siri**
MIB-2_RQ_DPO_210	It shall be possible to start and conrol Siri via the PTT button on the MFL depending on the HMI setting (e.g. long-press).
MIB-2_RQ_DPO_211	**2.1.2.2.1.3 RQ_DPO_Phone_Calls**
MIB-2_RQ_DPO_212	MFL phone button events (press and release) shall be sent to the CarPlay device (raw events without interpretation of the button events).
MIB-2_RQ_DPO_216	MFL Up- and Down-Buttons shall toggle through "Option list to handle a call" in cluster instrument
MIB-2_RQ_DPO_215	MFL Ok-Button shall activate the highlighted option
MIB-2_RQ_DPO_209	**2.1.2.2.1.4 RQ_DPO_Media**
MIB-2_RQ_DPO_218	Short press on one of the MFL Skip-Buttons shall skip music title
MIB-2_RQ_DPO_217	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song
MIB-2_RQ_DPO_208	Via the Skoda MFL button "Source Switch" it shall be possible to switch over from CarPlay media to any other native HMI media source.
MIB-2_RQ_DPO_581	It is not possible to switch to CarPlay via the Skoda MFL button "Source Switch".
MIB-2_RQ_DPO_219	**2.1.2.3 Instrument Cluster**
MIB-2_RQ_DPO_221	**2.1.2.3.1 FEAT_DPO_Instrument_Cluster_Phone_context**
MIB-2_RQ_DPO_1235	During an ongoing CarPlay session the cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1272	During any CarPlay phone call activity (i.e. none idle call state) the MFL buttons shall have no effect regarding any call activity including the CarPlay call.
MIB-2_RQ_DPO_1344	In case of an active CarPlay session the instrument cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_222	Once a CarPlay phone call is incoming, the cluster screen shall switch over to the phone context
MIB-2_RQ_DPO_1452	The fall back mechanism after the end of CarPlay phone calls shall be the same as for Bluetooth phone calls.
MIB-2_RQ_DPO_223	In systems without Phone functionality, there is no phone context visible for CarPlay in the cluster.
MIB-2_RQ_DPO_1236	**2.1.2.3.1.1 RQ_DPO_CarPlay_Cluster_Phone_Screen**
MIB-2_RQ_DPO_1237	During any CarPlay phone call activity (i.e. none idle call state) the cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1345	In case of an active CarPlay session the instrument cluster phone context shall show CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1238	At the CarPlay_Cluster_Phone_Screen there shall be the string "Apple CarPlay" visible (language independent)
MIB-2_RQ_DPO_1273	During any CarPlay phone call activity (i.e. none idle call state) the MFL buttons shall have no effect regarding any call activity including the CarPlay call.
MIB-2_RQ_DPO_1453	Once a CarPlay phone call is incoming, the cluster screen shall switch over to the phone context
MIB-2_RQ_DPO_1454	The fall back mechanism after the end of CarPlay phone calls shall be the same as for Bluetooth phone calls.
MIB-2_RQ_DPO_813	**2.1.2.3.1.2 RQ_DPO_Phone_Context_Visible_Information**
MIB-2_RQ_DPO_225	Various information shall be visible in the instrument cluster, depending on the call state (idle, incomming-, outgoing-, ongoing-call).
MIB-2_RQ_DPO_228	Incoming calls shall be displayed.
MIB-2_RQ_DPO_231	If the name of the caller/telephonee is available, it shall be displayed in the cluster instrument phone context.
MIB-2_RQ_DPO_1455	If the name of the caller/telephonee is not available but the phone number is available, the phone number shall be displayed in the cluster instrument phone context.
MIB-2_RQ_DPO_1456	If neither name nor number of the caller is available, "unknown" shall be displayed in the cluster instrument phone context. This string shall be language dependend.
MIB-2_RQ_DPO_1457	Call state of the call shall be displayed. I.e.: ringing/waiting, active, dialing, on hold
MIB-2_RQ_DPO_1458	Call states shall be mapped between Apple CarPlay protocol, DSI and BAP according to mapping defined in [8].
MIB-2_RQ_DPO_232	Option list to handle a call shall be displayed, during an incoming or ongoing call.
MIB-2_RQ_DPO_233	Signal strength (without info of cellular communication standard) shall be displayed.

MIB-2_RQ_DPO_226	If CarPlay phone is the sole connected phone, in phone context there shall be different information visible while no call is running
MIB-2_RQ_DPO_235	Apple CarPlay (In all languages same string) shall be visible if call state is IDL.
MIB-2_RQ_DPO_236	Provider shall be visible if call state is IDL.
MIB-2_RQ_DPO_1459	USB connection method icon shall be visible if call state is IDL.
MIB-2_RQ_DPO_237	Signal strength (without info of cellular communication standard) shall be visible
MIB-2_RQ_DPO_238	There is no Battery Level visible!
MIB-2_RQ_DPO_1460	There is no Call Stack List available/!
MIB-2_RQ_DPO_1461	There is no Call Option List available!
MIB-2_RQ_DPO_1462	There is no Missed Call Indication visible!
MIB-2_RQ_DPO_227	**2.1.2.3.1.3 RQ_DPO_User_Programmable-Cluster_Instrument_FPK behavior as MQB cluster**
MIB-2_RQ_DPO_817	The phone context in the Cluster Instrument FPK shall have the same behavior as MQB cluster.
MIB-2_RQ_DPO_582	No contact photos are visible
MIB-2_RQ_DPO_244	**2.1.2.3.1.4 RQ_DPO_Call_Option_List**
MIB-2_RQ_DPO_245	There shall be situation-dependent functions in the Call Option List to handle a call.
MIB-2_RQ_DPO_818	With Up- And Down-buttons of the MFL, it shall be possible to toggle through the list.
MIB-2_RQ_DPO_819	Press on OK-button of the MFL shall activate the visible option
MIB-2_RQ_DPO_248	Incoming call: Answer, Reject, Ignor shall be availablea
MIB-2_RQ_DPO_249	Outgoing call: Cancel shall be available
MIB-2_RQ_DPO_250	Call is ongoing: Hang up, Mic. off (Mute) shall be available
MIB-2_RQ_DPO_251	Respond to a second call: Answere, Reject shall be available
MIB-2_RQ_DPO_252	Two ongoing calls (one is active the other one is on hold): Mic. off (Mute), Hang up shall be available
MIB-2_RQ_DPO_253	Conference call: Mic. off (Mute), Hang up shall be available
MIB-2_RQ_DPO_243	**2.1.2.3.2 FEAT_DPO_Instrument_Cluster_Audio_Context**
MIB-2_RQ_DPO_269	The string "Apple CarPlay" shall be displayed while CarPlay is the active Media Source
MIB-2_RQ_DPO_1274	**2.1.2.3.2.1 RQ_DPO_Instrument_Cluster_Audio_Context**
MIB-2_RQ_DPO_583	The string "Apple CarPlay" shall be displayed while CarPlay is the active Media Source. (language independent)
MIB-2_RQ_DPO_1463	USB connection method icon shall be displayed while CarPlay is the active Media Source.
MIB-2_RQ_DPO_268	No metadata from CarPlay will be visible on the Instrument cluster.
MIB-2_RQ_DPO_270	**2.1.2.3.3 FEAT_DPO_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_DPO_271	At the cluster screen the compass shall be visible in Navigation context while CarPlay route guidance is running. (This does not apply to freely programmable instrument clusters)
MIB-2_RQ_DPO_1197	**2.1.2.3.3.1 RQ_DPO_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_DPO_272	There are no turn by turn info visible in the instrument cluster navigation context.
MIB-2_RQ_DPO_273	In systems without navigation functionality, there is no navigation context visible in the instrument cluster.
MIB-2_RQ_DPO_274	In case of having a fully programmable cluster instrument (FPK), the native Nav module maps are not shown on the FPK while there is a route guidance active on the CarPlay device.
MIB-2_RQ_DPO_275	The FPK in combination with the system shall show a string "Smartphone Navigation active" in the navigation context while CarPlay route guidance is running. Translated in all languages which are supported by MIB
MIB-2_RQ_DPO_276	The FPK in combination with the system shall show a compass while CarPlay route guidance is running.
MIB-2_RQ_DPO_1275	At the cluster screen of None-FPKs the compass shall be visible in Navigation context while CarPlay route guidance is running.
MIB-2_RQ_DPO_282	**2.1.2.4 Microphone**
MIB-2_RQ_DPO_828	**2.1.2.4.1 FEAT_DPO_Microphone**
MIB-2_RQ_DPO_283	The microphone in the cabin shall provide the voice input to the CarPlay device for Siri, Phone and Facetime functionality.
MIB-2_RQ_DPO_1198	**2.1.2.4.1.1 RQ_DPO_Microphone**
MIB-2_RQ_DPO_1199	The microphone in the cabin shall provide the voice input to the CarPlay device for Siri, Phone and Facetime functionality.
MIB-2_RQ_DPO_220	**2.1.2.5 ABT Hard Keys**
MIB-2_RQ_DPO_284	ABT HKs are always linked with the native HMI contexts, even if CarPlay is displayed on the MIB screen. An exception is the HK Voice.
MIB-2_RQ_DPO_1276	**2.1.2.5.1 FEAT_DPO_ABT_Hard_Keys**
MIB-2_RQ_DPO_1277	There might be a user programmable HK (former Voice button), which the CarPlay (AppConnect) functionality can be assigned to.
MIB-2_RQ_DPO_1278	**2.1.2.5.1.1 RQ_DPO_ABT_Hard_Keys**
MIB-2_RQ_DPO_1279	The voice HK shall have the same functionality as the MFL PTT button.
MIB-2_RQ_DPO_1281	This also applies to the Joker HK in case it has been assigned the Voice functionality.
MIB-2_RQ_DPO_1280	In case the Joker key has been assigned the AppConnect functionality, it shall link to the AppConnect context in the ABT.
MIB-2_RQ_DPO_287	**2.1.3 Audio**
MIB-2_RQ_DPO_289	**2.1.3.1 Routing Architecture**
MIB-2_RQ_DPO_291	 CarPlay Audio Routing Architecture
MIB-2_RQ_DPO_292	**2.1.3.1.1 FEAT_DPO_Main_Audio**
MIB-2_RQ_DPO_1200	The system shall support Main Audio as described in the Apple CarPlay specification [4]
MIB-2_RQ_DPO_872	**2.1.3.1.1.1 RQ_DPO_Main_Audio**
MIB-2_RQ_DPO_297	CarPlay Main Audio sources shall be: 1.Media, audio of music player and music streaming apps 2.Phone, audio of phone 3.Siri, audio of voice control 4.Facetime (audio only), audio of VoIP, 5. Ringtone audio
MIB-2_RQ_DPO_295	There are also other audio sources (media, phone, SDS of native HMI) connected to the audio channels that CarPlay Main Audio is connected to.
MIB-2_RQ_DPO_296	Only one audio source, of all audio sources which are connected to ENT Ch.1, ANN Ch.1 and ANN Ch.3, shall be active at the same time.
MIB-2_RQ_DPO_293	**2.1.3.1.2 FEAT_Alternate_Audio**
MIB-2_RQ_DPO_1201	The system shall support Alternate Audio as described in the Apple CarPlay specification [4]
MIB-2_RQ_DPO_873	**2.1.3.1.2.1 RQ_DPO_Alternate_Audio**
MIB-2_RQ_DPO_300	CarPlay Alternate Audio sources shall be: 1.UI Sound 2.Nav Guidance, audio of route guidance instructions 3.Alerts
MIB-2_RQ_DPO_1341	In addition to the CarPlay Alternate Audio sources UI Sound, Nav Guidance (audio of route guidance instructions) or Alerts an Audio Lowering (Ducking) shall be supported by the system.
MIB-2_RQ_DPO_299	There are also other audio sources (UI Sound, Nav Guidance, Alerts,… of native HMI) connected to this MIB audio channel. (ANN Ch. 2)
MIB-2_RQ_DPO_298	Only one audio source, of all audio sources which are connected to ANN Ch. 2, shall be active at the same time.
MIB-2_RQ_DPO_294	**2.1.3.1.3 FEAT_DPO_Audio_Input**
MIB-2_RQ_DPO_874	The system shall send audio signal from the microphone in the car's cabine to the CarPlay device.
MIB-2_RQ_DPO_875	**2.1.3.1.3.1 RQ_DPO_Signal_Processing**
MIB-2_RQ_DPO_1282	The system shall send audio signal from the microphone in the car's cabine to the CarPlay device.
MIB-2_RQ_DPO_301	Before the signal from the microphone is transferred to the CarPlay device, it shall be enhanced by echo cancellation and noise reduction as described in Apple's specification: [4] chapter "Audio". Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_302	Artifacts, Dropouts and Clipping on the processed microphone signal shall be avoided.
MIB-2_RQ_DPO_303	Loudness Peak of the microphone signal shall be no more than -15dBFS RMS in case of SIRI
MIB-2_RQ_DPO_304	SNR of the microphone signal shall be >12dB in case of SIRI/ Reverberation: <200ms (In any driving conditions). Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_305	For telephony the system shall support microphone signal sample rates of 8kHz and 16kHz.
MIB-2_RQ_DPO_306	For Siri and Facetime the system shall support a sample rate of the microphone signal of 24kHz
MIB-2_RQ_DPO_308	**2.1.3.1.4 FEAT_DPO_Audio_Connection_Labels**
MIB-2_RQ_DPO_876	There shall be different new Audio Connection Labels
MIB-2_RQ_DPO_309	**2.1.3.1.4.1 RQ_DPO_New_Audio_Connection_Labels**

MIB-2_RQ_DPO_310	CL_ENT_AMP_DIO_MEDIA -> DSI ID 160 shall be used for CarPlay Main Audio Media.
MIB-2_RQ_DPO_311	CL_ANN_AMP_DIO_PHONE -> DSI ID 151 shall be used for CarPlay Main Audio Phone or Facetime.
MIB-2_RQ_DPO_1464	CL_ANN_AMP_DIO_RINGTONE -> DSI ID 165 shall be used for CarPlay call ringtones.
MIB-2_RQ_DPO_312	CL_ANN_AMP_DIO_SIRI -> DSI ID 152 shall be used for CarPlay Main Audio SIRI Output.
MIB-2_RQ_DPO_313	CL_SYS_AMP_DIO_SIRI_SPEECH_INPUT -> DSI ID 153 shall be used to send the microphone signal to the CarPlay device in case of SIRI, Facetime or CarPlay phone activity.
MIB-2_RQ_DPO_314	CL_ANN_AMP_DIO_ANNOUNCEMENT -> DSI ID 154 shall be used for CarPlay Alternate Audio without Lowering (Ducking).
MIB-2_RQ_DPO_315	Regarding Lowering: (11) CL_ANN_AMP_DIO_LOWERING -> DSI ID 155 shall be used for CarPlay Alternate Audio with Lowering (Ducking).
MIB-2_RQ_DPO_316	**2.1.3.1.5 FEAT_Audio_Duck_Service**
MIB-2_RQ_DPO_317	New ConnectionLabels for Lowering (DSI ID 155) shall be implemented
MIB-2_RQ_DPO_1383	New ConnectionLabels for Lowering shall be implemented
MIB-2_RQ_DPO_877	**2.1.3.1.5.1 RQ_DPO_Lowering_Connection_Labels**
MIB-2_RQ_DPO_319	In case of Alternate Audio activity with an additional request for ducking, the system shall use requestConnection CL_ANN_AMP_DIO_LOWERING -> DSI ID 155.
MIB-2_RQ_DPO_318	The system shall use the existing mechanism for navigation attenuation for CarPlay ducking.
MIB-2_RQ_DPO_320	No separate „SetDuck“ Service necessary
MIB-2_RQ_DPO_322	**2.1.3.1.6 FEAT_DPO_Static_Audio_Connections**
MIB-2_RQ_DPO_1343	The system shall support the request and handling of an alternate audio connection from the CarPlay device.
MIB-2_RQ_DPO_323	**2.1.3.1.6.1 RQ_DPO_Support_of_Alternate_Audio**
MIB-2_RQ_DPO_878	The system shall support the request and handling of an alternate audio connection from the CarPlay device which may stay active as long as the CarPlay device is connected.
MIB-2_RQ_DPO_334	CarPlay Audio Connection(s) shall be released from HMI by Disconnect of Device
MIB-2_RQ_DPO_335	**2.1.3.1.7 FEAT_DPO_Audio_Latency**
MIB-2_RQ_DPO_881	The system shall meet the timing requirements for audio latency and startup as specified in [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_882	**2.1.3.1.7.1 RQ_VDO_General_Audio_Latency**
MIB-2_RQ_DPO_336	Audio-StartupTime shall be: < 200ms (Time for accessory to be ready to handle all received events from Device)
MIB-2_RQ_DPO_337	Telephony Audio Round-Trip (Car's microphone -> car's loudspeaker) delay shall be < 275ms (recommended < 200ms)
MIB-2_RQ_DPO_338	**2.1.3.1.7.2 RQ_DPO_Main_Audio_Siri_Latency**
MIB-2_RQ_DPO_341	The audio latency from the reception of sound at car's microphone and the reception by the CarPlay Communication Plug-In of a buffer or LPCM audio representing that sound shall be < 60ms. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_342	Latency from the receipt of a LPCM audio by the car from the CarPlay Communication Plug-In to the time it is emitted by the car's speaker shall be < 35ms. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_339	**2.1.3.1.7.3 RQ_DPO_Alternate_Audio**
MIB-2_RQ_DPO_343	Latency from the reception of a LPCM audio by the car from the CarPlay Communication Plug-In to the time it is emitted by the car's speaker shall be < 35ms: Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_340	**2.1.3.1.7.4 RQ_DPO_Audio_Ducking_Timing**
MIB-2_RQ_DPO_1202	Audio Ducking: Time between duckAudio command received by MIB to start ramping shall be < 75ms (recommended 10-20ms): Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_344	**2.1.3.1.8 FEAT_DPO_Streaming_Requirements**
MIB-2_RQ_DPO_879	The system shall fulfill the Streaming Requirements defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_880	**2.1.3.1.8.1 RQ_DPO_ Streaming_Requiments**
MIB-2_RQ_DPO_345	The system shall fulfill the Streaming Requiements defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]: Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_353	**2.1.4 CarPlay relevant functions in native HMI**
MIB-2_RQ_DPO_354	**2.1.4.1 FEAT_DPO_Blocking_native_HMI_Phone_functionality**
MIB-2_RQ_DPO_856	While a CarPlay phone call is ongoing, it shall not be possible to start a call via phone function of native HMI.
MIB-2_RQ_DPO_1370	While a CarPlay session is active, it shall not be possible to start a call via phone function of native HMI.
MIB-2_RQ_DPO_356	**2.1.4.1.1 RQ_DPO_Phone_Function_Blocking**
MIB-2_RQ_DPO_357	The native HMI phone context shall be blocked as long as a CarPlay phone call is ongoing. (call state non-idle)
MIB-2_RQ_DPO_1371	As long as a CarPlay session is active there shall be a string in the native HMI phone context which informs to disconnect Apple CarPlay first to use native HMI phone functionality.
MIB-2_RQ_DPO_358	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).
MIB-2_RQ_DPO_1372	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay session is active.
MIB-2_RQ_DPO_359	Sub menus related to phone functionality shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle) just like they are during active native phone calls.
MIB-2_RQ_DPO_1373	Sub menus related to phone functionality shall be blocked as long as a CarPlay session is active just like they are during active native phone calls.
MIB-2_RQ_DPO_360	**2.1.4.2 FEAT_DPO_ABT_Phone_context_CarPlay**
MIB-2_RQ_DPO_857	There shall be info about the connected CarPlay device and a link to the CarPlay phone context in native ABT phone context
MIB-2_RQ_DPO_858	**2.1.4.2.1 RQ_DPO_Phone_Context**
MIB-2_RQ_DPO_361	If there is only a CarPlay phone connected (no BT phone or SIM): in native HMI Phone context the information shall be visible that a CarPlay phone is present.
MIB-2_RQ_DPO_1374	In native HMI Phone context the information shall be visible that a CarPlay phone is present.
MIB-2_RQ_DPO_1379	In native HMI Phone context the information shall be visible that there is no BT phone functionality while an active CarPlay session.
MIB-2_RQ_DPO_362	In native HMI Phone context there shall be no text like: "No phone connected" while CarPlay is running!
MIB-2_RQ_DPO_363	There shall be no phone functionality on the CarPlay phone via native HMI Phone context!
MIB-2_RQ_DPO_364	**2.1.4.3 FEAT_DPO_Link_to_CarPlay_Phone**
MIB-2_RQ_DPO_365	When a CarPlay session is active, there shall be a direct link (SoftKey) in the MIB phone context to switch over to the CarPlay phone context.
MIB-2_RQ_DPO_860	**2.1.4.3.1 RQ_DPO_SoftKey_CarPlay_Phone_Context**
MIB-2_RQ_DPO_1283	When a CarPlay session is active, there shall be a direct link (SoftKey) in the MIB phone context to switch over to the CarPlay phone context.
MIB-2_RQ_DPO_366	If no CarPlay session is active, the direct link SK to the CarPlay phone context shall not be present.
MIB-2_RQ_DPO_367	During an ongoing native HMI phone call, the direct link SK to the CarPlay phone context shall be greyed out and shall have no functionality
MIB-2_RQ_DPO_368	This shortcut shall only be available in the case of phone context but such direct linkage will not be offered in case of music or navigation.
MIB-2_RQ_DPO_369	**2.1.4.4 FEAT_DPO_Bluetooth_block_CarPlay phone call**
MIB-2_RQ_DPO_861	During an ongoing CarPlay phone call it shall not be possible to pair, connect or disconnect any bluetooth device
MIB-2_RQ_DPO_1375	During an active CarPlay session it shall not be possible to pair, connect or disconnect any bluetooth device
MIB-2_RQ_DPO_862	**2.1.4.4.1 RQ_DPO_Block_BT_connection_establishment**
MIB-2_RQ_DPO_371	During an ongoing CarPlay call the pairing of Bluetooth devices shall be blocked.
MIB-2_RQ_DPO_1376	During an active CarPlay session the pairing of Bluetooth devices shall be blocked.
MIB-2_RQ_DPO_1284	During an ongoing CarPlay call incoming connections of Bluetooth devices shall be blocked.
MIB-2_RQ_DPO_1378	During an active CarPlay session incoming connections of Bluetooth devices shall be blocked.
MIB-2_RQ_DPO_370	During an ongoing CarPlay call Bluetooth settings in Global and Media settings shall be grayed out and shall not be accessible
MIB-2_RQ_DPO_1377	During an active CarPlay session Bluetooth settings in Global and Media settings shall be grayed out and shall not be accessible
MIB-2_RQ_DPO_372	**2.1.4.5 FEAT_DPO_Mini_Media_Player**
MIB-2_RQ_DPO_863	The mini Media Player in native HMI Navigation and Car context shall have limited functionality when CarPlay device is the active media source
MIB-2_RQ_DPO_373	**2.1.4.5.1 RQ_DPO_Mini_Media_Player_Functions**
MIB-2_RQ_DPO_374	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.
MIB-2_RQ_DPO_375	In the mini MediaPlayer in native HMI no MetaData shall be visible when CarPlay is the active audio source.
MIB-2_RQ_DPO_376	In the mini MediaPlayer in native HMI no control buttons shall be visible when CarPlay is the active audio source.
MIB-2_RQ_DPO_377	**2.1.4.6 FEAT_DPO_native_HMI_Popups**
MIB-2_RQ_DPO_864	When native HMI popups are visible while CarPlay screen is active, the background shall be the same CarPlay context but 100% dimmed as per Apple requirements.
MIB-2_RQ_DPO_865	**2.1.4.6.1 RQ_DPO_native_HMI_Popups**
MIB-2_RQ_DPO_378	Popups of the native HMI shall be visible even if CarPlay is the currently active HMI context. If the popup contains buttons, the background shall be the same CarPlay context but 100% dimmed as per apple requirements. Exceptions to this rule shall be agreed between HMI and function owners during time of development.
MIB-2_RQ_DPO_379	**2.1.4.7 FEAT_DPO_Volume_Bar**
MIB-2_RQ_DPO_870	Native HMI volume bar shall be visible while volume changes of CarPlay audio sources
MIB-2_RQ_DPO_871	**2.1.4.7.1 RQ_DPO_Volume_Bar**
MIB-2_RQ_DPO_380	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.
MIB-2_RQ_DPO_383	**2.1.5 FEAT_DPO_Siri**
MIB-2_RQ_DPO_805	The system shall fullfill the requirements for Siri via USB speech recognition audio as specified in the MFi Accessory Interface Specification with Apple CarPlay [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_387	Siri controls the CarPlay functions only. It has no access to the MIB functions.
MIB-2_RQ_DPO_388	SIRI is not a replacement of the native SDS. By a short press on PTT button it is still possible to start the native SDS.
MIB-2_RQ_DPO_384	**2.1.5.1 RQ_DPO_Siri_Activation_Deactivation**
MIB-2_RQ_DPO_389	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).
MIB-2_RQ_DPO_390	Long press on the home button in the CarPlay context may start Siri
MIB-2_RQ_DPO_391	Long press on the home button of the connected CarPlay device may start Siri
MIB-2_RQ_DPO_386	The system shall start a Siri prewarm when any of the car's PTT buttons is pressed as specified in [4].
MIB-2_RQ_DPO_1195	While the Siri session is active, all PTT button events (press and release) shall be sent to the CarPlay device (raw events without interpretation of the button events). Note: They shall not be interpreted by the internal SDS.
MIB-2_RQ_DPO_392	**2.1.6 FEAT_DPO_Bluetooth**
MIB-2_RQ_DPO_854	A device, which is connected as CarPlay device shall not be connected as HFP, A2DP, AVCRP at the same time
MIB-2_RQ_DPO_1367	A device, which is connected as CarPlay device shall not be connected as BT device at the same time
MIB-2_RQ_DPO_1348	During an active CarPlay session, no other device shall be connected via Bluetooth.

MIB-2_RQ_DPO_855	**2.1.6.1 RQ_DPO_Bluetooth_Handling_of_CarPlay_Device**
MIB-2_RQ_DPO_394	The system shall perform HFP, A2DP, AVCRP disconnection to the CarPlay device, when BT disconnect is requested by the CarPlay device.
MIB-2_RQ_DPO_1361	The system shall perform BT disconnection to the CarPlay device, when BT disconnect is requested by the CarPlay device.
MIB-2_RQ_DPO_395	Reconnect of HFP, A2DP, AVCRP to the connected CarPlay device shall be blocked by the system.
MIB-2_RQ_DPO_1366	Reconnect of BT to the connected CarPlay device shall be blocked by the system.
MIB-2_RQ_DPO_398	An info popup shall inform that it is not possible to connect a CarPlay device via Bluetooth profiles HFP, A2DP, AVRCP while it is in an active CarPlay session with the system.
MIB-2_RQ_DPO_1365	An info popup shall inform that it is not possible to connect a CarPlay device via Bluetooth while it is in an active CarPlay session with the system.
MIB-2_RQ_DPO_396	This BT blocking affects only the CarPlay device. It is still possible to connect multiple other BT devices to the system while CarPlay is running.
MIB-2_RQ_DPO_1349	**2.1.6.2 RQ_DPO_Bluetooth_Handling_of_other_Devices**
MIB-2_RQ_DPO_1350	The system shall disconnect any other Bluetooth device upon establishment of a CarPlay session.
MIB-2_RQ_DPO_1351	The disconnect of other Bluetooth devices upon establishment of a CarPlay session shall happen after the USB role switch was succesfully executed.
MIB-2_RQ_DPO_1352	A "Voice & Data" connection using a SIM-card and the internal phone module shall fall back to "Data only" upon establishment of a CarPlay session and the user shall be informed about the mode change.
MIB-2_RQ_DPO_1353	The system shall prevent connection of Bluetooth devices while a CarPlay session is active.
MIB-2_RQ_DPO_1354	During an active CarPlay session, the HMI options for Bluetooth connection and pairing shall be deactivated in a way so that the user understands that the function is currently not available.
MIB-2_RQ_DPO_1357	During an active CarPlay session, it shall not be possible to change the SIM mode to "Voice & Data".aa
MIB-2_RQ_DPO_1355	If the CarPlay session is ended the system shall reconnect other Bluetooth devices like on system startup.
MIB-2_RQ_DPO_1356	If the CarPlay session is ended and the system used an internal SIM card in "Voice & Data" mode before the CarPlay session, the SIM mode remains in "Data only" state. It can manually be changed by the customer.
MIB-2_RQ_DPO_399	**2.1.7 FEAT_DPO_Telephony**
MIB-2_RQ_DPO_852	native HMI call handling functionality shall not collide with CarPlay phone functionality and vice versa
MIB-2_RQ_DPO_853	**2.1.7.1 RQ_DPO_Telephony**
MIB-2_RQ_DPO_400	In addition to the CarPlay phone, up to two additional phones can be connected to MIB as well.
MIB-2_RQ_DPO_1346	Other phone connections via Bluetooth or the internal phone module will not be possible during an active CarPlay session.
MIB-2_RQ_DPO_401	While a phone call is ongoing on a BT connected phone or internal phone module it shall not be possible to start a CarPlay phone call and vice versa.
MIB-2_RQ_DPO_1465	While a phone call is ongoing on a BT connected phone or internal phone module it shall not be possible to start a CarPlay session.
MIB-2_RQ_DPO_1466	After a phone call on a BT connected phone or internal phone module is ended the CarPlay session is started by HMI.
MIB-2_RQ_DPO_1334	An incoming phone call on a BT connected phone or internal phone module during an ongoing CarPlay phone call shall be shown by a popup which shall allow the user to decline the incomming call or to replace the CarPlay call with the incomming call. Note: Cluster instrument phone context is still blocked by CarPlay_Cluster_Phone_Screen
MIB-2_RQ_DPO_1339	If an active CarPlay phone call is ended while there is an incomming phone call on a BT connected phone or internal phone module the incomming phone call shall be treated with the usual handling for incomming BT or internal phone module phone calls. Note: After end of CarPlay phone call, cluster instrument phone context shows current state of the BT or internal phone module phone call
MIB-2_RQ_DPO_1286	The call state of calls on an external phone module, internal phone module or on a Bluetooth connected phone shall be communicated to the CarPlay device by the system.
MIB-2_RQ_DPO_406	For more details see Apple's specification: MFi Accessory Interface Specification with Apple CarPlay chapter "Modes" [4]
MIB-2_RQ_DPO_1467	**2.1.7.2 RQ_DPO_OCU**
MIB-2_RQ_DPO_1347	The call state of calls on an external phone module shall be communicated to the CarPlay device by the system.
MIB-2_RQ_DPO_1468	If the respective audio connection for an OCU Call (Info-Call, Road Side Assistance, Manual Emergency Call, E-Call or ACN) becomes active during an incoming or outgoing or ongoing CarPlay-Call, the present CarPlay-Call shall be terminated by VW HMI.
MIB-2_RQ_DPO_1469	The system shall block CarPlay session start while an OCU-Call is outgoing, incoming or ongoing.
MIB-2_RQ_DPO_1285	The system shall end the CarPlay session upon initiation of an OCU-ACN-Call (Automatic-Crash-Notification Call).
MIB-2_RQ_DPO_1381	The system shall end the CarPlay session upon initiation of a legal OCU-MEC (Manual-Emergency- Call).
MIB-2_RQ_DPO_1382	The system shall restart the CarPlay session after the end of an OCU-ACN-Call (Automatic-Crash-Notification Call) if the CarPlay session was active before the OCU-ACN-Call.
MIB-2_RQ_DPO_1470	The system shall restart the CarPlay session after the end of a legal OCU-MEC (Manual-Emergency- Call) if the CarPlay session was active before the legal OCU-MEC.
MIB-2_RQ_DPO_1471	Incoming CarPlay calls can happen while there is an ICL, privat MEC or RSA call ongoing or outgoing on the OCU.
MIB-2_RQ_DPO_1472	The system shall end the CarPlay session upon an incoming CarPlay call while an OCU-CALL is outgoing or ongoing.
MIB-2_RQ_DPO_1473	The CarPlay session shall be started again if a present OCU-Call disappears and the CarPlay session has been ended caused by combination of incoming CarPlay call during active OCU call.
MIB-2_RQ_DPO_1474	During an active OCU-Call it shall not be possible to start a CarPlay session.
MIB-2_RQ_DPO_1475	During an ongoing or outgoing OCU call, an incomming CarPlay call shall be visible at the instrument cluster and the display of the MainUnit.
MIB-2_RQ_DPO_1476	During an ongoing or outgoing OCU call, the ring tone of an incomming CarPlay call shall not be audible via car speaker.
MIB-2_RQ_DPO_1477	If the OCU call is ended while a CarPlay call is still incoming / ringing, the ring tone of the incomming CarPlay call shall be audible via car speaker.
MIB-2_RQ_DPO_407	**2.1.8 FEAT_DPO_Navigation**
MIB-2_RQ_DPO_850	CarPlay route guidance and native HMI route guidance shall not be active at the same time
MIB-2_RQ_DPO_851	**2.1.8.1 RQ_DPO_ Route_Guidance**
MIB-2_RQ_DPO_409	Starting route guidance via native HMI while having active route guidance in CarPlay shall cause the CarPlay route guidance to stop and vice versa.
MIB-2_RQ_DPO_1287	Connecting a CarPlay device with an active route guidance shall end an active route guidance that is currently running in the native HMI.
MIB-2_RQ_DPO_408	It is not possible to run CarPlay route guidance and native HMI route guidance at the same time.
MIB-2_RQ_DPO_410	CarPlay navigation information is only visible at the car's main screen, but not at the cluster or any second screen.
MIB-2_RQ_DPO_411	PSD (Predictive Route Data) are available in the car while CarPlay route guidance is active but with same quality as inactive MIB route guidance.
MIB-2_RQ_DPO_412	**2.1.9 FEAT_DPO_Media**
MIB-2_RQ_DPO_413	CarPlay requires iAP2, which is not backward compatible to iAP1. While a CarPlay session is ongoing, iAP2 is active and iAP1 is deactivated for the USB port where the CarPlay device is connected. As a result of this behavior, the CarPlay device is no longer visible as Media device in Media context and cannot be controlled by the native HMI.
MIB-2_RQ_DPO_414	Another CarPlay device, which is connected at the same time to the other USB port, is not affected by switching to iAP2 and is still available as Media Device in native HMI Media context.
MIB-2_RQ_DPO_810	A CarPlay device with an ongoing CarPlay session is not selectable as Media Device in native HMI Media context
MIB-2_RQ_DPO_1289	**2.1.9.1 RQ_DPO_Media**
MIB-2_RQ_DPO_1288	A CarPlay device with an ongoing CarPlay session shall not be selectable as Media Device in native HMI Media context
MIB-2_RQ_DPO_419	**2.1.10 FEAT_DPO_Rearview_Camera**
MIB-2_RQ_DPO_848	While in CarPlay context, the Rearview Camera pop-up shall always be visible when activated
MIB-2_RQ_DPO_849	**2.1.10.1 RQ_DPO_Rearview_Camera**
MIB-2_RQ_DPO_421	While in CarPlay context, the Rearview Camera pop-up shall always be visible when activated
MIB-2_RQ_DPO_422	This behavior is independent from the resource constraint enum values for the screen, set by CarPlay. See [4] for details.
MIB-2_RQ_DPO_423	**2.1.11 iTunes Tagging**
MIB-2_RQ_DPO_424	iTunes Tagging enables consumers to "tag" songs that they hear over SiriusXM radio for subsequent preview and purchase on iTunes. In MIB this feature is realized via iAP1.Therefore this function will not work while CarPlay is running.
MIB-2_RQ_DPO_427	**2.1.12 FEAT_DPO_Hardware_Requirements**
MIB-2_RQ_DPO_846	The system shall fulfill the hardware requirements for CarPlay defined by Apple in the MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_847	**2.1.12.1 RQ_DPO_Hardware_Requirements**
MIB-2_RQ_DPO_428	The system shall be able to provide a minimum video resolution of 800 x 480, 18 bits of RGB color per pixel, 30 Hz refresh.
MIB-2_RQ_DPO_429	The system shall use a hardware H264 video decoder
MIB-2_RQ_DPO_430	The system shall support uncompressed LPCM audio as specified in [4].
MIB-2_RQ_DPO_431	The system's USB port(s) shall at least support Hi-Speed USB.
MIB-2_RQ_DPO_1290	At least one of the system's USB ports shall be able to switch over to USB Device Mode (USB Role Switch) and shall be able to provide power in both modes.
MIB-2_RQ_DPO_432	The system shall support a touchscreen, whose touch events shall be sampled at the same rate as the refresh rate of the video stream on the integrated display and a combination of knobs and buttons.
MIB-2_RQ_DPO_435	To switch over to CarPlay, the system shall provide one of the following: 1. A physical button 2.A soft button in a top-level menu 3. A menu item in a top-level menu
MIB-2_RQ_DPO_440	**2.1.13 FEAT_DPO_Connection**
MIB-2_RQ_DPO_845	It shall be possible to physically connect a CarPlay device with the system and to run a CarPlay session
MIB-2_RQ_DPO_443	Connecting a CarPlay compatible CarPlay device to the system shall automatically start a CarPlay session if Preference_Technology in Devices_Preference_Status_List is set to CarPlay for this device
MIB-2_RQ_DPO_444	If Siri is switched off or is not available on the CarPlay device, the CarPlay functionality is not accessible
MIB-2_RQ_DPO_442	**2.1.13.1 RQ_DPO_Physical_connections**
MIB-2_RQ_DPO_445	Connection via Apple Lightning ™ cable to Standard USB-A shall be possible
MIB-2_RQ_DPO_592	The HMI main screen shall not switch to CarPlay context automatically upon re-connection of a CarPlay device, unless the device explicitly requests the screen.
MIB-2_RQ_DPO_447	**2.1.13.2 RQ_DPO_USB_Role_Switch**
MIB-2_RQ_DPO_448	USB Role Switch can only be done at an USB OTG (On-the-go) connector.
MIB-2_RQ_DPO_449	When a CarPlay session is requested the system shall switch from USB Host mode to USB Device mode for the port, the CarPlay device is connected to. (Note: Conversely the CarPlay device shall switch from USB Device mode to USB Host mode.)
MIB-2_RQ_DPO_450	For more details see Apple's specification: MFi Accessory Interface Specification with Apple CarPlay chapter: "USB Role Switch Usage" [4]
MIB-2_RQ_DPO_451	**2.1.13.3 RQ_DPO_Apple_ Authentication_Coprocessor**
MIB-2_RQ_DPO_452	A CarPlay device verifies whether a third-party accessory (MIB) attached to it is authorized for use with the CarPlay device by using an authentication challenge to the accessory. The system must response to the CarPlay device's challenge, and it can do so only with the assistance of an Apple Authentication Coprocessor (CP) chip located in the USB port/hub of the MIB. Conversely, the MIB can use its CP chip to authenticate the CarPlay device.
MIB-2_RQ_DPO_593	The system shall have an Apple Authentication Coprocessor.
MIB-2_RQ_DPO_453	**2.1.14 FEAT_DPO_Protocols_Interfaces**
MIB-2_RQ_DPO_1203	Different CarPlay related protocols and interfaces shall be supported
MIB-2_RQ_DPO_454	**2.1.14.1 RQ_DPO_iAP2_Support**
MIB-2_RQ_DPO_458	iAP2 shall be supported as described in: MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_455	CarPlay requires iAP2, which is a complete replacement of iAP1 and is not backward compatible!
MIB-2_RQ_DPO_456	When the USB Role Switch is done, the system shall proceed to establish an authenticated iAP2 Session with the connected CarPlay device.
MIB-2_RQ_DPO_457	A mix mode or switching between iAP1 and iAP2 within a CarPlay session is not possible!
MIB-2_RQ_DPO_459	**2.1.14.2 RQ_DPO_DSI**
MIB-2_RQ_DPO_461	The system shall support the CarPlay DSI.
MIB-2_RQ_DPO_460	The system shall support the SmartphoneIntegration DSI.
MIB-2_RQ_DPO_462	**2.1.15 FEAT_DPO_Resource_Management**
MIB-2_RQ_DPO_463	Resource Management of Screen and Audio is handled by the CarPlay device, as described in Apple MFi Accessory Interface Specification with Apple CarPlay specification [4]

MIB-2_RQ_DPO_807	The system shall handle Setup and Control as specified by Apple MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_806	The system shall handle Resource Management and Modes as specified by Apple MFi Accessory Interface Specification with Apple CarPlay [4]
MIB-2_RQ_DPO_1292	**2.1.15.1 RQ_DPO_Resource_Management**
MIB-2_RQ_DPO_1291	Resource Management of Screen and Audio is handled by the CarPlay device, as described in Apple MFi Accessory Interface Specification with Apple CarPlay specification [4] Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_1293	The system shall handle Setup and Control as specified by Apple MFi Accessory Interface Specification with Apple CarPlay [4] Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_1294	The system shall handle Resource Management and Modes as specified by Apple MFi Accessory Interface Specification with Apple CarPlay [4] Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_DPO_464	**2.1.15.2 RQ_DPO_Deviation_Managment**
MIB-2_RQ_DPO_843	In some situations it might happen, that the native HMI cannot wait until CarPlay response to resource request before taking a resource.
MIB-2_RQ_DPO_595	In case native HMI takes a resource before CarPlay device sends UpdateMode, the system shall compare current real mode with UpdateMode from CarPlay after reception.
MIB-2_RQ_DPO_596	If there are deviations between current real mode and CarPlay UpdateMode, there shall be a Deviation Management on the native HMI side to handle this.
MIB-2_RQ_DPO_597	Deviation Management shall ensure that current real mode and CarPlay UpdateMode get synchronous again.
MIB-2_RQ_DPO_1295	The concept for deviation management has to be agreed in a separate document. [7]
MIB-2_RQ_DPO_468	**2.1.16 FEAT_DPO_Diagnosis**
MIB-2_RQ_DPO_469	The system shall support a diagnosis-switch which activates/deactivates the CarPlay functionality.
MIB-2_RQ_DPO_1297	**2.1.16.1 RQ_DPO_Diagnosis_Switch**
MIB-2_RQ_DPO_1296	The system shall support a diagnosis-switch which activates/deactivates the CarPlay functionality.
MIB-2_RQ_DPO_470	**2.1.16.2 RQ_DPO_Diagnosis_Deactivated**
MIB-2_RQ_DPO_472	In case the CarPlay diagnosis switch is set to "deactivated" there shall be no CarPlay Logo in AppConnect welcome screen
MIB-2_RQ_DPO_473	In case the CarPlay diagnosis switch is set to "deactivated" it shall not be possible to start a CarPlay session on any device
MIB-2_RQ_DPO_474	In case the CarPlay diagnosis switch is set to "deactivated" any connected CarPlay device shall be identified as media device if supported by the system.
MIB-2_RQ_DPO_471	**2.1.16.3 RQ_DPO_Diagnosis_Activated**
MIB-2_RQ_DPO_475	In case the CarPlay diagnosis switch is set to "activated" the system shall display the CarPlay Logo in App Connect welcome screen
MIB-2_RQ_DPO_476	In case the CarPlay diagnosis switch is set to "activated" the system shall support CarPlay.
MIB-2_RQ_DPO_477	**2.1.17 FEAT_DPO_SWAP**
MIB-2_RQ_DPO_841	There shall be a SWAP protection for the function CarPlay
MIB-2_RQ_DPO_842	**2.1.17.1 RQ_DPO_SWAP_Function**
MIB-2_RQ_DPO_478	There shall be a SWAP protection for the function "Apple CarPlay" with the FS-ID 00060800
MIB-2_RQ_DPO_479	If the SWAP ID for CarPlay is not activated, a message shall be displayed when the customer tries to start CarPlay.
MIB-2_RQ_DPO_1298	In case the SWAP ID for CarPlay is not activated it shall not be possible to start a CarPlay session on any device
MIB-2_RQ_DPO_1299	In case the SWAP ID for CarPlay is not activated any connected CarPlay device shall be identified as media device if supported by the system.
MIB-2_RQ_DPO_480	**2.1.18 FEAT_DPO_GEM**
MIB-2_RQ_DPO_840	There shall be a CarPlay section in GEM.
MIB-2_RQ_DPO_481	**2.1.18.1 RQ_DPO_Functionalites_GEM**
MIB-2_RQ_DPO_1300	There shall be a CarPlay section in GEM.
MIB-2_RQ_DPO_486	Version of Apple Communication PlugIn shall be visible in GEM
MIB-2_RQ_DPO_487	Devices_Preference_Status_List shall be visible (display only, no editing functionality) in GEM
MIB-2_RQ_DPO_488	A function to activate and deactivate DDS control functionality shall be available in GEM
MIB-2_RQ_DPO_489	**2.1.19 FEAT_DPO_Lastmode**
MIB-2_RQ_DPO_835	MIB shall support lastmode for CarPlay devices
MIB-2_RQ_DPO_836	**2.1.19.1 RQ_DPO_Lastmode_CarPlay**
MIB-2_RQ_DPO_490	If CarPlay has been the last active HMI context, it shall be active again after a restart of the system, given that the CarPlay device is still connected and available as CarPlay device.
MIB-2_RQ_DPO_491	If CarPlay has been the last active HMI context, but the CarPlay device is no longer available after a restart of the system, native HMI shall start with AppConnect context.
MIB-2_RQ_DPO_492	If music is playing on the CarPlay device at the moment of establishing the CarPlay session, the system's audio source shall switch over to CarPlay device, independent from former lastmode.
MIB-2_RQ_DPO_494	**2.1.20 FEAT_DPO_Powerstate**
MIB-2_RQ_DPO_495	The system shall support all CarPlay functionality under the same power management conditions under which USB connections would be possible
MIB-2_RQ_DPO_1204	**2.1.20.1 RQ_DPO_Powerstate**
MIB-2_RQ_DPO_1301	The system shall support all CarPlay functionalities as long as the power state is MMI_ON. See PwrMgt-Spec (MIB-2_RQ_PWR_1323)
MIB-2_RQ_DPO_1337	The system shall support all CarPlay functionalities as long as the power state is MMI_ON_TEL . See PwrMgt-Spec (MIB-2_RQ_PWR_1323)
MIB-2_RQ_DPO_1336	CarPlay calls shall trigger transitions from and to MMI_ON_TEL just like calls on the internal phone module or a connected Bluetooth phone would
MIB-2_RQ_DPO_1380	The system shall support all CarPlay functionality under the same power management conditions under which USB connections would be possible
MIB-2_RQ_DPO_1205	Pwr-Statemachine shall set OnTel status as long as a CarPlay phone call is ongoing. See PwrMgt-Spec (MIB-2_RQ_PWR_1323)
MIB-2_RQ_DPO_496	**2.1.21 FEAT_DPO_Performance**
MIB-2_RQ_DPO_497	The system shall accomplish the performance requirements as specified in the MFi Accessory Interface Specification with Apple CarPlay [4]. Any deviations shall be discussed with VOLKSWAGEN and Apple for approval.
MIB-2_RQ_DPO_839	**2.1.21.1 RQ_DPO_Performance_CarPlay**
MIB-2_RQ_DPO_1303	The system shall accomplish the performance requirements as specified in the MFi Accessory Interface Specification with Apple CarPlay [4]. Any deviations shall be discussed with VOLKSWAGEN and Apple for approval.
MIB-2_RQ_DPO_506	**2.1.22 FEAT_DPO_Sensor_Data_and_Car_information**
MIB-2_RQ_DPO_507	The car shall provide CarPlay with GPS, gyro, day/night-mode, left/right-hand-drive and wheel speed data if available.
MIB-2_RQ_DPO_1304	**2.1.22.1 RQ_DPO_Left_Right_Hand_Drive**
MIB-2_RQ_DPO_1305	The car shall provide CarPlay whether it is left or right hand drive via Info Message Key: rightHandDrive.
MIB-2_RQ_DPO_1206	**2.1.22.2 RQ_DPO_Day_Night_Mode**
MIB-2_RQ_DPO_1207	The car shall provide the CarPlay device with the information about Day/Night-Mode.
MIB-2_RQ_DPO_512	**2.1.22.3 RQ_DPO_Sensor_Mode_(wheel speed, gyro):**
MIB-2_RQ_DPO_513	The system shall provide PASCD with an Update rate of 10Hz to the CarPlay device.
MIB-2_RQ_DPO_514	The system shall provide PAGCD (at least yaw rate) with an Update rate of 10Hz to the CarPlay device.
MIB-2_RQ_DPO_834	**2.1.22.4 RQ_DPO_GNSS_Mode_(GPS)**
MIB-2_RQ_DPO_510	The system shall provide GPRMC data with an update rate of 1Hz to the CarPlay device as described in [4].
MIB-2_RQ_DPO_509	The system shall provide GPGGA data with an update rate of 10Hz to the CarPlay device.
MIB-2_RQ_DPO_511	The system shall provide latitude and longitute data to the CarPlay device. Note: Latitude data from the car must fall within the range of -90 to +90 degrees and longitude data from the car must fall within the range of -180 to +180 degrees as described in [4]:
MIB-2_RQ_DPO_515	**2.1.22.5 DPO_EXLAP_via_iAP2**
MIB-2_RQ_DPO_833	The system shall provide EXLAP via iAP2 to VW CarPlay apps.
MIB-2_RQ_DPO_600	A module shall be created which manages the communication of the EXLAP server to iAP2 (CarPlay) / AOAP (Android Auto)
MIB-2_RQ_DPO_532	**2.1.23 FEAT_DPO_Customer_Update**
MIB-2_RQ_DPO_533	The customer shall be able to update the CarPlay software component of the MIB via the Customer Update Process.
MIB-2_RQ_DPO_1309	**2.1.23.1 RQ_DPO_Customer_Update**
MIB-2_RQ_DPO_1310	The customer shall be able to update the CarPlay software component of the MIB via the Customer Update Process.
MIB-2_RQ_DPO_629	**2.2 UseCases**
MIB-2_RQ_DPO_640	**2.2.1 FEAT_DPO_Connection**
MIB-2_RQ_DPO_816	It shall be possible to connect a CarPlay compatible CarPlay device and to start CarPlay
MIB-2_RQ_DPO_641	**2.2.1.1 Connect CarPlay device Preference_Technology is CarPlay**
MIB-2_RQ_DPO_1068	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device is in home screen, no playback is running User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: Phone context -> Shows link to CarPlay Phone. All other contexts -> No additional requirements Cluster screen: Phone Context -> Shows CarPlay as connected, if no Bluetooth HFP connection is active. All other contexts -> No additional requirements Audio: No additional requirements 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_650	**2.2.1.2 Connect CarPlay device to CarPlay incompatible USB port**
MIB-2_RQ_DPO_1069	If a CarPlay device is connected to a non-OTG capable USB-port it shall be available as a media device in native HMI media context.
MIB-2_RQ_DPO_1070	Precondition: - MIB powered up - no CarPlay device connected User action: 1. Connect CarPlay device to a CarPlay incompatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Device is connected as Media Device
MIB-2_RQ_DPO_651	**2.2.1.3 Connect CarPlay device while audio playback is running on it. MIB in entertainment source context**
MIB-2_RQ_DPO_1071	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device

MIB-2_RQ_DPO_1326	The system's HMI context shall switch to CarPlay, if CarPlay becomes the active media source and the previously active HMI context was Radio, Media or TV-Tuner.
MIB-2_RQ_DPO_1072	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - MIB is in Radio, TV-Tuner or Media context native HMI - CarPlay device, audio playback is running (Music, Spotify,…) User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: Switches over to CarPlay context corresponding to status of CarPlay device Cluster screen: Media context -> Shows CarPlay as media source. All other contexts -> No additional requirements Audio: The resource Main Audio is dedicated to CarPlay 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_670	**2.2.1.4 Connect CarPlay device while audio playback is running on it. MIB phone call is ongoing.**
MIB-2_RQ_DPO_1075	CarPlay playback shall stop after CarPlay session ist started while there is an active call on the system.
MIB-2_RQ_DPO_1076	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - MIB is in phone context and phone call is ongoing. - CarPlay device, audio playback is running (Music, Spotify,…) User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: Media context -> Shows CarPlay as media source. All other contexts -> No additional requirements Audio: The resources Mic and Main Audio keep dedicated to native HMI (Phone) 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. CarPlay playback goes to pause 5. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_668	**2.2.1.5 Connect CarPlay device while call is running on it.**
MIB-2_RQ_DPO_1079	iPhone phone call shall switch over to CarPlay after CarPlay is started
MIB-2_RQ_DPO_1080	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - MIB no active call via native HMI - CarPlay device call is running - CarPlay device is not paired with MIB User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: Switches over to CarPlay context corresponding to status of CarPlay device Cluster screen: Context switches over to Phone. Phone number or contact name, List of actions to handle a call are visible Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. Microphone in the cabin is active for CarPlay phone 5. Main Audio of native HMI is muted 6. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_667	**2.2.1.6 Connect CarPlay device while call is running on it and native HMI has another running call**
MIB-2_RQ_DPO_1081	iPhone phone call shall keep on the iPhone after CarPlay is started and native HMI phone call is ongoing
MIB-2_RQ_DPO_1082	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - MIB call is running via native HMI - CarPlay device call is running - CarPlay device is not paired with MIB User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: The resources Mic and Main Audio keep dedicated to native HMI (Phone) 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. Microphone in the cabin is still active for native HMI phone 5. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_666	**2.2.1.7 Connect CarPlay device which is connected via HFP**
MIB-2_RQ_DPO_1084	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device is connected to MIB via HFP User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. MIB has to disconnect the BT connection to the CarPlay device when requested by CarPlay device (HFP, A2DP, AVRCP) 5. CarPlay device is no longer connected as BT phone to native HMI (Reconnect is blocked by South Side) 6. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_1360	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device is connected to MIB via HFP User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. MIB has to disconnect the BT connection to the CarPlay device when requested by CarPlay device 5. CarPlay device is no longer connected as BT phone to native HMI (Reconnect is blocked by South Side) 6. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_665	**2.2.1.8 Connect CarPlay device which is connected via HFP and call is running**
MIB-2_RQ_DPO_1085	iPhone HFP phone call shall switch over to CarPlay after CarPlay is started

MIB-2_RQ_DPO_1086	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device is connected to MIB via HFP - Call is running via native HMI and CarPlay device User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: MIB screen: Switches over to CarPlay context corresponding to status of CarPlay device Cluster screen: No additional requirements (If in Phone context -> CarPlay adjusted context is visible) Audio: Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. Call hands over to CarPlay device 5. Microphone in the cabin is active for CarPlay phone 6. MIB has to disconnect the BT connection to the CarPlay device when requested by CarPlay device 7. CarPlay device is no longer connected as BT phone to native HMI 8. After a CarPlay disconnect, the user can reconnect the CarPlay device again via Bluetooth manually (no automatic reconnection will be established) 9. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_664	**2.2.1.9 Connect CarPlay device while Siri is running on it**
MIB-2_RQ_DPO_1088	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device Siri is running User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. Siri session stops 5. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_663	**2.2.1.10 Connect CarPlay device while route guidance is running on it**
MIB-2_RQ_DPO_1090	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device rout guidance is running User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: Switches over to CarPlay Map context Cluster screen: No additional requirements (If in Nav context -> Compass is visible.) Audio: No additional requirements 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_662	**2.2.1.11 Connect CarPlay device while route guidance is running on CarPlay device and native HMI**
MIB-2_RQ_DPO_1091	Active iOS rout guidance shall switch over to CarPlay and active native HMI route guidance stops after CarPlay is started
MIB-2_RQ_DPO_1092	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - CarPlay device rout guidance is running native HMI rout guidance is running User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: Switches over to CarPlay Map context Cluster screen: No additional requirements Audio: No additional requirements 1. USB Port does a Rolle Change (CarPlay device -> USB Host Mode, MIB -> USB Device Mode) 2. iAP2 becomes active 3. CarPlay session starts 4. Route guidance of native HMI stops 5. Rout guidance of CarPlay is still active 6. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_661	**2.2.1.12 Unplug CarPlay device while MIB screen is in CarPlay mode**
MIB-2_RQ_DPO_1093	The system shall switch to AppConnect context if CarPlay device is disconnected while CarPlay is active system context.
MIB-2_RQ_DPO_1094	Precondition: - MIB powered up - iOS device is connected as CarPlay device - MIB screen is in CarPlay mode User action: 1. Unplug the CarPlay device physically MIB reaction shall be: MIB screen: stays in AppConnect context. Cluster screen: no additional requirements. Audio: No additional requirements 1. USB Port does a Roll Change back to Host Mode
MIB-2_RQ_DPO_660	**2.2.1.13 Unplug CarPlay device while MIB screen and audio are in native HMI mode**
MIB-2_RQ_DPO_1095	Screen shall stay in native HMI mode when CarPlay device is unplugged
MIB-2_RQ_DPO_1096	Precondition: - MIB powered up - iOS device is connected as CarPlay device - MIB screen is in native HMI mode - Main Audio is in use by native HMI User action: 1. Unplug the CarPlay device physically MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. USB Port does a Roll Change back to Host Mode
MIB-2_RQ_DPO_657	**2.2.1.14 Unplug CarPlay device while ongoing CarPlay phone call**
MIB-2_RQ_DPO_1102	Precondition: - MIB powered up - iOS device is connected as CarPlay device - MIB screen is in CarPlay mode - Main Audio is in use by an ongoing CarPlay phone call User action: 1. Unplug the CarPlay device physically MIB reaction shall be: MIB screen: Switches over to last Main context (native HMI). Cluster screen: If CarPlay context was active -> switches over to corresponding native HMI context. If not: No additional requirements Audio: Switches over to native HMI if context needs Main Audio. If not: No additional requirements 1. USB Port does a Rolle Change back to Host Mode 2. Phone call is ongoing on the CarPlay device (Handled by Apple) 3. Reconnect of other known Mirror device, if connected.
MIB-2_RQ_DPO_656	**2.2.1.15 Unplug CarPlay device while ongoing CarPlay phone call and at a BT connected phone a call has been started via the phone**
MIB-2_RQ_DPO_1103	Phone call at HFP connected phone shall stay on the HFP connected phone (private mode) even if CarPlay device is disconnected while the call is omgoing at the phone.

MIB-2_RQ_DPO_1104	Precondition: - MIB powered up - iOS device is connected as CarPlay device - BT phone is paired - Main Audio is in use by an ongoing CarPlay phone call User action: 1. Start a phone call via the BT phone, direct at the phone 2. Wait until phone call is running 3. Unplug the CarPlay device physically MIB reaction shall be: MIB screen: Switches over to last Main context (native HMI). Cluster screen: If CarPlay context was active -> switches over to corresponding native HMI context. If not: No additional requirements Audio: Switches over to native HMI if context needs Main Audio. If not: No additional requirements 1. USB Port does a Rolle Change back to Host Mode 2. Phone call is ongoing on the CarPlay device (Handled by Apple) 3. Reconnect of other known Mirror device, if connected. 4. Phone call stays at the BT phone (User can manualy switch over to Hands Free Mode)
MIB-2_RQ_DPO_655	**2.2.1.16 Connect two CarPlay devices at the same time**
MIB-2_RQ_DPO_1106	Precondition: - MIB powered up -Devices were former connected and CarPlay session has been activated via AppConnect - Two CarPlay compatible iOS device are connected User action: 1. Open native HMI Media context 2. Open Touch on Source SK MIB reaction shall be: MIB screen: native HMI Media context is visible Cluster screen: No additional requirements Audio: No additional requirements 1. CarPlay device at the On-The-Go USB port is in CarPlay mode and not visible in Media Source list 2. CarPlay device at the other USB port is in Media Device mode and visible in Media Source list 3. The device at the On-The-Go USB port gets first position in Devices_Preference_Status_List
MIB-2_RQ_DPO_654	**2.2.1.17 Connect CarPlay device, Preference_Technology is CarPlay, MirrorLink or Android Auto is active already**
MIB-2_RQ_DPO_1108	Precondition: - MIB powered up - no CarPlay device connected - Device was former connected and CarPlay session has been activated via AppConnect - MirrorLink or Android Auto has an active session User action: 1. Connect CarPlay device to MIB via CarPlay compatible USB port MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. CarPlay doesn't start 2. CarPlay device is identified as Media device 3. There are no changes in Devices_Preference_Status_List
MIB-2_RQ_DPO_653	**2.2.1.18 Connect a mobile phone while having an active CarPlay call**
MIB-2_RQ_DPO_1109	Any Bluetooth connection dialog shall be grayed out while an ongoing CarPlay phone call
MIB-2_RQ_DPO_1110	Precondition: - MIB powered up - iOS device is connected as CarPlay device - A phone call is ongoing on CarPlay User action: 1. Open any context which contains BT setting (Phone, Media,…) MIB reaction shall be: MIB screen: The Bluetooth option in MIB is greyed out and can't be accessed Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to the CarPlay phone call 1. It is not possible to connect the HFP phone from MIB.
MIB-2_RQ_DPO_652	**2.2.1.19 Auto connect of a former connected mobile phone while having an active CarPlay call**
MIB-2_RQ_DPO_1111	Auto reconnect of BT devices while an ongoing CarPlay phone call shall be paused.
MIB-2_RQ_DPO_1112	Precondition: - MIB powered up - iOS device is connected as CarPlay device - A phone call is ongoing on CarPlay - BT is set to off at the mobile phone User action: 1. Activate BT at the mobile phone MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to the CarPlay phone call 1. The MIB rejects the connection requests from the HFP phone and sends reconnect suspend to avoid auto reconnect 2. The Bluetooth option in MIB is greyed out and can't be accessed 3. It is not possible to connect the HFP phone from MIB.
MIB-2_RQ_DPO_689	**2.2.2 FEAT_DPO_Phone**
MIB-2_RQ_DPO_991	CarPlay phone- and native HMI phone functionality shall exist side by side
MIB-2_RQ_DPO_1358	CarPlay phone- and native HMI phone functionality shall not exist side by side
MIB-2_RQ_DPO_690	**2.2.2.1 Initiating a CarPlay phone call**
MIB-2_RQ_DPO_993	Precondition: -The MIB system is on -CarPlay is running and active on the MIB screen -Active context: CarPlay User action: 1. Initiate a call MIB reaction shall be: MIB screen: No additional requirements Cluster screen: If in phone context: Context shows CarPlay_Cluster_Phone_Screen If not: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay
MIB-2_RQ_DPO_727	**2.2.2.2 Activating a MIB entertainment source during a CarPlay phone call**
MIB-2_RQ_DPO_996	If the user trys to activate a native HMI entertainment source during an ongoing CarPlay phone call the system audio shall stay by the CarPlay phone call until CarPlay phone call is ended and switch to the selected audio source afterwards.
MIB-2_RQ_DPO_997	Precondition: -The MIB system is on -An active call using CarPlay is in progress. -Active context:Carplay User action: 1. Proceeds to attempt to activate any entertainment source from the MIB system such as (but not limited to) Music, Radio. MIB reaction shall be: MIB screen: entertainment sources are accessible but can't be started during phone calls. Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay
MIB-2_RQ_DPO_725	**2.2.2.3 Using SDS during a CarPlay phone call**
MIB-2_RQ_DPO_1000	It shall not be possible to start the system's native SDS during an ongoing CarPlay phone call
MIB-2_RQ_DPO_1001	Precondition: -The MIB system is on -An active call using CarPlay is in progress. -Active Context: Carplay User action: 1. A press for less than 600 ms on the push-to-talk button on the steering wheel MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. SDS doesn't start
MIB-2_RQ_DPO_724	**2.2.2.4 Using the native HMI messaging function during a CarPlay phone call**

MIB-2_RQ_DPO_1003	Precondition: -The MIB system is on -An active call using CarPlay is in progress. -Active context: Carplay User action: 1. Start the native HMI Phone context via HK or SK MIB reaction shall be: MIB screen: Switches over to the native HMI Phone context Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Info popup is visible: e.g. "Phone functionality is not available while an ongoing CarPlay phone call" 2. The native HMI phone context is blocked by the popup as long as the CarPlay phone call is ongoing.
MIB-2_RQ_DPO_1478	Precondition: -The MIB system is on -An active call using CarPlay is in progress. -Active context: Carplay User action: 1. Start the native HMI Phone context via HK or SK MIB reaction shall be: MIB screen: Switches over to the native HMI Phone context Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Info is visible: e.g. "Please disconnect Apple CarPlay first to connect a different mobile phone" 2. Native HMI messaging function is not available
MIB-2_RQ_DPO_722	**2.2.2.5 Receiving a phone call at native HMI during a CarPlay phone call**
MIB-2_RQ_DPO_1007	Precondition: -The MIB system is on -An active call using CarPlay is in progress. -Active Context: Carplay User action: 1. Incoming phone call on the native HMI MIB reaction shall be: MIB screen: The background is dimmed with a pop-up shown allowing the user to decline the incomming call or to replace the CarPlay call withe the incomming call. In case the user ends the CarPlay call from the CarPlay device directly, then the pop-up will change into a new pop-up offering two options for the call: answering and declining. Cluster screen: the received call is shown Audio: The resources Mic and Main Audio are dedicated to CarPlay
MIB-2_RQ_DPO_719	**2.2.2.6 Starting a call from CarPlay during an ongoing native HMI phone call**
MIB-2_RQ_DPO_1013	Precondition: -The MIB system is on -An active call over HFP,RSAP or internal SIM is in progress -Active Context: Carplay(Appconnect) User action: 1. Switch over to CarPlay context 2. Open phone context 3. Start a phone call MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to native HMI (Phone) 1. It is not possible to start a CarPlay phone call (Handled by CarPlay)
MIB-2_RQ_DPO_718	**2.2.2.7 Receiving a call via CarPlay during an ongoing native HMI phone call**
MIB-2_RQ_DPO_1015	Precondition: -The MIB system is on -An active call over HFP,RSAP or internal SIM is in progress -Active context: any native MIB context (not Appconnect) User action: 1. Incoming phone call via CarPlay MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1- Carplay will not ask for the audio and screen resources because it is already informed of the running call on MIB
MIB-2_RQ_DPO_717	**2.2.2.8 Receiving a phone call on CarPlay during listening to an entertainment source on the native HMI**
MIB-2_RQ_DPO_1017	Precondition: -The MIB system is on -The audio from native entertainment source is active - CarPlay is active but not displayed -Active context: native MIB entertainment source User action: 1. Incoming phone call via CarPlay MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: Phone Context shows CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. It is possible to accept the call via SK in CarPlay screen.
MIB-2_RQ_DPO_716	**2.2.2.9 Receiving a phone call on CarPlay while using native HMI functions**
MIB-2_RQ_DPO_1019	Precondition: -The MIB system is on -Various native HMI functions are active (Messaging, Navigation, …) -CarPlay is active but not displayed -no phone call is active on MIB -Active context: any native MIB context (not Appconnect) User action: 1. Incoming phone call via CarPlay MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen:Phone Context shows CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. It is possible to accept the call via SK in CarPlay screen.
MIB-2_RQ_DPO_715	**2.2.2.10 Receiving a phone call on native HMI while using CarPlay**
MIB-2_RQ_DPO_1021	Precondition: -The MIB system is on -CarPlay is active and displayed - Music is playing from CarPlay -Active Context: Carplay(Appconnect) User action: 1. Incoming phone call via native HMI (HFP,RSAP or internal SIM) MIB reaction shall be: MIB screen: A pop-up is displayed with an option of answer or decline with the background being the same CarPlay context but dimmed as per Apple requirements. Cluster screen: Current call is displayed Audio: The resources Mic and Main Audio are dedicated to native HMI (Phone)
MIB-2_RQ_DPO_713	**2.2.2.11 Initiating a call direct from HFP connected phone during a CarPlay phone call is ongoing**
MIB-2_RQ_DPO_1022	A phone call which is initiate direct from HFP connected phone during a CarPlay phone call is ongoing call audio shall stay on the HFP connected phone
MIB-2_RQ_DPO_1023	Precondition: -The MIB system is on -A phone call using CarPlay is in progress User action: 1. Start a phone call on the HFP connected phone MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The call on the HFP connected phone stays there
MIB-2_RQ_DPO_711	**2.2.2.12 Initiating a phone call directly from the iPhone**

MIB-2_RQ_DPO_1025	Precondition: -The MIB system is on -CarPlay is running and active on the native HMI -any native MIB context (not Appconnect) User action: 1. Start the phone application in the CarPlay device 2. Choose a contact and perform a touch event to start a call MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: Phone Context shows CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay (Nav announcements possible in the settings menu)
MIB-2_RQ_DPO_710	**2.2.2.13 Answering a CarPlay phone call using the Hook button or 'OK' button on MFL**
MIB-2_RQ_DPO_1026	It shall be possible to answere an incomming CarPlay phone call using the Hook button or 'OK' button on MFL
MIB-2_RQ_DPO_1479	It shall be possible to answere an incomming CarPlay phone call using the Hook button on MFL
MIB-2_RQ_DPO_1027	Precondition: -The MIB system is on -CarPlay is active -A phone call is incoming via CarPlay -any native MIB context (not Appconnect) User action: 1. Press Hook button on MFL or 1. Choosing the option 'Answer' from the Cluster screen using the up-down and 'OK' buttons on MFL MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: Phone Context is blocked by CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay
MIB-2_RQ_DPO_1480	Precondition: -The MIB system is on -CarPlay is active -A phone call is incoming via CarPlay -any native MIB context (not Appconnect) User action: 1. Press Hook button on MFL MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: Phone Context shows CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay
MIB-2_RQ_DPO_709	**2.2.2.14 Pressing the Hook button on the MFL while not being on the phone context on the Cluster screen while having a CarPlay device connected**
MIB-2_RQ_DPO_1028	Pressing the Hook button while CarPlay is the single phone shall result in cluster context switch to phone
MIB-2_RQ_DPO_1029	Precondition: -The MIB system is ON -A CarPlay session is active -There is no CarPlay call incoming, outgoing or ongoing. -The displayed context on Cluster screen is not the phone context User action: 1. Press the Hook button on the MFL MIB reaction shall be: MIB screen: No additional requirements Cluster screen: The context is changed to the phone context where the CarPlay logo is displayed with the network operator name from the CarPlay device Audio: No additional requirements
MIB-2_RQ_DPO_708	**2.2.2.15 Pressing the Hook button on the MFL while being on the phone context on the Cluster screen**
MIB-2_RQ_DPO_1030	Hook button shall have no functionality while cluster is phone context and there is no phone call ongoing or incomming
MIB-2_RQ_DPO_1031	Precondition: -The MIB system is ON -A CarPlay session is active -There is no other phone connected other than the CarPlay device from the CarPlay session -The displayed context on Cluster screen is the phone context User action: 1. Press the Hook button on the MFL MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The Hook button does not have an effect in this case.
MIB-2_RQ_DPO_707	**2.2.2.16 Ending an active CarPlay call using the Hook button or the combination of the up-down and 'OK' buttons on the MFL**
MIB-2_RQ_DPO_1034	It shall be possible to end an active CarPlay call using the Hook button or the combination of the up-down and 'OK' buttons on the MFL
MIB-2_RQ_DPO_1033	Precondition: -The MIB system is ON -A CarPlay session is active -A call is active via CarPlay User action: 1. Press Hook button on MFL or 1. Choosing the option 'Hang-up' from the Cluster screen using the up-down and 'OK' buttons on MFL MIB reaction shall be: MIB screen: No additional requirements Custer screen: No additional requirements Audio: The resources are returned to the last active mode before the call
MIB-2_RQ_DPO_1481	**2.2.2.17 Ending an active CarPlay call using the Hook button on the MFL**
MIB-2_RQ_DPO_1482	It shall be possible to end an active CarPlay call using the Hook button on the MFL CR
MIB-2_RQ_DPO_1483	Precondition: -The MIB system is ON -A CarPlay session is active -A call is active via CarPlay User action: 1. Press Hook button on MFL MIB reaction shall be: MIB screen: No additional requirements Custer screen: No additional requirements Audio: The resources are returned to the last active mode before the call
MIB-2_RQ_DPO_705	**2.2.2.18 Muting an active call on CarPlay using MFL**
MIB-2_RQ_DPO_1037	There shall be the option to mute an active CarPlay phone call via the cluster phone context
MIB-2_RQ_DPO_1038	Precondition: -The MIB system is on -A CarPlay session is active and a phone call on CarPlay is ongoing -The displayed context on Cluster screen is the phone context User action: 1. Choosing the option 'Mic-off' from the Cluster screen using the up-down and 'OK' buttons on MFL MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The car microphone is muted. No audio flow to the active CarPlay call.
MIB-2_RQ_DPO_704	**2.2.2.19 Declining an incoming CarPlay call using MFL**
MIB-2_RQ_DPO_1039	There shall be the option to decline an incomming CarPlay phone call via the cluster phone context
MIB-2_RQ_DPO_1040	Precondition: -The MIB system is on -A CarPlay session is active - A phone call on CarPlay is incoming -The displayed context on Cluster screen is the phone context -Active context: Carplay(Appconnect) User action: 1. Choosing the option 'Reject' from the Cluster screen using the up-down and 'OK' buttons on MFL MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The call is declined

MIB-2_RQ_DPO_703	**2.2.2.20 Ending an outgoing call on CarPlay using MFL**
MIB-2_RQ_DPO_1041	There shall be the option to end an outgoing CarPlay phone call via the cluster phone context
MIB-2_RQ_DPO_1042	Precondition: -The MIB system is on -A CarPlay session is active -A phone call on CarPlay is outgoing -The displayed context on Cluster screen is the phone context -Active context: Carplay(Appconnect) User action: 1. Choosing the option 'Cancel' from the Cluster screen using the up-down and 'OK' buttons on MFL MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Call is cancelled
MIB-2_RQ_DPO_702	**2.2.2.21 Muting an incoming CarPlay phone call using MFL**
MIB-2_RQ_DPO_1043	There shall be the option to mute an incomming CarPlay phone call via the cluster phone context
MIB-2_RQ_DPO_1044	Precondition: -The MIB system is on -A CarPlay session is active -A phone call on CarPlay is incoming -The displayed context on Cluster screen is the phone context User action: 1. Choosing the option 'Ignore' from the Cluster screen using the up-down and 'OK' buttons on MFL MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The incoming call (ring tone) is muted
MIB-2_RQ_DPO_701	**2.2.2.22 Switch over from native HMI Phone context to CarPlay Phone context**
MIB-2_RQ_DPO_1046	Precondition: -The MIB system is on -A CarPlay session is active -Active context: native MIB phone User action: 1. Open native HMI Phone context 2. Touchevent on SK which is linked to CarPlay Phone context MIB reaction shall be: MIB screen: Switches over to CarPlay Phone context Cluster screen: No additional requirements Audio: No additional requirements
MIB-2_RQ_DPO_700	**2.2.2.23 Switch over from native HMI Phone context to CarPlay Phone context while an ongoing native HMI phone call**
MIB-2_RQ_DPO_1048	Precondition: - The MIB system is on - A CarPlay session is active - native HMI phone call is ongoing User action: 1. Open native HMI Phone context MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The SK, to switch over to CarPlay phone context, is greyed out and has no functionality until the active phone call ends
MIB-2_RQ_DPO_699	**2.2.2.24 Two incoming calls, CarPlay is the first one**
MIB-2_RQ_DPO_1049	There shall be a handling for two incomming calls, CarPlay is the first one
MIB-2_RQ_DPO_1050	Precondition: - The MIB system is on - A CarPlay session is active - HFP, RSAP phone or internal SIM is connected - No phone call is ongoing -Active context: any native MIB context (not Appconnect) User action: 1. CarPlay phone call is incomming 2. native HMI phone call is incomming while CarPlay call has not been answered MIB reaction shall be: MIB screen: The phone context of CarPlay is visible. A pop up, with the background being the same CarPlay context but dimmed as per Apple requirements, is shown notifying the user of the incoming native HMI call and allowing the user to decline the incomming call or to replace the CarPlay call with the incomming call Cluster screen: Phone Context is blocked by CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. If the native HMI call has been declined, it is possible to accept the CarPlay call via button in CarPlay HMI. 2. If the CarPlay call has been declined or finished while the native HMI call pop up is still visible, the pop up switchs over to a pop up with the option accept, decline and mute for the HFP, RSAP phone or internal SIM call.
MIB-2_RQ_DPO_698	**2.2.2.25 Two incoming calls, native HMI is the first one**
MIB-2_RQ_DPO_1052	Precondition: - The MIB system is on - A CarPlay session is active - No phone call is ongoing - Active context: Carplay(Appconnect) User action: 1. native HMI phone call is incomming 2. CarPlay phone call is incomming while native HMI call has not been answered MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1- Carplay will not ask for the audio and screen resources because it is already informed of the running call on MIB
MIB-2_RQ_DPO_697	**2.2.2.26 Incoming native HMI call while outgoing CarPlay call**
MIB-2_RQ_DPO_1054	Precondition: - The MIB system is on - A CarPlay session is active - No phone call is ongoing -Active context: Carplay(Appconnect) User action: 1. Start outgoing CarPlay phone call via CarPlay HMI 2. native HMI phone call is incomming while CarPlay call has not been answered MIB reaction shall be: MIB screen: The phone context of CarPlay is visible. A pop up, with the background being the same CarPlay context but dimmed as per Apple requirements, is shown notifying the user of the incoming native HMI call and allowing the user to decline the incomming call or to replace the CarPlay call withe the incomming call Cluster screen: Phone Context is blocked by CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. If the CarPlay call has been ended while the native HMI call pop up is still visible, the pop up switchs over to a pop up with the option accept, decline and mute for the HFP call.
MIB-2_RQ_DPO_696	**2.2.2.27 Incoming CarPlay call while outgoing native HMI call**
MIB-2_RQ_DPO_1056	Precondition: - The MIB system is on - A CarPlay session is active - No phone call is ongoing User action: 1. Start outgoing native HMI phone call 2. CarPlay phone call is incoming while native HMI call has not been answered MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1- Carplay will not ask for the audio and screen resources because it is already informed of the running call on MIB
MIB-2_RQ_DPO_695	**2.2.2.28 Accepting an Incoming waiting call on the CarPlay device while having an active one, via CarPlay HMI**

MIB-2_RQ_DPO_1058	Precondition: - The MIB system is on -A CarPlay session is active -A phone call is already active on CarPlay -Active context: any native HMI context (Not appconnect) User action: 1. A secondary call is incoming on the CarPlay device 2. Proceed to accept it via CarPlay HMI MIB reaction shall be: MIB screen: No additional requirements Cluster screen: Phone Context shows CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Call handling is made by CarPlay
MIB-2_RQ_DPO_694	**2.2.2.29 Using the MFL hook button for accepting an Incoming waiting call on the CarPlay device while having an active one**
MIB-2_RQ_DPO_1059	It shall be possible to accept an incomming waiting call on the CarPlay device via Hook button, while having an active one
MIB-2_RQ_DPO_1060	Precondition: - The MIB system is on -A Carplay session is active -A phone call is already active on Carplay -Active context: any native HMI context (Not appconnect) User action: 1. A secondary call is incoming on the CarPlay device 2. Proceed to accept it using the MFL hook button MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: The phone context is hijacked showing the waiting call on CarPlay and then returned back when the call ends. Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Call handling is made by CarPlay
MIB-2_RQ_DPO_693	**2.2.2.30 Using the MFL up-down and 'OK' buttons for accepting an Incoming waiting call on the CarPlay device while having an active one**
MIB-2_RQ_DPO_1061	It shall be possible to accept an incomming waiting call on the CarPlay device via up-down and "OK" button, while having an active one
MIB-2_RQ_DPO_1062	Precondition: -The MIB system is on -A Carplay session is active -A phone call is already active on Carplay -Active context: any native HMI context (Not appconnect) User action: 1. A secondary call is incoming on the CarPlay device 2. Proceed to accept it using the MFL up-down and 'OK' buttons to choose the option 'Answer' in cluster phone context MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: The phone context is hijacked showing the waiting call on CarPlay and then returned back when the call ends. Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Call handling is made by CarPlay
MIB-2_RQ_DPO_692	**2.2.2.31 Declining an Incoming waiting call on the CarPlay device while having an active one**
MIB-2_RQ_DPO_1064	Precondition: -The MIB system is on -A Carplay session is active -A phone call is already active on Carplay -Active context: any native HMI context (Not appconnect) User action: 1. A secondary call is incoming on the CarPlay device 2. Proceeds to decline it via CarPlay HMI MIB reaction shall be: MIB screen: No additional requirements Cluster screen: Phone Context shows CarPlay_Cluster_Phone_Screen Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Call handling is made by CarPlay
MIB-2_RQ_DPO_691	**2.2.2.32 Using the MFL up-down and 'OK' buttons for declining an Incoming waiting call on the CarPlay device while having an active one**
MIB-2_RQ_DPO_1065	It shall be possible to decline an incomming waiting call on the CarPlay device via up-down and "OK" button, while having an active one
MIB-2_RQ_DPO_1066	Precondition: - The MIB system is on -A Carplay session is active -A phone call is already active on Carplay -Active context: any native HMI context (Not appconnect) User action: 1. A secondary call is incoming on the CarPlay device 2. Proceed to accept it using the MFL up-down and 'OK' buttons to choose the option 'Reject' in cluster phone context MIB reaction shall be: MIB screen: The phone context of CarPlay is visible Cluster screen: The phone context is hijacked showing the waiting call on CarPlay and then returned back when the user declines it Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Call handling is made by CarPlay
MIB-2_RQ_DPO_730	**2.2.3 FEAT_DPO_Navigation**
MIB-2_RQ_DPO_958	CarPlay navigation and native HMI navigation functionality shall exist side by side
MIB-2_RQ_DPO_731	**2.2.3.1 Using a MIB entertainment source during CarPlay route guidance is active**
MIB-2_RQ_DPO_954	CarPlay turn by turn announcements shall be audible during native HMI media source is active
MIB-2_RQ_DPO_955	Precondition: -The MIB system is on -CarPlay is active and the maps app on CarPlay is displayed User action: 1.The user activates an entertainment source on the native MIB system using the HK or the MIB main menu while using the navigation app on CarPlay MIB reaction shall be: MIB screen: The context of the MIB system is displayed Cluster screen: In media context, the metadata from media are available. In navigation context, the compass is displayed (turn by turn guidance will not be accessible) Audio: The resource Main Audio is dedicated to native HMI (Media/Radio) 1. While turn by turn announcements, there is ducking on Main Audio.
MIB-2_RQ_DPO_738	**2.2.3.2 Starting route guidance of native HMI while route guidance of CarPlay is active**
MIB-2_RQ_DPO_957	Precondition: -The MIB system is on -Route guidance of CarPlay is running User action: 1. Start route guidance of native HMI MIB reaction shall be: MIB screen: native HMI navigation context is visible Cluster screen: In Nav context the pre-defined MIB Nav context is displayed with turn by turn information Audio: Route guidance announcements of native HMI are audible 1. Route guidance of CarPlay stops
MIB-2_RQ_DPO_737	**2.2.3.3 Starting route guidance of CarPlay while route guidance of native HMI is active**
MIB-2_RQ_DPO_960	Precondition: -The MIB system is on -Route guidance of native HMI is running User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Route guidance of native HMI stops
MIB-2_RQ_DPO_1239	**2.2.3.4 Starting route guidance of CarPlay while route guidance of native HMI is active and the user is manipulating rubberband**
MIB-2_RQ_DPO_1340	Route guidance of native HMI shall stop if CarPlay route guidance starts even if in rubberband manipulation mode

MIB-2_RQ_DPO_1242	Precondition: -The MIB system is on -Route guidance of native HMI is running -User is manipulating rubberband User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Route guidance of native HMI stops 2. Rubberband is aborted
MIB-2_RQ_DPO_1243	**2.2.3.5 Starting route guidance of CarPlay during PNav Map is visible**
MIB-2_RQ_DPO_1244	PNav shall stay active in the backround while CarPlay route guidance is active
MIB-2_RQ_DPO_1245	Precondition: -The MIB system is on -Route guidance of native HMI is running -PNav map is aktive User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. PNav stays active in the backround
MIB-2_RQ_DPO_1246	**2.2.3.6 Starting route guidance of CarPlay during Waypoint Mode is "default"**
MIB-2_RQ_DPO_1247	Waypoint Mode shall stay active in the backround while CarPlay route guidance is active
MIB-2_RQ_DPO_1248	Precondition: -The MIB system is on -Route guidance of native HMI is running -Waypoint Mode is "default" User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Waypoint Mode stays active in the backround
MIB-2_RQ_DPO_1249	**2.2.3.7 Starting route guidance of CarPlay during Waypoint Mode is "drive"**
MIB-2_RQ_DPO_1250	Offroad route guidance shall stop and waypoint Mode shall stay active in the backround while CarPlay route guidance is active
MIB-2_RQ_DPO_1251	Precondition: -The MIB system is on -Route guidance of native HMI is running -Waypoint Mode is "drive" User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Offroad route guidance stops 2. Waypoint Mode stays active in the backround
MIB-2_RQ_DPO_1252	**2.2.3.8 Starting route guidance of CarPlay during Waypoint Mode is "record"**
MIB-2_RQ_DPO_1253	Record shall stop and shall be saved and waypoint Mode shall stay active in the backround while CarPlay route guidance is active
MIB-2_RQ_DPO_1254	Precondition: -The MIB system is on -Route guidance of native HMI is running -Waypoint Mode is "record" User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Record stops 2. Record is saved 3. Waypoint Mode stays active in the backround
MIB-2_RQ_DPO_1255	**2.2.3.9 Starting route guidance of CarPlay during native HMI route guidance calculation**
MIB-2_RQ_DPO_1256	Native HMI route guidance calculation shall stop if CarPlay route guidance starts
MIB-2_RQ_DPO_1257	Precondition: -The MIB system is on -Route guidance calculation of native HMI is running User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Route guidance calculation of native HMI stops
MIB-2_RQ_DPO_1258	**2.2.3.10 Starting route guidance of CarPlay during native HMI offers multiple routes**
MIB-2_RQ_DPO_1259	Native HMI multiple routes context shall close when CarPlay route guidance starts
MIB-2_RQ_DPO_1260	Precondition: -The MIB system is on -Route guidance calculation of native HMI is running User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. Multiple routes context is closed
MIB-2_RQ_DPO_1261	**2.2.3.11 Native HMI route guidance start via Fuel warning Popup**
MIB-2_RQ_DPO_1262	Precondition: -The MIB system is on -Route guidance of CarPlay is running -Fuel warning Popup appears User action: 1. Start route guidance to next gas station via Popup MIB reaction shall be: MIB screen: native HMI navigation context is visible Cluster screen: In Nav context the pre-defined MIB Nav context is displayed with turn by turn information Audio: Route guidance announcements of native HMI are audible 1. Route guidance of CarPlay stops
MIB-2_RQ_DPO_1264	**2.2.3.12 Starting route guidance of CarPlay during native HMI tour is active**
MIB-2_RQ_DPO_1266	Precondition: -The MIB system is on -native HMI tour is running User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: CarPlay navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. native HMI tour stops 2. Tour info are lost
MIB-2_RQ_DPO_1267	**2.2.3.13 Starting route guidance of CarPlay during a list is displayed in native HMI navigation context**
MIB-2_RQ_DPO_1268	List in native HMI navigation context shall be hold in backround if CarPlay route guidance starts

MIB-2_RQ_DPO_1269	Precondition: -The MIB system is on -a list is visible in native HMI navigation context User action: 1. Start route guidance of CarPlay 2. Switch over to native HMI navigation context MIB reaction shall be: MIB screen: No additional requirements Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of CarPlay are audible 1. The list is still visible in native HMI navigation context
MIB-2_RQ_DPO_736	**2.2.3.14 Removing any accessory from the system during route guidance of CarPlay is active**
MIB-2_RQ_DPO_962	Precondition: -The MIB system is on -Route guidance of CarPlay is running User action: 1. The user removes a SD card, USB stick, CD, Sim card or Aux cable in the MIB system MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on CarPlay functionality)
MIB-2_RQ_DPO_735	**2.2.3.15 Connecting any Media device to the system during route guidance of CarPlay is active**
MIB-2_RQ_DPO_964	Precondition: -The MIB system is on -Route guidance of CarPlay is running User action: 1. The user inserts a SD card, USB stick or CD in the MIB system MIB reaction shall be: MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement
MIB-2_RQ_DPO_734	**2.2.3.16 Using route guidance of CarPlay during being on a phone call on native HMI**
MIB-2_RQ_DPO_1335	CarPlay turn by turn announcements shall be audible during an ongoing native HMI phone call if this option is activated in nativeHMI navigation settings
MIB-2_RQ_DPO_966	Precondition: -The MIB system is on -The user is on a phone call on native HMI (BT or internal SIM) User action: 1. Start route guidance of CarPlay via CarPlay context MIB reaction shall be: MIB screen: No additional requirement Cluster screen: In the phone context, the active phone call details are displayed. In Nav context the compass is visible (no turn by turn information are visible) Audio: The resources Mic and Main Audio are dedicated to the native HMI (Phone) (Navigation announcements possible using the switch in the navigation settings)
MIB-2_RQ_DPO_733	**2.2.3.17 Using route guidance of CarPlay with FPK and MIB2 High**
MIB-2_RQ_DPO_968	Precondition: -The MIB system is on -No active audio User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: No additional requirement Cluster screen: There is a string like "Smartphone Navigation active" in Navigaton context Audio: No additional requirement
MIB-2_RQ_DPO_732	**2.2.3.18 Using route guidance of CarPlay with FPK and MIB2 Standard**
MIB-2_RQ_DPO_970	Precondition: -The MIB system is on -No active audio User action: 1. Start route guidance of CarPlay MIB reaction shall be: MIB screen: No additional requirement Cluster screen: There is the compass visible in Navigaton context Audio: No additional requirement
MIB-2_RQ_DPO_739	**2.2.4 FEAT_DPO_Media**
MIB-2_RQ_DPO_953	Native HMI Media shall be still usable during CarPlay is active
MIB-2_RQ_DPO_740	**2.2.4.1 Switch over from CarPlay to Phone, Navigation, Traffic, Car or Menu context of native HMI**
MIB-2_RQ_DPO_972	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Song is playing from CarPlay device User action: 1. Switch over from CarPlay to Phone, Navigation, Traffic, Car or Menu context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements
MIB-2_RQ_DPO_749	**2.2.4.2 Switch over from CarPlay to Media context of native HMI**
MIB-2_RQ_DPO_974	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Song is playing from CarPlay device User action: 1. Switch over from CarPlay to Media context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. CarPlay device stops playing 2. Lastmode is the same as any other switch over within native HMI to Media (Playback of the last played song of an active and in this moment still present media source starts.) 4. The iOS CarPlay device is not visible and not selectable as media source
MIB-2_RQ_DPO_748	**2.2.4.3 Switch over from CarPlay to Radio or TV Tuner context of native HMI**
MIB-2_RQ_DPO_976	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Song is playing from CarPlay device User action: 1. Switch over from CarPlay to Radio or TV Tuner context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI Radio (TV Tuner) context Cluster screen: No additional requirement Audio: The resource Main Audio is dedicated to native HMI (Radio/TV Tuner) 1. CarPlay device stops playing 2. Lastmode is the same as any other switch over within native HMI to Radio/TV Tuner (Last active channel becomes active)
MIB-2_RQ_DPO_747	**2.2.4.4 Switch over from native HMI to CarPlay while native HMI is using an entertainment source**
MIB-2_RQ_DPO_977	Media playback of native HMI shall be paused, if CarPlay requests main audio

MIB-2_RQ_DPO_978	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - CarPlay device is connected as CarPlay device - MIB screen is in native HMI mode - Song is playing from native HMI media source User action: 1. Switch over from native HMI to CarPlay MIB reaction shall be: MIB screen: Switches over to CarPlay context Cluster screen: No additional requirements Audio: If CarPlay requests Main Audio, the resource Main Audio is dedicated to CarPlay. If not, no additional requirement 1. native HMI playback stops, if CarPlay gets Main Audio.
MIB-2_RQ_DPO_746	**2.2.4.5 Switch over from CarPlay to an entertainment source of native HMI during CarPlay phone call is running**
MIB-2_RQ_DPO_979	native HMI media playback shall not start during an ongoing CarPlay phone call
MIB-2_RQ_DPO_980	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Call is running via CarPlay device User action: 1. Switch over from CarPlay to an entertainment source context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI Media/Radio context Cluster screen: No additional requirements Audio: No additional requirements 1. Playback of media file doesn't start, if media context is active
MIB-2_RQ_DPO_745	**2.2.4.6 Start CarPlay media playback while native HMI phone call is running**
MIB-2_RQ_DPO_982	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - CarPlay device is connected as CarPlay device - MIB screen is in native HMI mode - Call is running via native HMI User action: 1. Switch over from native HMI to CarPlay via HK (Free programmable HK) 2. Switch to Music player 3. Start playback of a song MIB reaction shall be: MIB screen: Switches over to CarPlay context Cluster screen: No additional requirements Audio: No additional requirements 1. Playback doesn't start
MIB-2_RQ_DPO_743	**2.2.4.7 Skip song in CarPlay via MFL skip buttons**
MIB-2_RQ_DPO_984	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Cluster screen mode has no influence on this use case - Song is playing from CarPlay device User action: 1. Press skip button on steering wheel MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Playback skips to next or previous song
MIB-2_RQ_DPO_742	**2.2.4.8 Skip song in CarPlay via MFL up- / down- buttons**
MIB-2_RQ_DPO_986	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Cluster screen is in Media mode - Song is playing from CarPlay device User action: 1. Press up- / down- buttons on steering wheel MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Playback skips to next or previous song
MIB-2_RQ_DPO_741	**2.2.4.9 CarPlay device disconnects its currently used audio channel**
MIB-2_RQ_DPO_988	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Song is playing from CarPlay device User action: 1. Finish the iOS music app via task manager directly at the CarPlay device MIB reaction shall be: MIB screen: No additional requirements (If in CarPlay mode, Apple will handle) Cluster screen: No additional requirements Audio: No additional requirements
MIB-2_RQ_DPO_811	**2.2.4.10 FastForward/FastBackward in CarPlay via skip buttons**
MIB-2_RQ_DPO_990	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Cluster screen mode has no influence on this use case - Song is playing from CarPlay device User action: 1. Keep one of the skip button on steering wheel pressed MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. While the button is pressed CarPlay playback switches over to FastForward/FastBackward
MIB-2_RQ_DPO_750	**2.2.5 FEAT_DPO_Voice_Control**
MIB-2_RQ_DPO_920	Siri and native HMI Voice Control functionality shall exist side by side
MIB-2_RQ_DPO_751	**2.2.5.1 Starting Siri, MIB screen is in CarPlay mode**
MIB-2_RQ_DPO_922	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Song is playing from CarPlay device User action: 1. Do a long press on one of these buttons: --- the car's push to talk button (pressing time > 600 ms) --- the home button of the CarPlay screen --- the home button of the connected CarPlay device MIB reaction shall be: MIB screen: Handled by CarPlay Cluster screen: No additional requirements Audio: Handled by CarPlay 1. Prewarm of Siri starts when button is pressed 2. After 600ms Siri starts
MIB-2_RQ_DPO_779	**2.2.5.2 Starting Siri, MIB screen is in native HMI mode**

MIB-2_RQ_DPO_924	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in native HMI mode - Song is playing from native HMI User action: 1. Do a long press on one of these buttons: --- the car's push to talk button (pressing time > 600 ms) --- the home button of the connected CarPlay device MIB reaction shall be: MIB screen: Switches over to CarPlay Siri Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. Prewarm of Siri starts when button is pressed 2. After 600ms Siri starts
MIB-2_RQ_DPO_778	**2.2.5.3 Receiving phone call via native HMI while Siri is running**
MIB-2_RQ_DPO_925	Siri shall be stoped if there is an incomming phone call on the system
MIB-2_RQ_DPO_926	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in native HMI mode - Siri is running User action: 1. An incoming phone call at the native HMI arrives MIB reaction shall be: MIB screen: A pop-up is displayed with the option to answer or decline. Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to native HMI (Phone) 1. Siri stops
MIB-2_RQ_DPO_776	**2.2.5.4 Receiving phone call via CarPlay while Siri is running. MIB screen is in CarPlay mode**
MIB-2_RQ_DPO_929	Siri shall stop by incomming CarPlay phone call
MIB-2_RQ_DPO_930	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Siri is running User action: 1. An incoming phone call at CarPlay arrives MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements (If in Phone context -> CarPlay adjusted context is visible) Audio: No additional requirements 1. Handled by CarPlay
MIB-2_RQ_DPO_775	**2.2.5.5 Start music playback via Siri, MIB screen is not in a native HMI entertainment source context**
MIB-2_RQ_DPO_932	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device -MIB screen is not in a native HMI entertainment source context - MIB screen is in CarPlay mode User action: 1. Start Siri 2. Utter a command to start playback of a song which is located at the CarPlay device MIB reaction shall be: MIB screen: Switches over to CarPlay Cluster screen: No additional requirements (If in Media context -> CarPlay adjusted context is visible) Audio: The resource Main Audio is dedicated to CarPlay 1. Playback starts
MIB-2_RQ_DPO_774	**2.2.5.6 Start music playback via Siri, MIB screen is in a native HMI entertainment source context**
MIB-2_RQ_DPO_934	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device -MIB screen is in a MIB entertainment audio context User action: 1. Start Siri 2. Utter a command to start playback of a song which is located at the CarPlay device MIB reaction shall be: MIB screen: Switches over to CarPlay Cluster screen: No additional requirements (If in Media context -> CarPlay adjusted context is visible) Audio: The resource Main Audio is dedicated to CarPlay 1. Playback starts
MIB-2_RQ_DPO_773	**2.2.5.7 Start navigation via Siri, MIB screen is in native HMI mode**
MIB-2_RQ_DPO_936	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device -MIB screen is in native HMI mode User action: 1. Start Siri 2. Utter a command to start a route guidance MIB reaction shall be: MIB screen: Switches over to CarPlay Navigation Cluster screen: No additional requirements Audio: No additional requirements 1. Route guidance starts
MIB-2_RQ_DPO_772	**2.2.5.8 Start navigation via Siri, MIB screen is in CarPlay mode**
MIB-2_RQ_DPO_938	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device -MIB screen is in CarPlay mode User action: 1. Start Siri 2. Utter a command to start a route guidance MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Route guidance starts
MIB-2_RQ_DPO_771	**2.2.5.9 Start a phone call via Siri, MIB screen is in native HMI mode**
MIB-2_RQ_DPO_940	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device -MIB screen is in native HMI mode User action: 1. Start Siri 2. Utter a command to start a phone call MIB reaction shall be: MIB screen: Switches over to CarPlay Phone Cluster screen: No additional requirements (If in Phone context -> CarPlay adjusted context is visible) Audio: The resources Mic and Main Audio are dedicated to CarPlay Phone 1. Call via CarPlay device starts
MIB-2_RQ_DPO_770	**2.2.5.10 Start a phone call via Siri, MIB screen is in CarPlay mode**

MIB-2_RQ_DPO_942	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device -MIB screen is in CarPlay mode User action: 1. Start Siri 2. Utter a command to start a phone call MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements (If in Phone context -> CarPlay adjusted context is visible) Audio: The resources Mic and Main Audio are dedicated to CarPlay Phone 1. Call via CarPlay device starts
MIB-2_RQ_DPO_768	**2.2.5.11 Start SDS, MIB is in CarPlay mode**
MIB-2_RQ_DPO_946	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - Music playback is active on CarPlay User action: 1. Starting SDS by pressing the PTT button for less than 600 msec MIB reaction shall be: MIB screen: SDS dialog is visible with the background being the same CarPlay context but dimmed as per apple requirements Cluster screen: No additional requirements Audio: The resources (Mic and Main Audio) are dedicated to Main Audio (SDS) native HMI 1. Prewarm of Siri starts when button is pressed 2. Release of the button starts SDS
MIB-2_RQ_DPO_767	**2.2.5.12 Start Siri while CarPlay phone call is ongoing**
MIB-2_RQ_DPO_948	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in CarPlay mode - CarPlay phone call is ongoing User action: 1. Start Siri MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Handled by CarPlay
MIB-2_RQ_DPO_766	**2.2.5.13 Start Siri while native HMI phone call is ongoing**
MIB-2_RQ_DPO_950	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in native HMI mode - native HMI phone call is ongoing User action: 1. Start Siri MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Siri doesn't start
MIB-2_RQ_DPO_812	**2.2.5.14 Start Siri while native HMI SDS is ongoing**
MIB-2_RQ_DPO_952	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - MIB screen is in native HMI mode - native HMI SDS is ongoing User action: 1. Do a long press (> 600 ms) on the home button of the connected CarPlay device MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Siri doesn't start
MIB-2_RQ_DPO_780	**2.2.6 FEAT_DPO_Messages**
MIB-2_RQ_DPO_909	CarPlay Messages and native HMI Messages functionality shall exist side by side
MIB-2_RQ_DPO_1368	CarPlay Messages and native HMI Messages functionality shall not exist side by side
MIB-2_RQ_DPO_781	**2.2.6.1 Using the messaging app on CarPlay**
MIB-2_RQ_DPO_911	Precondition: - The MIB system is on -CarPlay is active and displayed User action: 1. The user opens the messaging app and wants to use it MIB reaction shall be: MIB screen: The messaging app from CarPlay is displayed Cluster Screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to CarPlay 1. The user will be able to use the messaging app with the help of SIRI.
MIB-2_RQ_DPO_786	**2.2.6.2 Receiving a phone call on native HMI while using the messaging app on CarPlay**
MIB-2_RQ_DPO_913	Precondition: -The MIB system is on -CarPlay is active and the messaging app is being used User action: 1. The user receives a phone call on the MIB system MIB reaction shall be: MIB screen: A pop-up is displayed with the option to answer or decline with the background being the same CarPlay context but dimmed as per apple requirements. Cluster Screen: Incoming phone call is visible Audio: The resources Mic and Main Audio are dedicated to native HMI (Phone) 1. SIRI stops 2. After the phone call the user shall need to re-activate SIRI again if the user wishes to continue using the messaging function on CarPlay.
MIB-2_RQ_DPO_784	**2.2.6.3 Context change while using the messaging app in CarPlay**
MIB-2_RQ_DPO_915	Precondition: -The MIB system is on -CarPlay is active and the messaging app is being used User action: 1. The user proceeds to change the context to native HMI MIB reaction shall be: MIB screen: Switches over to the new context Cluster Screen: No additional requirements Audio: If new context requests Main Audio -> Main Audio is dedicated to native HMI (new context). If new context doesn't request Main Audio -> Main Audio is dedicated to Main Audio source which has been active before the Siri session. 1. The messaging session will be ended and SIRI will be stopped.
MIB-2_RQ_DPO_783	**2.2.6.4 Message is read by TTS in the MIB system while Music is running on Carplay**
MIB-2_RQ_DPO_917	Precondition: -The MIB system is on -CarPlay is active and the music is running -Active context: Messaging function in MIB User action: 1- The user pushes the 'Read' button in order to listen to a message on the native MIB system 2. Or any other action in native HMI to start TTS MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: is borrowed until the message is read and then returned to Carplay 1. Music on Carplay is interrupted and then resumed after the message is read
MIB-2_RQ_DPO_782	**2.2.6.5 Incoming message on Carplay**

MIB-2_RQ_DPO_919	Precondition: -The MIB system is on -CarPlay is active -Active context: any native context on MIB other than emergency announcments or an equivalent variant User action: 1- A message is received on Carplay while the user is using native functions on MIB MIB reaction shall be: MIB screen:switches over to Carplay Cluster screen: No additional requirements Audio: a tone is sent over the alternate audio resource 1. The context on MIB screen is changed to Carplay and the message is displayed allowing the user to access it directly from the Carplay screen
MIB-2_RQ_DPO_787	**2.2.7 FEAT_DPO_HMI**
MIB-2_RQ_DPO_892	native HMI and CarPlay HMI shall exist side by side
MIB-2_RQ_DPO_788	**2.2.7.1 Switch over to CarPlay while a global pop-up is visible**
MIB-2_RQ_DPO_893	Global Popup shall stay visible although in CarPlay frame buffer
MIB-2_RQ_DPO_894	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in native HMI mode - A global pop-up of native HMI, which expects confirmation is visible User action: 1. Initiate a switch over to CarPlay by press on HK or SK CarPlay or an incoming CarPlay phone call MIB reaction shall be: MIB screen: Switches over to CarPlay Cluster screen: No additional requirements Audio: If CarPlay requests Main Audio, the resource Main Audio is dedicated to CarPlay. If not, no additional requirement 1. The pop-up is displayed with the given options. 2. The background being the same CarPlay context but dimmed as per apple requirements.
MIB-2_RQ_DPO_795	**2.2.7.2 Switch over to CarPlay while a context dependent pop-up is visible**
MIB-2_RQ_DPO_896	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in native HMI mode - A content dependent pop-up of native HMI, which expects confirmation is visible User action: 1. Initiate a switch over to CarPlay by press on HK or SK CarPlay or an incoming CarPlay phone call MIB reaction shall be: MIB screen: Switches over to CarPlay Cluster screen: No additional requirements Audio: If CarPlay requests Main Audio, the resource Main Audio is dedicated to CarPlay. If not, no additional requirement 1. The pop-up is no longer visible
MIB-2_RQ_DPO_794	**2.2.7.3 Switch over to CarPlay while an info pop-up is visible**
MIB-2_RQ_DPO_898	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in native HMI mode - An info pop-up of native HMI is visible User action: 1. Initiate a switch over to CarPlay by press on HK or SK CarPlay or an incoming CarPlay phone call MIB reaction shall be: MIB screen: Switches over to CarPlay Cluster screen: No additional requirements Audio: If CarPlay requests Main Audio, the resource Main Audio is dedicated to CarPlay. If not, no additional requirement 1. The pop-up is no longer visible
MIB-2_RQ_DPO_793	**2.2.7.4 RVC while CarPlay owns screen, constraint= Never**
MIB-2_RQ_DPO_900	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in CarPlay mode - Resource constraint enume value for the screen is set to 1000 (Resource may never be taken or borrow) by CarPlay User action: 1. Activate RVC via reverse gear MIB reaction shall be: MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible as long as reverse gear is active
MIB-2_RQ_DPO_792	**2.2.7.5 RVC while CarPlay owns screen, constraint= User Initiated**
MIB-2_RQ_DPO_902	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in CarPlay mode - Resource constraint enume value for the screen is set to 500 (Resource may be taken or borrow if user requested) by CarPlay User action: 1. Activate RVC via reverse gear MIB reaction shall be: MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible as long as reverse gear is active
MIB-2_RQ_DPO_791	**2.2.7.6 RVC while CarPlay owns screen, constraint= Anytime**
MIB-2_RQ_DPO_904	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in CarPlay mode - Resource constraint enume value for the screen is set to 100 (Resource may be taken or borrow at any time) by CarPlay User action: 1. Activate RVC via reverse gear MIB reaction shall be: MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible as long as reverse gear is active
MIB-2_RQ_DPO_790	**2.2.7.7 Emergency Popups while CarPlay owns screen**
MIB-2_RQ_DPO_906	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device - Screen is in CarPlay mode User action: 1. Native HMI generates an emergency popup MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Emergency popup is visible with the background being the same CarPlay context but dimmed as per apple requirements
MIB-2_RQ_DPO_789	**2.2.7.8 Day- and Night Mode**
MIB-2_RQ_DPO_908	Precondition: - MIB powered up - CarPlay device is connected as CarPlay device User action: 1. Switch between Day/Night via global "Setup"/"Screen" 2. Switch over to CarPlay context MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. CarPlay context is in Day-/Night-Mode corresponding to Day/Night global settings.
MIB-2_RQ_DPO_796	**2.2.8 FEAT_DPO_Diagnosis_SWAP**
MIB-2_RQ_DPO_883	Diagnosis and SWAP shall have influence on CarPlay functionality

MIB-2_RQ_DPO_797	**2.2.8.1 Diagnosis switch for CarPlay is set to off (0)**
MIB-2_RQ_DPO_884	Precondition: - MIB powered up - CarPlay compatible CarPlay device is connected at OTG USB Port User action: 1. Check Menu context 2. Check push to talk button MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. There is still AppConnect link in Menu context 2. There is no CarPlay-logo or -functionality in AppConnect 3. Longpress on Push to talk button starts native HMI SDS
MIB-2_RQ_DPO_800	**2.2.8.2 Diagnosis switch for CarPlay is set to on (1)**
MIB-2_RQ_DPO_887	Precondition: - MIB powered up - CP compatible CarPlay device is connected at OTG USB Port User action: 1. Check Menu context 2. Check push to talk button MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. There is the AppConnect link in Menu context 2. There is the CarPlay-logo and -functionality in AppConnect 3. Longpress on Push to talk button starts Siri while CarPlay is ongoing
MIB-2_RQ_DPO_799	**2.2.8.3 CarPlay SWAP ID is released**
MIB-2_RQ_DPO_889	Precondition: - MIB powered up - CarPlay compatible CarPlay device is connected at OTG USB Port - CarPlay FS-ID 00060800 is released User action: 1. Start CarPlay session (Via AppConnect or connecting CarPlay device while Preference setting for this device is CarPlay) MIB reaction shall be: MIB screen: See UseCases Connection and AppConnect Cluster screen: See UseCases Connection and AppConnect Audio: See UseCases Connection and AppConnect 1. CarPlay session starts 2. There is the AppConnect link in Menu context 3. Longpress on Push to talk button starts Siri while CarPlay is ongoing
MIB-2_RQ_DPO_798	**2.2.8.4 CarPlay SWAP ID is not released**
MIB-2_RQ_DPO_891	Precondition: - MIB powered up - CarPlay compatible CarPlay device is connected at OTG USB Port - CarPlay FS-ID 00060800 is not released User action: 1. Start CarPlay session (Via AppConnect or connecting CarPlay device while CarPlay Preference setting is on) MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirementsAppConnect 1. CarPlay session doesn't start. 2. Popup appears: "CarPlay is not released/enabled, you must buy this feature" 3. There is the AppConnect link in Menu context 4. Longpress on Push to talk button doesn't start Siri
MIB-2_RQ_DPO_33	**2.3 Digital Ipod Out Requirements**
MIB-2_RQ_DPO_50	**2.3.1 FEAT_TM_IPOD_GENERAL**
MIB-2_RQ_DPO_57	The system shall support Digital iPod-Out functionality as an accessory device as defined by Apple in the Digital iPod Out Specification [4].
MIB-2_RQ_DPO_185	As the final version of the Digital iPod Out Specification [4] is not yet available, the supplier shall agree with VOLKSWAGEN on the version to be implemented.
MIB-2_RQ_DPO_51	**2.3.2 FEAT_TM_IPOD_SW_AS_PRODUCT**
MIB-2_RQ_DPO_58	It shall be possible to activate Digital iPod-Out via SW as Product [1] mechanisms.
MIB-2_RQ_DPO_61	**2.3.3 FEAT_TM_IPOD_SW_UPDATE**
MIB-2_RQ_DPO_62	If the brand specific mainunit platform supports updates, the user shall be able to update the Digital iPod Out functionality using the mechanisms as described in SWDL specification.
MIB-2_RQ_DPO_63	If the brand specific mainunit platform supports online updates and a data connnection is available, the user shall be able to run an online update as described in SWDL specification.
MIB-2_RQ_DPO_64	The Digital iPod Out software shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_DPO_65	In the case, that an incompatibility to a popular highrunner phone is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency" update within 30 days after notice of the failure.
MIB-2_RQ_DPO_70	**2.3.4 FEAT_TM_IPOD_Performance**
MIB-2_RQ_DPO_71	The system shall use the performance requirements as specified in the Digital iPod Out specification [4] as target. Any deviations shall be discussed with VOLKSWAGEN and Apple for approval.
MIB-2_RQ_DPO_72	The system shall ensure that the latency between user control events (e.g. touch events) and the reaction on the screen is less than 100ms for USB connections.
MIB-2_RQ_DPO_76	**2.3.5 FEAT_TM_IPOD_Siri**
MIB-2_RQ_DPO_77	The system shall support Siri via USB as specified in the Digital iPod Out specification. Support for Siri via Bluetooth is not required.
MIB-2_RQ_DPO_81	**2.3.6 FEAT_TM_IPOD_Handling_Mode_Changes_Screen_Handling**
MIB-2_RQ_DPO_82	The system shall handle Mode Change Requests requesting Screen access sent by the CarPlay device as specified by Apple.
MIB-2_RQ_DPO_83	The system shall take into account system conditions (e.g. resource availability) which might require reject of a Change Mode request sent by the CarPlay device.
MIB-2_RQ_DPO_84	The system shall inform the CarPlay device about the infotainment status as described in the Digital iPod Out Specification
MIB-2_RQ_DPO_93	**2.3.7 FEAT_TM_IPOD_Handling_Mode_Changes_Audio_Handling**
MIB-2_RQ_DPO_94	The system shall handle Mode Change Requests requesting main audio sent by the CarPlay device as specified by Apple and in compliance to the audio management requirements.
MIB-2_RQ_DPO_95	The system shall take into account system conditions (e.g. resource availability) which might require reject of a Change Mode request for main audio sent by the CarPlay device. The priorities are defined by the audio management priority table.
MIB-2_RQ_DPO_96	The system shall inform the CarPlay device about the infotainment status as described in the Digital iPod Out Specification
MIB-2_RQ_DPO_110	**2.3.8 FEAT_TM_IPOD_Handling_Alternative_Audio**
MIB-2_RQ_DPO_111	The system shall handle iOS alternative audio similar to system tones
MIB-2_RQ_DPO_114	**2.3.9 FEAT_TM_IPOD_HMI_Phone_HK**
MIB-2_RQ_DPO_115	The system HMI shall take into account phone and media status to decide when to switch to Digital iPod Out in case the Phone HK was pressed
MIB-2_RQ_DPO_121	**2.3.10 FEAT_TM_IPOD_HMI_Phone_Audio**
MIB-2_RQ_DPO_122	The system shall be able to handle Phone audio via Digital iPod Out
MIB-2_RQ_DPO_126	**2.3.11 FEAT_TM_IPOD_Media_Context**
MIB-2_RQ_DPO_127	If an CarPlay device is connected via Digital iPod Out and the user selects the USB port to which the device is connected as Media Source, the system HMI shall switch to Digital iPod Out and bring the media application of the CarPlay device to foreground
MIB-2_RQ_DPO_131	**2.3.12 FEAT_TM_IPOD_HMI_Main**
MIB-2_RQ_DPO_132	The system HMI shall provide a Softkey in the Menu HMI to start Digital iPod Out
MIB-2_RQ_DPO_183	The system HMI shall be able to configure to provide a Softkey in the Media context to switch to Digital iPod Out.
MIB-2_RQ_DPO_135	**2.3.13 FEAT_TM_IPOD_ACTIVATE**
MIB-2_RQ_DPO_136	The system HMI shall activate Digital iPod Out when the user presses the softkey for Digital iPod Out in the Menu
MIB-2_RQ_DPO_137	The system HMI shall take into account the current system status before activating Digital iPod Out (e.g. active phone call, media playback)
MIB-2_RQ_DPO_142	**2.3.14 FEAT_TM_IPOD_ACTIVATE_Failure_Handling**
MIB-2_RQ_DPO_143	The system shall inform the user if the Digital iPod Out connection establishment to the CarPlay device failed
MIB-2_RQ_DPO_146	**2.3.15 FEAT_TM_IPOD_HMI_Disconnect**
MIB-2_RQ_DPO_147	The system shall provide a softkey to disconnect Digital iPod Out in the Digital iPod Out context
MIB-2_RQ_DPO_151	**2.3.16 FEAT_TM_IPOD_HMI_Supported_Events**
MIB-2_RQ_DPO_152	It shall be possible to control the Apps via Digital iPod Out via touch screen (if available in the system) and via the rotary knob.
MIB-2_RQ_DPO_175	The system shall support multimedia keys (skip forward/backward , play/pause) from the steering wheel and/or main control panel to the connected device.
MIB-2_RQ_DPO_163	**2.3.17 FEAT_TM_IPOD_HMI_Cluster**
MIB-2_RQ_DPO_164	The system HMI shall show "Digital iPod Out" or similar in the Media Context of the instrument cluster when Digital iPod Out is the active context
MIB-2_RQ_DPO_167	**2.3.18 FEAT_TM_IPOD_Location_Information**
MIB-2_RQ_DPO_168	The MainUnit shall provide GPS location or speed and gyro data to the CarPlay device as defined in the Digital iPod Out Specification
MIB-2_RQ_DPO_177	**2.3.19 FEAT_TM_IPOD_DIAGNOSTIC**
MIB-2_RQ_DPO_178	The system shall be able to configure the Digital iPod Out functionality using diagnostics [2].
MIB-2_RQ_DPO_36	**3 Appendix**
MIB-2_RQ_DPO_37	**3.1 Abbreviations**

MIB-2_RQ_DPO_38

Term	Explanation
Term 1	Explanation 1

MIB-2_RQ_DPO_42 **3.2 Definitions**

MIB-2_RQ_DPO_45

Abbreviation	Description
ABT	Anzeige Bedienteil / Touch display
BT	Bluetooth
DDS	Dreh Drück Steller / Rotary Knob
EC	Echo Cancelation
GEM	Green Engineering Menu
HFP	Hands Free Profile
HMI	Human Machine Interface
MDI	Media Device Interface
MFL	Multi Funktions Lenkrad / Multi function steering wheel
MU	Main Unit
NR	Noise Reduction
PSD	Prediktive Strecken Daten / Predictive Route Data
PTT	Push To Talk
RVC	Rear View Camera
SDS	Speech Dialog System
SK	Soft Key
SWAP	Software as a Product

MIB-2_RQ_DPO_48 **4 Disclaimer**

MIB-2_RQ_DPO_49

Appendix D – Specification of Android Auto

ID	Responsible: AU: Felbermeir, Christian; SE: Collado, Belén; SK: Chara, Tomas; VW: Moursy, Islam
MIB-2_RQ_PJM_1	**1 Document**
MIB-2_RQ_PJM_2	**1.1 History of changes**
MIB-2_RQ_PJM_3	

Date	Requirement/Section	new Vers.	Description of change	Author
20.02.14	all	0.1	Initial version	
30.09.14	all	0.2	Reworked Version	IMo

MIB-2_RQ_PJM_7	**1.2 Related documents**
MIB-2_RQ_PJM_8	

Ref.Id	Documentname/ Description	Version	Filename
/1/	Software as a Product RQ list	4.2	MIB_2_RQ_LIST_SW_As_Product
/2/	Diagnostic coding		Codierung
/3/	MIB SWDL specification		MIB_2_RQ_LIST_Download
/4/	AA_HU_Integration_Guide		
/5/	Touch Coordinate Interpolation Concept		Touch_Coordinate_Interpolation_Concept_v1.pdf
/6/	BT Connectivity Spec.		MIB_2_RQ_LIST_Bluetooth
/7/	Media Device Data Interface		MIB_2_RQ_LIST_MobileDevice_DataInterface
/8/	Telephony Specification		MIB_2_RQ_LIST_Telephone
/9/	Android Open Accessory Protocol		Source.android.com/accessories/aoa.html
/10/	AAP_Audio_Handling		AAP_Audio_Handling_vX_VW_XXX

MIB-2_RQ_PJM_21	**1.3 Purpose of document**
MIB-2_RQ_PJM_22	This document describes the integration of Google's "Android Auto" features and requirements into the MIB.
MIB-2_RQ_PJM_66	In the first discussions, it was known as "Projected Mode"or as "Google Automotive Link".
MIB-2_RQ_PJM_32	**2 Functional Requirements**
MIB-2_RQ_PJM_68	**2.1 Introduction**
MIB-2_RQ_PJM_69	The Google Android Auto (AA) is a method to access certain defined functions on certain mobile devices via another display i.e. via the Head Unit (HU) display. The mobile devices in question must be running a certain Android operating system that is compatible with the AA protocol.
MIB-2_RQ_PJM_71	The AA is mainly implemented in a SW module, which has to be integrated in the HU. This reference implementation is provided by Google.
MIB-2_RQ_PJM_72	A prototype implementation for the mobile device side will be provided by Google.
MIB-2_RQ_PJM_206	**2.2 Android Auto Requirements**
MIB-2_RQ_PJM_207	**2.2.1 General**
MIB-2_RQ_PJM_208	**2.2.1.1 FEAT_PJM_Android_Auto_Support**
MIB-2_RQ_PJM_209	The system shall support the AA functionality as an accessory device as defined by Google in the AA HU Integration Guide [4]
MIB-2_RQ_PJM_210	**2.2.1.1.1 RQ_PJM_Android_Auto_Support**
MIB-2_RQ_PJM_211	The system shall support the AA functionality as an accessory device as defined by Google in the Android Auto HU Integration Guide [4]
MIB-2_RQ_PJM_212	To be able to access the Google Android Auto Specifications, the MIB supplier and all (subcontracted) software developers must sign the required agreements and acquire the licenses from Google
MIB-2_RQ_PJM_213	A Customer Update package for the Android Auto software component of the MIB shall be provided by the system supplier at least twice a year free of charge, as long as the system is in mass production.
MIB-2_RQ_PJM_214	In the case, that an incompatibility to an Android Auto device is found, the system supplier shall be ready to fix the incompatibility and provide a complementary "emergency" update within 30 days after notice of the failure.
MIB-2_RQ_PJM_215	The Android Auto function should be rolled out by Google in all the regions where the Google services are available.
MIB-2_RQ_PJM_216	MIB generally supports Android Auto in all regions of the world; via EOL coding it can be restricted.
MIB-2_RQ_PJM_217	**2.2.2 Affected Modules**
MIB-2_RQ_PJM_218	**2.2.2.1 Touchscreen**
MIB-2_RQ_PJM_219	**2.2.2.1.1 FEAT_PJM_Display_TouchEvents_DDS**
MIB-2_RQ_PJM_220	The Touchscreen shall display the Android Auto screen and the system shall send touch events and DDS actions to the Android Auto device.
MIB-2_RQ_PJM_221	**2.2.2.1.1.1 RQ_PJM_Touchscreen**
MIB-2_RQ_PJM_222	The Android Auto device streams the Android Auto screen as a H264 stream from the Android Auto device to the system.
MIB-2_RQ_PJM_223	The system shall decode the H264 stream received from the Android Auto device and shall display the content on the car's screen.
MIB-2_RQ_PJM_224	Touch events on the Touchscreen shall be sent to the Android Auto device.
MIB-2_RQ_PJM_899	The system shall forward multiple simultaneous touch events to the AA device.
MIB-2_RQ_PJM_225	Android Auto in its Version 1.0 supports Multi-touch functionality where the gestures are to be sent to the Android Auto device over the AA protocol. The Android device is responsible for the interpreation of these respective gestures.
MIB-2_RQ_PJM_956	If the Android phone is not able to deliver the requested video resolution of the HMI the south side shall scale the highest available video resolution of the smartphone with the same aspect ratio up or down to the resolution request by the HMI.
MIB-2_RQ_PJM_957	The aspect ratio of the video stream shall not be changed while scaling the video.
MIB-2_RQ_PJM_226	**2.2.2.1.1.2 RQ_PJM_DDS**
MIB-2_RQ_PJM_227	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)
MIB-2_RQ_PJM_228	The user shall be able to navigate across SKs or lists via the rotary knob function
MIB-2_RQ_PJM_229	Pressing the DDS shall activate the highlighted object
MIB-2_RQ_PJM_230	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)
MIB-2_RQ_PJM_231	**2.2.2.1.1.3 RQ_PJM_Algorithm_Dead_Touch_Areas**
MIB-2_RQ_PJM_232	The current MIB ABTs from Alpine have the hardware restriction, that areas at the borders of the touchscreen do not generate touch events with the correct coordinates. Android Auto uses the full display screen. Therefore a concept for a touchable area of the full display size is necessary.
MIB-2_RQ_PJM_233	The touch coordinates from the border shall be interpolated from the touchable frame to the full display screen size. An interpolation algorithm shall be implemented for all MIB ABT to fix the described deficiencies. [5]
MIB-2_RQ_PJM_234	**2.2.2.2 MFL**
MIB-2_RQ_PJM_235	**2.2.2.2.1 FEAT_PJM _Control_via_MFL**
MIB-2_RQ_PJM_236	There shall be MFL button support to control Android Auto
MIB-2_RQ_PJM_237	Button functionality shall be realized as described in: AA HU Integration Guide[4] in the "Buttons" Chapter
MIB-2_RQ_PJM_238	**2.2.2.2.1.1 RQ_PJM_Volume**
MIB-2_RQ_PJM_239	The MFL volume buttons shall control the volume of the car's amplifier.
MIB-2_RQ_PJM_240	The volume of the Android Auto device cannot be controlled via buttons on the car side as the audio out of the Android Auto device is a constant line signal
MIB-2_RQ_PJM_241	**2.2.2.2.1.2 RQ_PJM_Google_Voice**
MIB-2_RQ_PJM_242	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL.
MIB-2_RQ_PJM_243	**2.2.2.2.1.3 RQ_PJM_Phone_Calls**
MIB-2_RQ_PJM_244	In case of a Bluetooth connection for telephony, the MFL buttons shall control the Android Auto phone calls in the same way as Bluetooth telephony. This is specified in [8].
MIB-2_RQ_PJM_247	**2.2.2.2.1.4 RQ_PJM_Media**
MIB-2_RQ_PJM_248	Short press on one of the MFL Skip-Buttons shall skip music title
MIB-2_RQ_PJM_945	Short press on one of the MFL Up/Down-Buttons while being in Audio context in cluster shall skip music title
MIB-2_RQ_PJM_249	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song
MIB-2_RQ_PJM_250	Via the Škoda MFL button "Source Switch" it shall be possible to switch over from Android Auto media to any other native HMI media source.
MIB-2_RQ_PJM_251	It is not possible to switch to Android Auto via the Skoda MFL button "Source Switch".
MIB-2_RQ_PJM_252	**2.2.2.3 Instrument Cluster**
MIB-2_RQ_PJM_253	**2.2.2.3.1 FEAT_PJM_Instrument_Cluster_Phone_context**
MIB-2_RQ_PJM_254	The Android Auto representaion in the phone context on the instrument cluster will have the same feature set avaliable for the Bluetooth telephony functionality. This is defined in [8].
MIB-2_RQ_PJM_259	**2.2.2.3.1.1 RQ_PJM_Android Auto_Cluster_Phone_Context**
MIB-2_RQ_PJM_260	The Android Auto representation in the phone context on the instrument cluster will have the same feature set defined for the Bluetooth telephony functionality. This is defined in [8].
MIB-2_RQ_PJM_288	**2.2.2.3.2 FEAT_PJM_Instrument_Cluster_Audio_Context**
MIB-2_RQ_PJM_289	The string "Android Auto" shall be displayed while Android Auto is the active Media Source
MIB-2_RQ_PJM_290	**2.2.2.3.2.1 RQ_PJM_Instrument_Cluster_Audio_Context**
MIB-2_RQ_PJM_291	The string "Android Auto" shall be displayed while Android Auto is the active Media Source. (language independent)
MIB-2_RQ_PJM_292	No metadata from Android Auto will be visible on the Instrument cluster.

MIB-2_RQ_PJM_293	**2.2.2.3.3 FEAT_PJM_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_PJM_294	At the cluster screen the compass shall be visible in Navigation context while Android Auto route guidance is running. (This does not apply to freely programmable instrument clusters)
MIB-2_RQ_PJM_295	**2.2.2.3.3.1 RQ_PJM_Instrument_Cluster_Navigation_Context**
MIB-2_RQ_PJM_296	There are no turn by turn info visible in the instrument cluster navigation context.
MIB-2_RQ_PJM_297	In systems without navigation functionality, there is no navigation context visible in the instrument cluster.
MIB-2_RQ_PJM_298	In case of having a fully programmable cluster instrument (FPK), the native Nav module maps are not shown on the FPK while there is a route guidance active on the Android Auto device.
MIB-2_RQ_PJM_299	The FPK in combination with the system shall show a string "Smartphone Navigation active" in the navigation context while Android Auto route guidance is running. Translated in all languages which are supported by the system
MIB-2_RQ_PJM_300	The FPK in combination with the system shall show a compass while Android Auto route guidance is running.
MIB-2_RQ_PJM_301	At the cluster screen of None-FPKs the compass shall be visible in Navigation context while Android Auto route guidance is running.
MIB-2_RQ_PJM_302	**2.2.2.4 Microphone**
MIB-2_RQ_PJM_303	**2.2.2.4.1 FEAT_PJM_Microphone**
MIB-2_RQ_PJM_304	The microphone in the cabin shall provide the voice input to the Android Auto device for speech recognition and phone calls
MIB-2_RQ_PJM_305	**2.2.2.4.1.1 RQ_PJM_Microphone**
MIB-2_RQ_PJM_306	The microphone in the cabin shall provide the voice input to the Android Auto device for speech recognition and phone calls
MIB-2_RQ_PJM_307	**2.2.2.5 ABT Hard Keys**
MIB-2_RQ_PJM_308	ABT HKs are always linked with the native HMI contexts, even if Android Auto is displayed on the MIB screen. An exception is the HK Voice.
MIB-2_RQ_PJM_309	**2.2.2.5.1 FEAT_PJM_ABT_Hard_Keys**
MIB-2_RQ_PJM_310	The voice HK on ABT shall have the same functionality as the MFL PTT button.
MIB-2_RQ_PJM_311	**2.2.2.5.1.1 RQ_PJM_ABT_Hard_Keys**
MIB-2_RQ_PJM_312	The voice HK on ABT shall have the same functionality as the MFL PTT button.
MIB-2_RQ_PJM_313	This also applies to the Joker HK in case it has been assigned the Voice functionality.
MIB-2_RQ_PJM_314	In case the Joker key has been assigned the AppConnect functionality, it shall link to the AppConnect context in the ABT.
MIB-2_RQ_PJM_315	**2.2.3 Audio**
MIB-2_RQ_PJM_318	**2.2.3.1 FEAT_PJM_Audio_Handling**
MIB-2_RQ_PJM_319	The system shall support the Audio specifications as described in the AAP_Audio_handling[10].
MIB-2_RQ_PJM_954	**2.2.3.1.1 RQ_PJM_Audio_Handling**
MIB-2_RQ_PJM_955	The system shall support the Audio specifications as described in the AAP_Audio_handling[10].
MIB-2_RQ_PJM_331	**2.2.3.2 FEAT_PJM_Audio_Input**
MIB-2_RQ_PJM_332	The system shall send audio signal from the microphone in the car's cabine to the Android Auto device.
MIB-2_RQ_PJM_333	**2.2.3.2.1 RQ_PJM_Signal_Processing**
MIB-2_RQ_PJM_334	The system shall send audio signal from the microphone in the car's cabine to the Android Auto device.
MIB-2_RQ_PJM_335	In case of speech recognition (i.e. Google Voice), before the signal from the microphone is transferred to the Android Auto device , the signal shall be not be enhanced by echo cancellation, noise reduction or automatic gain control as described in Google's Head Unit Integration guide: [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_336	Artifacts, Dropouts and Clipping on the processed microphone signal shall be avoided.
MIB-2_RQ_PJM_339	For Voice Recognition. the system shall support microphone signal sample rate of 16 kHz.
MIB-2_RQ_PJM_341	**2.2.3.3 FEAT_PJM_Audio_Connection_Labels**
MIB-2_RQ_PJM_342	There shall be different new Audio Connection Labels
MIB-2_RQ_PJM_343	**2.2.3.3.1 RQ_PJM_New_Audio_Connection_Labels**
MIB-2_RQ_PJM_344	CL_ENT_AMP_GAL_MEDIA->DSI ID 156 shall be used for Android Auto Media.
MIB-2_RQ_PJM_345	CL_ANN_AMP_GAL_PHONE -> DSI ID 157 shall be used for Android Auto Phone
MIB-2_RQ_PJM_346	CL_ANN_AMP_GAL_SPEECH-> DSI ID 158 shall be used for Android Auto Voice recognition Output
MIB-2_RQ_PJM_347	CL_SYS_AMP_GAL_SPEECH_INPUT -> DSI ID 159 shall be used to send the microphone signal to the Android Auto device in case of Voice Recognition
MIB-2_RQ_PJM_348	CL_ANN_AMP_GAL_ANNOUNCEMENT -> DSI ID 160 shall be used for Android Auto Navigation Announcements without Lowering (Ducking).
MIB-2_RQ_PJM_349	Regarding Lowering: (11) CL_ANN_AMP_GAL_LOWERING -> DSI ID 161 shall be used for Android Auto Navigation Announcements with Lowering (Ducking).
MIB-2_RQ_PJM_949	CL_SYS_AMP_GAL_PHONE_SPEECH_INPUT -> DSI ID 164 shall be used for Android Auto phone speech input
MIB-2_RQ_PJM_350	**2.2.3.4 FEAT_Audio_Duck_Service**
MIB-2_RQ_PJM_351	New ConnectionLabels for Lowering (DSI ID 161) shall be implemented
MIB-2_RQ_PJM_352	**2.2.3.4.1 RQ_PJM_Lowering_Connection_Labels**
MIB-2_RQ_PJM_353	In case Navigation annouenements activity is communnicated from the AAP device , the system shall use requestConnection CL_ANN_AMP_DIO_LOWERING -> DSI ID 161.
MIB-2_RQ_PJM_354	The system shall use the existing mechanism for navigation attenuation for Android Auto ducking.
MIB-2_RQ_PJM_355	No separate „SetDuck" Service necessary
MIB-2_RQ_PJM_361	**2.2.3.5 FEAT_PJM_Audio_Latency**
MIB-2_RQ_PJM_362	The system shall meet the timing requirements for audio latency and startup as specified in [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_363	**2.2.3.5.1 RQ_PJM_General_Audio_Latency**
MIB-2_RQ_PJM_364	The system shall support Audio-Setup latency of maximum 200 ms and Audio-output latency of maximum 50 ms as defined in Google's Head Unit Integration Guide[4]
MIB-2_RQ_PJM_373	**2.2.3.6 FEAT_PJM_Streaming_Requirements**
MIB-2_RQ_PJM_374	The system shall fulfill the Streaming Requirements defined by Google in the AA HU Integration Guide [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_375	**2.2.3.6.1 RQ_PJM_ Streaming_Requiments**
MIB-2_RQ_PJM_376	The system shall fulfill the Streaming Requiements defined by Google in the Android Auto Projection Specification [4]: Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_377	**2.2.4 Android Auto relevant functions in native HMI**
MIB-2_RQ_PJM_388	**2.2.4.1 FEAT_PJM_ABT_Phone_context_Android_Auto**
MIB-2_RQ_PJM_389	The system shall inform the user about the connected Android Auto device in native ABT phone context. This information is identical to the one defined for the Bluetooth telephony functionality. This is specified in [8].
MIB-2_RQ_PJM_390	**2.2.4.1.1 RQ_PJM_ABT_Phone_context_Android_Auto**
MIB-2_RQ_PJM_392	The system shall inform the user about the connected Android Auto device in native ABT phone context. This information is identical to the one defined for the Bluetooth telephony functionality. This is specified in [8].
MIB-2_RQ_PJM_403	**2.2.4.2 FEAT_PJM_Bluetooth_connection_handling**
MIB-2_RQ_PJM_405	During an active Android Auto session there shall not be any other Bluetooth connection than HFP, MAP and PBAP connections to the Android Auto device.
MIB-2_RQ_PJM_406	**2.2.4.2.1 RQ_PJM_BT_connection_handling**
MIB-2_RQ_PJM_886	When an AA session is started, the system shall disconnect all its Bluetooth connections, except for already existing HFP,PBAP and MAP connections to the AA device.
MIB-2_RQ_PJM_889	When an AA session is started and the AA device is not yet in the list of paired Bluetooth devices, the system shall perform the Bluetooth pairing procedure without user interaction as defined in [4].
MIB-2_RQ_PJM_410	During an active Android Auto session, incoming Bluetooth connection requests to the system from devices other than the active AA device shall be blocked.
MIB-2_RQ_PJM_909	During an active Android Auto session, the system shall not try to reconnect to other Bluetooth devices.
MIB-2_RQ_PJM_411	During an active AA session, a user initiated Bluetooth connection to another device shall be blocked and the user shall be informed.
MIB-2_RQ_PJM_900	During an active AA session, a user initiated Bluetooth profile connection to a profile other than HFP, PBAP and MAP shall be blocked and the user shall be informed.
MIB-2_RQ_PJM_901	During an active AA session with an HFP connection to the AA device, the system shall also ensure connection of PBAP and MAP profiles to the same device.
MIB-2_RQ_PJM_902	The system shall allow the user to switch off Bluetooth even during an active AA session.
MIB-2_RQ_PJM_903	In case Bluetooth is deactivated in the system, it shall not be activated automatically upon initiation of an AA session. (Note: This is an intentional contradiction to [4])
MIB-2_RQ_PJM_456	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.
MIB-2_RQ_PJM_911	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device", the system shall re-establish an rSAP connection to this device.
MIB-2_RQ_PJM_912	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device" and there is a non-idle call on the Android Auto device, the upgrade to rSAP shall be delayed until the call state is idle again.
MIB-2_RQ_PJM_910	If the Android Auto session is ended, the system shall not actively disconnect the Bluetooth connection of the Android Auto device.
MIB-2_RQ_PJM_413	**2.2.4.3 FEAT_PJM_Mini_Media_Player**
MIB-2_RQ_PJM_414	The mini Media Player in native HMI Navigation and Car context shall have limited functionality when Android Auto device is the active media source
MIB-2_RQ_PJM_415	**2.2.4.3.1 RQ_PJM_Mini_Media_Player_Functions**
MIB-2_RQ_PJM_416	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.
MIB-2_RQ_PJM_417	In the mini MediaPlayer in native HMI no MetaData shall be visible when Android Auto is the active audio source.
MIB-2_RQ_PJM_418	In the mini MediaPlayer in native HMI no control buttons shall be visible when Android Auto is the active audio source.
MIB-2_RQ_PJM_419	**2.2.4.4 FEAT_PJM_native_HMI_Popups**
MIB-2_RQ_PJM_420	When native HMI popups are visible while Android Auto screen is active, the background shall be the same Android Auto context but dimmed
MIB-2_RQ_PJM_421	**2.2.4.4.1 RQ_PJM_native_HMI_Popups**
MIB-2_RQ_PJM_422	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.
MIB-2_RQ_PJM_907	While a native HMI pop-up is overlayed over the Android Auto context, no touch events shall be forwarded to the Android Auto device.
MIB-2_RQ_PJM_423	**2.2.4.5 FEAT_PJM_Volume_Bar**
MIB-2_RQ_PJM_424	Native HMI volume bar shall be visible while the volume of Android Auto audio sources changes.
MIB-2_RQ_PJM_425	**2.2.4.5.1 RQ_PJM_Volume_Bar**
MIB-2_RQ_PJM_426	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.
MIB-2_RQ_PJM_908	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.
MIB-2_RQ_PJM_427	**2.2.5 FEAT_PJM_Google_Voice**
MIB-2_RQ_PJM_428	The system shall fullfill the requirements for the Google Voice function as specified in the Android Auto Projection Specification [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_429	Google Voice controls the Android Auto functions only. It has no access to the MIB functions.
MIB-2_RQ_PJM_430	Google Voice is not a replacement of the native SDS. By a short press on PTT button it is still possible to start the native SDS.

MIB-2_RQ_PJM_431	**2.2.5.1 RQ_PJM_Google _Voice**
MIB-2_RQ_PJM_432	Long press > 600ms on any of the car's PTT buttons shall start the Google Voice unless there is a non-idle phone call in the system. (The system shall not wait for the button release but shall start Google Voice after the expiry of the 600ms timer).
MIB-2_RQ_PJM_433	A press on the microphone SK in the Android Auto UI may start Google Voice
MIB-2_RQ_PJM_436	While the Google Voice session is active, all PTT button events (press and release) shall be sent to the Android Auto device (raw events without interpretation of the button events). Note: They shall not be interpreted by the internal SDS.
MIB-2_RQ_PJM_437	**2.2.6 FEAT_PJM_SIM_Mode**
MIB-2_RQ_PJM_440	A "Voice & Data" connection using a SIM-card and the internal phone module shall fall back to "Data only" upon establishment of an Android Auto session and the user shall be informed about the mode change.
MIB-2_RQ_PJM_449	**2.2.6.1 RQ_PJM_SIM_Mode**
MIB-2_RQ_PJM_452	A "Voice & Data" connection using a SIM-card and the internal phone module shall fall back to "Data only" upon establishment of an Android Auto session and the user shall be informed about the mode change.
MIB-2_RQ_PJM_455	As long as an active Android Auto session, it shall not be possible to change the SIM mode to "Voice & Data".
MIB-2_RQ_PJM_457	If the Android Auto session is ended the SIM mode remains in "Data only". It can be changed manually by the user.
MIB-2_RQ_PJM_458	**2.2.7 FEAT_PJM_Telephony**
MIB-2_RQ_PJM_459	The system shall handle Android Auto calls over Bluetooth as specified in [8].
MIB-2_RQ_PJM_460	**2.2.7.1 RQ_PJM_Telephony**
MIB-2_RQ_PJM_461	In addition to the Android Auto phone, up to two additional phones can be connected to MIB as well.
MIB-2_RQ_PJM_463	While a phone call is ongoing on a BT connected phone or internal phone module it shall not be possible to start a Android Auto phone call and vice versa.
MIB-2_RQ_PJM_464	The system shall handle Android Auto calls over Bluetooth as specified in [8].
MIB-2_RQ_PJM_465	An incoming phone call on a BT connected phone or internal phone module during an ongoing Android Auto phone call shall be shown by a popup which shall allow the user to decline the incomming call or to replace the Android Auto call with the incomming call. Note: Cluster instrument phone context is still blocked by Android Auto_Cluster_Phone_Screen
MIB-2_RQ_PJM_466	If an active Android Auto phone call is ended while there is an incomming phone call on a BT connected phone or internal phone module the incomming phone call shall be treated with the usual handling for incomming BT or internal phone module phone calls. Note: After end of Android Auto phone call, cluster instrument phone context shows current state of the BT or internal phone module phone call
MIB-2_RQ_PJM_467	The call state of calls on an external phone module, internal phone module or on a Bluetooth connected phone shall be communicated to the Android Auto device by the system.
MIB-2_RQ_PJM_470	**2.2.8 FEAT_PJM_Navigation**
MIB-2_RQ_PJM_471	Android Auto route guidance and native HMI route guidance shall not be active at the same time
MIB-2_RQ_PJM_472	**2.2.8.1 RQ_PJM_ Route_Guidance**
MIB-2_RQ_PJM_473	Starting route guidance via native HMI while having active route guidance in Android Auto shall cause the Android Auto route guidance to stop and vice versa.
MIB-2_RQ_PJM_474	Connecting a Android Auto device with an active route guidance shall end an active route guidance that is currently running in the native HMI.
MIB-2_RQ_PJM_476	Android Auto navigation information is only visible at the car's main screen, but not at the cluster or any second screen.
MIB-2_RQ_PJM_477	PRD (Predictive Route Data) are available in the car while Android Auto route guidance is active but with same quality as inactive MIB route guidance.
MIB-2_RQ_PJM_478	**2.2.9 FEAT_PJM_Media**
MIB-2_RQ_PJM_479	Android Auto requires AOAP, which is not compatible to MTP and/or mass storage device. While a Android Auto session is ongoing, AOAP is active and MTP and/or MSC is deactivated for the USB port where the Android Auto device is connected. As a result of this behavior, the Android Auto device is no longer visible as Media device in Media context and cannot be controlled by the native HMI.
MIB-2_RQ_PJM_480	Another Android Auto capable device, which is connected at the same time to the other USB port, is not affected by the active AOAP session on Android Auto and is still available as Media Device in native HMI Media context.
MIB-2_RQ_PJM_481	An Android Auto device with an ongoing Android Auto session is not selectable as Media Device in native HMI Media context
MIB-2_RQ_PJM_482	**2.2.9.1 RQ_PJM_Media**
MIB-2_RQ_PJM_483	An Android Auto device with an ongoing Android Auto session shall not be selectable as Media Device in native HMI Media context
MIB-2_RQ_PJM_484	**2.2.10 FEAT_PJM_Rearview_Camera**
MIB-2_RQ_PJM_485	While in Android Auto context, the Rearview Camera pop-up shall always be visible when activated
MIB-2_RQ_PJM_486	**2.2.10.1 RQ_PJM_Rearview_Camera**
MIB-2_RQ_PJM_487	While in Android Auto context, the Rearview Camera pop-up shall always be visible when activated
MIB-2_RQ_PJM_488	This behavior is independent from the mode of the video focus defined by Android Auto. See [4] for details.
MIB-2_RQ_PJM_501	**2.2.11 FEAT_PJM_Connection**
MIB-2_RQ_PJM_503	Connecting a Android Auto compatible Android Auto device to the system shall automatically start a Android Auto session if Preference_Technology in Devices_Preference_Status_List is set to Android Auto for this device
MIB-2_RQ_PJM_505	**2.2.11.1 RQ_PJM_Connection**
MIB-2_RQ_PJM_506	Connection via a Standard USB 2.0 connection shall be possible
MIB-2_RQ_PJM_507	The HMI main screen shall not switch to Android Auto context automatically upon re-connection of a Android Auto device, unless the device explicitly requests the screen resource.
MIB-2_RQ_PJM_508	**2.2.11.2 RQ_PJM_USB_Mode_Selection**
MIB-2_RQ_PJM_509	The system shall support Android Auto connection on all its USB ports.
MIB-2_RQ_PJM_510	When an Android Device is connected, the system shall check if the Android device is in accessory mode and shall start the device in the mentioned mode if it is not already active. The system shall announce itself as an Android Auto accessory and try to establish an Android Auto communication with the MD.
MIB-2_RQ_PJM_892	If the connected Android device does not support AOAP, it will ignore the AOAP initial message sent by the system. In this case, the system shall proceed to negotiate other USB modes like MTP or Charge-only modes.
MIB-2_RQ_PJM_894	Terminating an Android Auto session shall be performed by re-enumerating USB using another protocol.
MIB-2_RQ_PJM_511	For more details USB-modes and connection setup see Google's specification: AA HU Integration Guide chapter: "Setting Up Transport" [4]
MIB-2_RQ_PJM_512	**2.2.11.3 RQ_PJM_Authentication**
MIB-2_RQ_PJM_513	Upon MD connection and after the AOAP initial connection message is sent from the HU, an authenication process shall take place to verify if the MD and HU are authorized to perform Android Auto. The process is accomplished by exchanging X.509 certificates located on both the MD and the HU. In the process, the MD verifies if the HU is a valid AA receiver and the HU verifies if the MD is a valid AA projection device.
MIB-2_RQ_PJM_897	The system shall be able to save the certificates required for the authentication process and be able to pass them to AA receiver library when needed.
MIB-2_RQ_PJM_896	In case of authenication failure, the system shall terminate the connection and disconnect AOAP and shall start to negotiate other USB modes in order to make the device available as a media source in native HMI media context (note: e.g. MTP).
MIB-2_RQ_PJM_895	The system shall be able to provide the correct time and date (using GPS, manual user entry, etc...) in order to avoid the failure of SSL authentication
MIB-2_RQ_PJM_514	For more information regarding authentication: see Google AA HU Integration Guide chapter "Authenticating"[4]
MIB-2_RQ_PJM_515	**2.2.12 FEAT_PJM_Protocol_Interfaces**
MIB-2_RQ_PJM_516	AOAP and the DSI-modules required for support of Android Auto shall be implemented in the system.
MIB-2_RQ_PJM_517	**2.2.12.1 RQ_PJM_AOAP_Support**
MIB-2_RQ_PJM_518	AOAP shall be supported as described in [9]
MIB-2_RQ_PJM_519	The system shall support AOAP v1.0 in order to support Android Auto.
MIB-2_RQ_PJM_521	A mix mode or switching between AOAP and MTP within a Android Auto session is not possible!
MIB-2_RQ_PJM_893	Future mobile devices may announce themselves as AOAP v2.0 which is backward compatible with AOAP v1.0
MIB-2_RQ_PJM_919	The system shall allow connections with mobile devices supporting AOAP v2.0 or higher as long as the AOAP version used by the mobile device is downward compatible with AOAP v1.0.
MIB-2_RQ_PJM_522	**2.2.12.2 RQ_PJM_DSI**
MIB-2_RQ_PJM_523	The system shall support the Android Auto DSI.
MIB-2_RQ_PJM_524	The system shall support the SmartphoneIntegration DSI.
MIB-2_RQ_PJM_525	**2.2.13 FEAT_PJM_Resource_Management**
MIB-2_RQ_PJM_526	Resource Management of Screen and Audio is negotiated with the Android Auto device, as described in AA Integration Guide [4]
MIB-2_RQ_PJM_528	The system shall handle Resource Management for navigation and speech modes as specified by Google AA HU Integration Guide [4]
MIB-2_RQ_PJM_529	**2.2.13.1 RQ_PJM_Resource_Management**
MIB-2_RQ_PJM_530	Resource Management of Screen and Audio is negotiated with the Android Auto device, as described in Google Android Auto Specification [4] Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_918	The system shall grant the request for the resource screen from the Android Auto device (i.e. assign the car's screen to the Android Auto session). Exceptions shall be agreed with the OEM during development time.
MIB-2_RQ_PJM_532	The system shall handle navigation modes and speech modes as specified by Google Android Auto Projection Specification [4]. Deviations shall be discussed and agreed with the OEM.
MIB-2_RQ_PJM_539	**2.2.14 FEAT_PJM_Diagnosis**
MIB-2_RQ_PJM_540	The system shall support a diagnosis switch which activates/deactivates the Android Auto functionality.
MIB-2_RQ_PJM_541	**2.2.14.1 RQ_PJM_Diagnosis_Switch**
MIB-2_RQ_PJM_542	The system shall support a diagnosis switch which activates/deactivates the Android Auto functionality.
MIB-2_RQ_PJM_543	**2.2.14.2 RQ_PJM_Diagnosis_Deactivated**
MIB-2_RQ_PJM_544	In case the Android Auto diagnosis switch is set to "deactivated", there shall be no Android Auto Logo, label and / or AA related settings in the HMI.
MIB-2_RQ_PJM_545	In case the Android Auto diagnosis switch is set to "deactivated", it shall not be possible to start a Android Auto session on any device
MIB-2_RQ_PJM_547	**2.2.14.3 RQ_PJM_Diagnosis_Activated**
MIB-2_RQ_PJM_548	In case the Android Auto diagnosis switch is set to "activated", the system shall display the Android Auto Logo, label and AA related settings in the HMI.
MIB-2_RQ_PJM_549	In case the Android Auto diagnosis switch is set to "activated", the system shall support Android Auto.
MIB-2_RQ_PJM_550	**2.2.15 FEAT_PJM_SWAP**
MIB-2_RQ_PJM_551	There shall be a SWAP protection for the function Android Auto
MIB-2_RQ_PJM_552	**2.2.15.1 RQ_PJM_SWAP**
MIB-2_RQ_PJM_553	There shall be a SWAP protection for the function "Google Android Auto" with the FS-ID 00060900
MIB-2_RQ_PJM_554	If the SWAP ID for Android Auto is not activated, the user shall be informed.
MIB-2_RQ_PJM_555	In case the SWAP ID for Android Auto is not activated it shall not be possible to start a Android Auto session on any device
MIB-2_RQ_PJM_557	**2.2.16 FEAT_PJM_GEM**
MIB-2_RQ_PJM_558	There shall be a Android Auto section in GEM.
MIB-2_RQ_PJM_559	**2.2.16.1 RQ_PJM_GEM**
MIB-2_RQ_PJM_560	There shall be a Android Auto section in GEM.
MIB-2_RQ_PJM_561	Version of Google Android Auto Receiver Library shall be visible in GEM
MIB-2_RQ_PJM_921	It shall be possible to enable/disable accepting video focus requests via GEM.
MIB-2_RQ_PJM_930	The individual bits of the drive level bit mask as defined in RQ_PJM_592 shall be configurable via GEM.

MIB-2_RQ_PJM_923	Further GEM entries shall be mutually agreed during project development time.
MIB-2_RQ_PJM_562	Devices_Preference_Status_List shall be visible (display only, no editing functionality) in GEM
MIB-2_RQ_PJM_563	A function to activate and deactivate DDS control functionality shall be available in GEM
MIB-2_RQ_PJM_564	**2.2.17 FEAT_PJM_Lastmode**
MIB-2_RQ_PJM_565	MIB shall support HMI lastmode for Android Auto context
MIB-2_RQ_PJM_566	**2.2.17.1 RQ_PJM_Lastmode_Android Auto**
MIB-2_RQ_PJM_567	If Android Auto has been the last active HMI context, it shall be active again after a restart of the system, given that the Android Auto device is still connected and available as Android Auto device.
MIB-2_RQ_PJM_568	If Android Auto has been the last active HMI context, but the Android Auto device is no longer available after a restart of the system, native HMI shall start with AppConnect context.
MIB-2_RQ_PJM_570	**2.2.18 FEAT_PJM_Powerstate**
MIB-2_RQ_PJM_571	The system shall support all Android Auto functionality under the same power management conditions under which USB connections would be possible. Exception: Bluetooth functionality behaves as described in [6].
MIB-2_RQ_PJM_572	**2.2.18.1 RQ_PJM_Powerstate**
MIB-2_RQ_PJM_575	Android Auto calls shall trigger transitions from and to MMI_ON_TEL just like calls on the internal phone module or a connected Bluetooth phone would
MIB-2_RQ_PJM_576	The system shall support all Android Auto functionality under the same power management conditions under which USB connections would be possible
MIB-2_RQ_PJM_924	Exception to RQ_PJM_576: The power management for Bluetooth connections shall still be handled as specified in [6].
MIB-2_RQ_PJM_577	The actual behavior of the AA device under the condition that the USB connection is still active but Bluetooth is disconnected is up to the AA device.
MIB-2_RQ_PJM_578	**2.2.19 FEAT_PJM_Performance**
MIB-2_RQ_PJM_579	The system shall accomplish the performance requirements as specified in the Android Auto Projection Specification [4]. Any deviations shall be discussed with the OEM for approval.
MIB-2_RQ_PJM_580	**2.2.19.1 RQ_PJM_Performance**
MIB-2_RQ_PJM_581	The system shall accomplish the performance requirements as specified in the Android Auto Projection Specification [4]. Any deviations shall be discussed with the OEM for approval.
MIB-2_RQ_PJM_582	**2.2.20 FEAT_PJM_Sensor_Data_and_Car_information**
MIB-2_RQ_PJM_583	The car shall provide the following vehicle data to the Android Auto device: GPS, gyro, Accelerometer, Compass orientation, day/night-mode, current gear, drive level and wheel speed data if available.
MIB-2_RQ_PJM_586	**2.2.20.1 RQ_PJM_Day_Night_Mode**
MIB-2_RQ_PJM_587	The car shall provide the Android Auto device with the information about Day/Night-Mode.
MIB-2_RQ_PJM_588	**2.2.20.2 RQ_PJM_Navigation_Data**
MIB-2_RQ_PJM_589	The system shall provide Position of the vehicle, from a GPS source if one is present in the system. Uses WGS84 datum. It may include corrections from sensor fusion, but must not include dead reckoning or map matching. ● Latitude & Longitude ● Accuracy (68% confidence horizontal radius) ● Number of satellites used in fix ● Altitude ● Speed (as calculated by Location engine) ● Course (as calculated by Location engine) The head unit should send raw GPS values to the mobile device with no Dead Reckoning (DR) or Map Matching (MM) applied because the mobile device will perform its own DR and MM with the additional sensors and map data it has available. This data shall be refreshed with a rate of 10Hz.
MIB-2_RQ_PJM_916	The system shall provide the Android Auto device with the vehicle speeed which is derived from the mechanical rotation at transmission or wheels and not from GPS (Refresh rate 10hz).
MIB-2_RQ_PJM_917	The system shall provide the Android Auto device with Accelerometer and Gyroscope information (Refresh rate 10hz).
MIB-2_RQ_PJM_590	The system shall provide 1-axis compass heading (or optional 3-axis if pitch and roll are available) to the Android Auto. The compass heading should be magnetic north (rather than true north). The recommended resolution of compass heading data is 1 degree, and the minimum resolution is 45 degrees. Refresh rate 10Hz.
MIB-2_RQ_PJM_591	**2.2.20.3 RQ_PJM_Drive_level**
MIB-2_RQ_PJM_592	The system shall provide drive level information to the Android Auto device
MIB-2_RQ_PJM_593	Android Devices will behave on Drive_level information as follows: Drive level indicates the level of feature/functionality lockout as determined by vehicle. It is defined as a bitmask: 00001 = no video playback allowed (video playback is defined as media such as movies,YouTube, games, etc. -- not UI). 00010 = no text input allowed (on-screen keyboard, rotary controller speller, touchpad text entry) 00100 = no voice input allowed 01000 = no setup/configuration allowed 10000 = limit displayed message length
MIB-2_RQ_PJM_926	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.
MIB-2_RQ_PJM_928	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.
MIB-2_RQ_PJM_929	The usual hysteresis behavior as defined for BT-BONDING shall apply.
MIB-2_RQ_PJM_927	The drive level bit mask shall be MIB region variant specific.
MIB-2_RQ_PJM_914	**2.2.20.4 RQ_PJM_Current Gear**
MIB-2_RQ_PJM_915	The system shall provide current gear information to the Android Auto device as defined in [4].
MIB-2_RQ_PJM_931	**2.2.20.5 RQ_PJM_Left_Right_Hand_Drive**
MIB-2_RQ_PJM_932	The system shall provide information about the steering wheel position to the AA device as defined in [4].
MIB-2_RQ_PJM_595	**2.2.20.6 PJM_EXLAP_via_AOAP**
MIB-2_RQ_PJM_596	The system shall provide EXLAP via AOAP to VW Android Auto apps.
MIB-2_RQ_PJM_598	**2.2.21 FEAT_PJM_Customer_Update**
MIB-2_RQ_PJM_599	The customer shall be able to update the Android Auto software component of the MIB via the Customer Update Process.
MIB-2_RQ_PJM_600	**2.2.21.1 RQ_PJM_Customer_Update**
MIB-2_RQ_PJM_601	The customer shall be able to update the Android Auto software component of the MIB via the Customer Update Process.
MIB-2_RQ_PJM_602	**2.3 UseCases**
MIB-2_RQ_PJM_603	**2.3.1 FEAT_PJM_Connection**
MIB-2_RQ_PJM_604	It shall be possible to connect a Android Auto compatible Android Auto device and to start Android Auto
MIB-2_RQ_PJM_605	**2.3.1.1 Connect Android Auto device Preference_Technology is Android Auto**
MIB-2_RQ_PJM_606	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - Android Auto device is in home screen, no playback is running User action: 1. Connect Android Auto device to MIB via Android Auto compatible USB port MIB reaction shall be: MIB screen: Phone context -> Shows the BT connected Android Auto device All other contexts -> No additional requirements Cluster screen: Phone Context -> Shows the Info of the BT connected Android Auto device All other contexts -> No additional requirements Audio: No additional requirements 1.AOAP becomes active 2. Android Auto session starts 3. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_610	**2.3.1.2 Connect Android Auto device while audio playback is running on it. MIB in entertainment source context**
MIB-2_RQ_PJM_611	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device
MIB-2_RQ_PJM_612	The system's HMI context shall switch to Android Auto, if Android Auto becomes the active media source and the previously active HMI context was Radio, Media or TV-Tuner.
MIB-2_RQ_PJM_613	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - MIB is in Radio, TV-Tuner or Media context native HMI - Android Auto device, audio playback is running (Music, Spotify,…) User action: 1. Connect Android Auto device to MIB via Android Auto compatible USB port MIB reaction shall be: MIB screen: Switches over to Android Auto context corresponding to status of Android Auto device Cluster screen: Media context -> Shows Android Auto as media source. All other contexts -> No additional requirements Audio: The resource Audio is dedicated to Android Auto 1. AOAP is active 2. Android Auto session starts 3. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_617	**2.3.1.3 Connect Android Auto device while call is running on it.**

MIB-2_RQ_PJM_619	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - MIB no active call via native HMI - Android Auto device call is running - Android Auto device is not connected with MIB User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: no additional requirement Cluster screen: Context switches over to Phone. The phone call info is visible as in the case of normal calls over BT telephony Audio: The resources Mic and Main Audio are dedicated to Android Auto 1. AOAP is active 2. Android Auto session starts 3. Microphone in the cabin is active for Android Auto phone over BT 4. Main Audio of native HMI is muted 5. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_623	**2.3.1.4 Connect Android Auto device which is connected via HFP**
MIB-2_RQ_PJM_624	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - Android Auto device is connected to MIB via HFP User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. AOAP is active 2. Android Auto session starts 3. The AA device remains connected to MIB via Bluetooth HFP 4. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_626	**2.3.1.5 Connect Android Auto device which is connected via HFP and call is running**
MIB-2_RQ_PJM_628	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - Android Auto device is connected to MIB via HFP - Call is running via native HMI and Android Auto device User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Audio: The resources Mic and Main Audio are dedicated to Android Auto 1. AOAP is active 2. Android Auto session starts 3. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_629	**2.3.1.6 Connect Android Auto device while Google Voice is running on it**
MIB-2_RQ_PJM_630	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - Android Auto device Google Voice is running User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. AOAP is active 2. Android Auto session starts 3. The Google Voice stops (depending on the behavior of the AA device) 4. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_631	**2.3.1.7 Connect Android Auto device while route guidance is running on it**
MIB-2_RQ_PJM_632	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - Android Auto device route guidance is running User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: depends on the Android device Cluster screen: No additional requirements (If in Nav context -> Compass is visible.) Audio: No additional requirements 1.AOAP is active 2. Android Auto session starts 3. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_633	**2.3.1.8 Connect Android Auto device while route guidance is running on Android Auto device and native HMI**
MIB-2_RQ_PJM_635	Precondition: - MIB powered up - no Android Auto device connected - Device was former connected and Android Auto session has been activated via AppConnect - Android Auto device rout guidance is running native HMI rout guidance is running User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: no additional requirements (depends on the behavior of the Android device) Cluster screen: No additional requirements Audio: No additional requirements 1.AOAP is active 2. Android Auto session starts 3. Route guidance of native HMI stops 4. Rout guidance of Android Auto is still active 5. The device gets first position in Devices_Preference_Status_List
MIB-2_RQ_PJM_636	**2.3.1.9 Unplug Android Auto device while MIB screen is in Android Auto mode**
MIB-2_RQ_PJM_637	The system shall switch to AppConnect context if Android Auto device is disconnected while Android Auto is active system context.
MIB-2_RQ_PJM_638	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in Android Auto mode User action: 1. Unplug the Android Auto device physically MIB reaction shall be: MIB screen: stays in AppConnect context. Cluster screen: no additional requirements. Audio: No additional requirements
MIB-2_RQ_PJM_639	**2.3.1.10 Unplug Android Auto device while MIB screen and audio are in native HMI mode**
MIB-2_RQ_PJM_640	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.

MIB-2_RQ_PJM_641	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in native HMI mode - Main Audio is in use by native HMI User action: 1. Unplug the Android Auto device physically MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements
MIB-2_RQ_PJM_642	**2.3.1.11 Unplug Android Auto device while ongoing Android Auto phone call**
MIB-2_RQ_PJM_643	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in Android Auto mode - Audio is in use by an ongoing Android Auto phone call User action: 1. Unplug the Android Auto device physically MIB reaction shall be: MIB screen: Switches over to last Main context (native HMI). Cluster screen: If Android Auto context was active -> switches over to corresponding native HMI context. If not: No additional requirements Audio: is further dedicated to the phone call on the Android phone connected via Bluetooth HFP 1. Phone call is ongoing over Bluetooth HFP 2. Reconnect of other known Mirror device or Carplay, if connected.
MIB-2_RQ_PJM_647	**2.3.1.12 Connect two Android Auto devices at the same time**
MIB-2_RQ_PJM_648	Precondition: - MIB powered up - Two Android Auto compatible devices are connected. both were not connected before. -The user chose before not to start AA on them by using the "AA first connection" pop-up User action: Open the HMI media context MIB reaction shall be: MIB screen: native HMI Media context is visible Cluster screen: No additional requirements Audio: No additional requirements 1. Both devices are available in the device list in Appconnect and also visible in the Media context
MIB-2_RQ_PJM_649	**2.3.1.13 Connect Android Auto compatible device, Preference_Technology is Android Auto. MirrorLink or Carplay or Android Auto is active already**
MIB-2_RQ_PJM_650	Precondition: - MIB powered up - no Android Auto device connected - Device was formerly connected and its preference technology in the saved device list is Android Auto - MirrorLink or Carplay has an active session User action: 1. Connect Android Auto device to MIB via Android Auto MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Android Auto doesn't start 2. Android Auto device is identified as Media device 3. There are no changes in Devices_Preference_Status_List 4. MirrorLink/CarPlay stay active
MIB-2_RQ_PJM_651	**2.3.1.14 Connect another mobile phone while having an active Android Auto call**
MIB-2_RQ_PJM_653	Precondition: - MIB powered up - Android device is connected as Android Auto device - A phone call is ongoing on Android Auto User action: 1. Open any context which contains BT setting (Phone, Media,…) MIB reaction shall be: MIB screen: The Bluetooth option in MIB is greyed out and can't be accessed Cluster screen: No additional requirements Audio: The resources Mic and Audio are dedicated to the Android Auto phone call 1. It is not possible to connect the HFP phone to MIB.
MIB-2_RQ_PJM_654	**2.3.1.15 Auto connect of a former connected mobile phone while having an active Android Auto call**
MIB-2_RQ_PJM_656	Precondition: - MIB powered up - Android device is connected as Android Auto device - A phone call is ongoing on Android Auto - BT is set to off at the 2nd mobile phone User action: 1. Activate BT at the 2nd mobile phone MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: The resources Mic and Audio are dedicated to the Android Auto phone call 1. The MIB accepts the connection requests from the HFP phone 2. The Bluetooth option in MIB is greyed out and can't be accessed 3. It is not possible to connect the HFP phone to MIB.
MIB-2_RQ_PJM_935	**2.3.1.16 Deactivation of AA using the device list in the Appconnect context in MIB**
MIB-2_RQ_PJM_936	Precondition: - MIB powered up - Android device is connected as Android Auto device User action: 1. the user ends the android session by pressing on the Android Auto device entry in the connected_devices_list in Appconnect MIB reaction shall be: MIB screen: The appconnect context shall remain active Cluster screen: any AA specific content is not displayed any longer Audio: If audio was active on AA, it will be assigned to the last active mode before AA. 1. The device is still visible in the device list, but the preference technology is changed to 'unknown'.
MIB-2_RQ_PJM_937	**2.3.1.17 Activation of AA via AppConnect, no AA compatible device**
MIB-2_RQ_PJM_938	A Popup shall inform the user that a device is not compatible with AA. This shall happen after initialization via AppConnect starts and then fails
MIB-2_RQ_PJM_939	Precondition: - MIB powered up - AA incompatible device is connected as Media Device User action: 1. Open AppConnect via SK in native HMI Menu context 2. Open "Connected devices list" 3. Chose the mentioned device from the "Connected devices list" via touch event or DDS (push) MIB reaction shall be: Cluster screen: No additional requirements Audio: No additional requirements MIB screen: 1. Popup informs the user about the ongoing process and blocks the context for any user action until initialization process has completely finished. 2. MIB shall try to start AA by sending the AOAP handshake 3. Android device ignores the AOAP handshake which means it is AA incompatible 4. Android session doesn't start 5. Popup informs the user that the Android device is not compatible with AA 6. "Connected devices list" is visible 7. The status for this device in Devices_Preference_Status_List is set to "Unknown"
MIB-2_RQ_PJM_940	**2.3.1.18 AA session is active. another AA compatible device is connected to MIB**

MIB-2_RQ_PJM_941	Precondition: - MIB powered up - an AA session is active User action: 1. Connect another AA compatible device. MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The 2nd connected device is visible in the media context as well as in the device list in the Appconnect context. 2. The 2nd connected device has no effect on the active AA session
MIB-2_RQ_PJM_942	**2.3.1.19 Connect an AA compatible device while a call is active on MIB**
MIB-2_RQ_PJM_943	The AA session initialization shall be delayed until any non-idle call on the system is ended.
MIB-2_RQ_PJM_944	Precondition: - MIB powered up - A phone call is active on the system User action: 1. The user connects an AA compatible device to the system via USB MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. The system shall not try to start an AA session until the call is ended 2. Android session does not start
MIB-2_RQ_PJM_657	**2.3.2 FEAT_PJM_Phone**
MIB-2_RQ_PJM_658	Android Auto phone- and native HMI phone functionality shall exist side by side to the same device.
MIB-2_RQ_PJM_662	**2.3.2.1 Receiving a phone call on Android Auto with the active context being the Android Auto UI**
MIB-2_RQ_PJM_663	If the user receives an call on Android Auto while using Android Auto(i.e. active context Android Auto), then the Android Auto UI will handle the incoming call. The system shall suppress (i.e. not display) the incoming call pop-up that is displayed in case of Bluetooth Telephony [8].
MIB-2_RQ_PJM_737	**2.3.3 FEAT_PJM_Navigation**
MIB-2_RQ_PJM_738	Android Auto navigation and native HMI navigation functionality shall exist side by side
MIB-2_RQ_PJM_739	**2.3.3.1 Using a MIB entertainment source during Android Auto route guidance is active**
MIB-2_RQ_PJM_740	Android Auto turn by turn announcements shall be audible during native HMI media source is active
MIB-2_RQ_PJM_741	Precondition: -The MIB system is on -Android Auto is active and the maps app on Android Auto is displayed User action: 1.The user activates an entertainment source on the native MIB system using the HK or the MIB main menu while using the navigation on Android Auto MIB reaction shall be: MIB screen: The context of the MIB system is displayed Cluster screen: In media context, the metadata from media are available. In navigation context, the compass is displayed (turn by turn guidance will not be accessible) Audio: The resource Audio is dedicated to native HMI (Media/Radio) While turn by turn announcements, there is ducking on the Media Audio.
MIB-2_RQ_PJM_742	**2.3.3.2 Starting route guidance of native HMI while route guidance of Android Auto is active**
MIB-2_RQ_PJM_743	Precondition: -The MIB system is on -Route guidance of Android Auto is running User action: 1. Start route guidance of native HMI MIB reaction shall be: MIB screen: native HMI navigation context is visible Cluster screen: In Nav context the native Nav context is displayed with turn by turn information Audio: Route guidance announcements of native HMI are audible 1. Route guidance of Android Auto stops
MIB-2_RQ_PJM_744	**2.3.3.3 Starting route guidance of Android Auto while route guidance of native HMI is active**
MIB-2_RQ_PJM_745	Precondition: -The MIB system is on -Route guidance of native HMI is running User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen (Non-FPK): In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Route guidance of native HMI stops
MIB-2_RQ_PJM_746	**2.3.3.4 Starting route guidance of Android Auto while route guidance of native HMI is active and the user is manipulating rubberband**
MIB-2_RQ_PJM_747	Route guidance of native HMI shall stop if Android Auto route guidance starts even if in rubberband manipulation mode
MIB-2_RQ_PJM_748	Precondition: -The MIB system is on -Route guidance of native HMI is running -User is manipulating rubberband User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Route guidance of native HMI stops 2. Rubberband is aborted
MIB-2_RQ_PJM_749	**2.3.3.5 Starting route guidance of Android Auto during PNav Map is visible**
MIB-2_RQ_PJM_750	PNav shall stay active in the backround while Android Auto route guidance is active
MIB-2_RQ_PJM_751	Precondition: -The MIB system is on -Route guidance of native HMI is running -PNav map is aktive User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. PNav stays active in the backround
MIB-2_RQ_PJM_752	**2.3.3.6 Starting route guidance of Android Auto during Waypoint Mode is "default"**
MIB-2_RQ_PJM_753	Waypoint Mode shall stay active in the backround while Android Auto route guidance is active
MIB-2_RQ_PJM_754	Precondition: -The MIB system is on -Route guidance of native HMI is running -Waypoint Mode is "default" User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Waypoint Mode stays active in the backround
MIB-2_RQ_PJM_755	**2.3.3.7 Starting route guidance of Android Auto during Waypoint Mode is "drive"**
MIB-2_RQ_PJM_756	Offroad route guidance shall stop and waypoint Mode shall stay active in the backround while Android Auto route guidance is active
MIB-2_RQ_PJM_757	Precondition: -The MIB system is on -Route guidance of native HMI is running -Waypoint Mode is "drive" User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Offroad route guidance stops 2. Waypoint Mode stays active in the backround

MIB-2_RQ_PJM_758	**2.3.3.8 Starting route guidance of Android Auto during Waypoint Mode is "record"**
MIB-2_RQ_PJM_759	Record shall stop and shall be saved and waypoint Mode shall stay active in the backround while Android Auto route guidance is active
MIB-2_RQ_PJM_760	Precondition: -The MIB system is on -Route guidance of native HMI is running -Waypoint Mode is "record" User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Record stops 2. Record is saved 3. Waypoint Mode stays active in the backround
MIB-2_RQ_PJM_761	**2.3.3.9 Starting route guidance of Android Auto during native HMI route guidance calculation**
MIB-2_RQ_PJM_762	Native HMI route guidance calculation shall stop if Android Auto route guidance starts
MIB-2_RQ_PJM_763	Precondition: -The MIB system is on -Route guidance calculation of native HMI is running User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Route guidance calculation of native HMI stops
MIB-2_RQ_PJM_764	**2.3.3.10 Starting route guidance of Android Auto during native HMI offers multiple routes**
MIB-2_RQ_PJM_765	Native HMI multiple routes context shall close when Android Auto route guidance starts
MIB-2_RQ_PJM_766	Precondition: -The MIB system is on -Route guidance calculation of native HMI is running User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Multiple routes context is closed
MIB-2_RQ_PJM_767	**2.3.3.11 Native HMI route guidance start via Fuel warning Popup**
MIB-2_RQ_PJM_768	Precondition: -The MIB system is on -Route guidance of Android Auto is running -Fuel warning Popup appears User action: 1. Start route guidance to next gas station via Popup MIB reaction shall be: MIB screen: native HMI navigation context is visible Cluster screen: In Nav context the pre-defined MIB Nav context is displayed with turn by turn information Audio: Route guidance announcements of native HMI are audible 1. Route guidance of Android Auto stops
MIB-2_RQ_PJM_769	**2.3.3.12 Starting route guidance of Android Auto during native HMI tour is active**
MIB-2_RQ_PJM_770	Precondition: -The MIB system is on -native HMI tour is running User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. native HMI tour stops 2. Tour info are lost
MIB-2_RQ_PJM_771	**2.3.3.13 Starting route guidance of Android Auto during a list is displayed in native HMI navigation context**
MIB-2_RQ_PJM_772	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts
MIB-2_RQ_PJM_773	Precondition: -The MIB system is on -a list is visible in native HMI navigation context User action: 1. Start route guidance of Android Auto 2. Switch over to native HMI navigation context MIB reaction shall be: MIB screen: No additional requirements Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. The list is still visible in native HMI navigation context
MIB-2_RQ_PJM_774	**2.3.3.14 Removing any accessory from the system during route guidance of Android Auto is active**
MIB-2_RQ_PJM_775	Precondition: -The MIB system is on -Route guidance of Android Auto is running User action: 1. The user removes a SD card, USB stick, CD, Sim card or Aux cable from the MIB system MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)
MIB-2_RQ_PJM_776	**2.3.3.15 Connecting any Media device to the system during route guidance of Android Auto is active**
MIB-2_RQ_PJM_777	Precondition: -The MIB system is on -Route guidance of Android Auto is running User action: 1. The user inserts a SD card, USB stick or CD in the MIB system MIB reaction shall be: MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement
MIB-2_RQ_PJM_778	**2.3.3.16 Using route guidance of Android Auto during a phone call**
MIB-2_RQ_PJM_779	Android Auto turn by turn announcements shall be audible during an ongoing phone call if this option is activated in nativeHMI navigation settings
MIB-2_RQ_PJM_780	Precondition: -The MIB system is on -The user is on a phone call on native HMI (BT or internal SIM) User action: 1. Start route guidance of Android Auto via Android Auto context MIB reaction shall be: MIB screen: No additional requirement Cluster screen: In the phone context, the active phone call details are displayed. In Nav context the compass is visible (no turn by turn information are visible) Audio: The resources Mic and Main Audio are dedicated to the native HMI (Phone) (Navigation announcements possible using the switch in the navigation settings)
MIB-2_RQ_PJM_781	**2.3.3.17 Using route guidance of Android Auto with FPK in combination with a MIB showing the map via MOST**
MIB-2_RQ_PJM_782	Precondition: -The MIB system is on -No active audio User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: No additional requirement Cluster screen: There is a string like "Smartphone Navigation active" in Navigaton context Audio: No additional requirement
MIB-2_RQ_PJM_783	**2.3.3.18 Using route guidance of Android Auto with FPK in combination with a MIB not showing the map via MOST**

MIB-2_RQ_PJM_784	Precondition: -The MIB system is on -No active audio User action: 1. Start route guidance of Android Auto MIB reaction shall be: MIB screen: No additional requirement Cluster screen: There is the compass visible in Navigaton context Audio: No additional requirement
MIB-2_RQ_PJM_785	**2.3.4 FEAT_PJM_Media**
MIB-2_RQ_PJM_786	Native HMI Media shall not be blocked for other sources while Android Auto is active.
MIB-2_RQ_PJM_787	**2.3.4.1 Switch over from Android Auto to Phone, Navigation, Traffic, Car or Menu context of native HMI**
MIB-2_RQ_PJM_788	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Song is playing from Android Auto device User action: 1. Switch over from Android Auto to Phone, Navigation, Traffic, Car or Menu context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements
MIB-2_RQ_PJM_789	**2.3.4.2 Switch over from Android Auto to Media context of native HMI**
MIB-2_RQ_PJM_790	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Song is playing from Android Auto device User action: 1. Switch over from Android Auto to Media context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Media (Playback of the last played song of an active and in this moment still present media source starts.) 4. The Android Auto device is not visible and not selectable as media source
MIB-2_RQ_PJM_791	**2.3.4.3 Switch over from Android Auto to Radio or TV Tuner context of native HMI**
MIB-2_RQ_PJM_792	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Song is playing from Android Auto device User action: 1. Switch over from Android Auto to Radio or TV Tuner context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI Radio (TV Tuner) context Cluster screen: No additional requirement Audio: The resource Main Audio is dedicated to native HMI (Radio/TV Tuner) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Radio/TV Tuner (Last active channel becomes active)
MIB-2_RQ_PJM_793	**2.3.4.4 Switch over from native HMI to Android Auto while native HMI is using an entertainment source**
MIB-2_RQ_PJM_794	Media playback of native HMI shall be paused, if Android Auto requests media audio
MIB-2_RQ_PJM_795	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - Android Auto device is connected as Android Auto device - MIB screen is in native HMI mode - Song is playing from native HMI media source User action: 1. Switch over from native HMI to Android Auto MIB reaction shall be: MIB screen: Switches over to Android Auto context Cluster screen: No additional requirements Audio: If Android Auto requests media Audio, the resource Main Audio is dedicated to Android Auto. If not, no additional requirement 1. native HMI playback stops, if Android Auto gets media Audio.
MIB-2_RQ_PJM_796	**2.3.4.5 Switch over from Android Auto to an entertainment source of native HMI during Android Auto phone call is running**
MIB-2_RQ_PJM_797	native HMI media playback shall not start during an ongoing Android Auto phone call
MIB-2_RQ_PJM_798	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Call is running via Android Auto device User action: 1. Switch over from Android Auto to an entertainment source context of native HMI via HK MIB reaction shall be: MIB screen: Switches over to native HMI Media/Radio context Cluster screen: No additional requirements Audio: No additional requirements 1. Playback of media file doesn't start, if media context is active
MIB-2_RQ_PJM_799	**2.3.4.6 Start Android Auto media playback while phone call is running**
MIB-2_RQ_PJM_800	Precondition: - MIB powered up - Various media devices (CD, USB Stick, SD card) are connected - Android Auto device is connected as Android Auto device - MIB screen is in native HMI mode - Call is running via native HMI User action: 1. Switch over from native HMI to Android Auto via HK (Free programmable HK) 2. Switch to Music player 3. Start playback of a song MIB reaction shall be: MIB screen: Switches over to Android Auto context Cluster screen: No additional requirements Audio: No additional requirements 1. Playback doesn't start
MIB-2_RQ_PJM_801	**2.3.4.7 Skip song in Android Auto via MFL skip buttons**
MIB-2_RQ_PJM_802	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Cluster screen mode has no influence on this use case - Song is playing from Android Auto device User action: 1. Press skip button on steering wheel MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Playback skips to next or previous song
MIB-2_RQ_PJM_803	**2.3.4.8 Skip song in Android Auto via MFL up- / down- buttons**

MIB-2_RQ_PJM_804	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Cluster screen is in Media mode - Song is playing from Android Auto device User action: 1. Press up- / down- buttons on steering wheel MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Playback skips to next or previous song
MIB-2_RQ_PJM_807	**2.3.4.9 FastForward/FastBackward in Android Auto via skip buttons**
MIB-2_RQ_PJM_808	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Cluster screen mode has no influence on this use case - Song is playing from the Android Auto device User action: 1. Keep one of the skip button on steering wheel pressed MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. While the button is pressed Android Auto playback switches over to FastForward/FastBackward
MIB-2_RQ_PJM_809	**2.3.5 FEAT_PJM_Voice_Control**
MIB-2_RQ_PJM_810	Google Voice and native HMI Voice Control functionality shall exist side by side
MIB-2_RQ_PJM_811	**2.3.5.1 Starting Google Voice**
MIB-2_RQ_PJM_812	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in Android Auto mode - Song is playing from Android Auto device User action: Do a long press on the car's push to talk button (pressing time > 600 ms) or activate Google voice via the AA HMI. MIB reaction shall be: MIB screen: Handled by Android Auto Cluster screen: No additional requirements Audio: Handled by Android Auto Google Voice starts
MIB-2_RQ_PJM_815	**2.3.5.2 Receiving phone call via native HMI while Google Voice is running**
MIB-2_RQ_PJM_816	Google Voice shall be stoped if there is an incomming phone call on the system
MIB-2_RQ_PJM_817	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device - MIB screen is in native HMI mode - Google Voice is running User action: 1. An incoming phone call at the native HMI arrives MIB reaction shall be: MIB screen: A pop-up is displayed with the option to answer or decline. Cluster screen: No additional requirements Audio: The resources Mic and Main Audio are dedicated to native HMI (Phone) 1. Google Voice stops
MIB-2_RQ_PJM_818	**2.3.5.3 Receiving phone call via Android Auto while Google Voice is running, MIB screen is in Android Auto mode**
MIB-2_RQ_PJM_819	Google Voice shall be stopped by the incoming Android Auto phone call
MIB-2_RQ_PJM_820	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device - MIB screen is in Android Auto mode - Google Voice is running User action: 1. An incoming phone call at Android Auto MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements (If in Phone context -> Android Auto adjusted context is visible) Audio: No additional requirements 1. Handled by Android Auto
MIB-2_RQ_PJM_821	**2.3.5.4 Start music playback via Google Voice, MIB screen is not in a native HMI entertainment source context**
MIB-2_RQ_PJM_822	Precondition: - MIB powered up - Android device is connected as Android Auto device -MIB screen is not in a native HMI entertainment source context - MIB screen is in Android Auto mode User action: 1. Start Google Voice 2. Utter a command to start playback of a song which is located at the Android Auto device MIB reaction shall be: MIB screen: Switches over to Android Auto (if screen resource is requested by AA device) Cluster screen: No additional requirements (If in Media context -> Android Auto adjusted context is visible) Audio: The resource media Audio is dedicated to Android Auto 1. Playback starts
MIB-2_RQ_PJM_823	**2.3.5.5 Start music playback via Google Voice, MIB screen is in a native HMI entertainment source context**
MIB-2_RQ_PJM_824	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device -MIB screen is in a MIB entertainment audio context User action: 1. Start Google Voice 2. Utter a command to start playback of a song which is located at the Android Auto device MIB reaction shall be: MIB screen: Switches over to Android Auto (even if screen resource is not requested by AA device but only media audio resource). Cluster screen: No additional requirements (If in Media context -> Android Auto adjusted context is visible) Audio: The resource media Audio is dedicated to Android Auto 1. Playback starts
MIB-2_RQ_PJM_825	**2.3.5.6 Start navigation via Google Voice, MIB screen is in native HMI mode**
MIB-2_RQ_PJM_826	Precondition: - MIB powered up - Android device is connected as Android Auto device -MIB screen is in native HMI mode User action: 1. Start Google Voice 2. Utter a command to start a route guidance MIB reaction shall be: MIB screen: Switches over to Android Auto (if screen resource is requested by AA device) Cluster screen: No additional requirements Audio: No additional requirements 1. Route guidance starts
MIB-2_RQ_PJM_827	**2.3.5.7 Start navigation via Google Voice, MIB screen is in Android Auto mode**

MIB-2_RQ_PJM_828	Precondition: - MIB powered up - Android device is connected as Android Auto device -MIB screen is in Android Auto mode User action: 1. Start Google Voice 2. Utter a command to start a route guidance MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Route guidance starts
MIB-2_RQ_PJM_829	**2.3.5.8 Start a phone call via Google Voice, MIB screen is in native HMI mode**
MIB-2_RQ_PJM_830	Precondition: - MIB powered up - Android device is connected as Android Auto device -MIB screen is in native HMI mode User action: 1. Start Google Voice 2. Utter a command to start a phone call MIB reaction shall be: MIB screen: Switches over to Android Auto Phone (if screen resource is requested by AA device) Cluster screen: No additional requirements (If in Phone context -> Android Auto phone information is visible) Audio: The resources Mic and Audio are dedicated to Android Auto Phone 1. Call via Android Auto device starts
MIB-2_RQ_PJM_831	**2.3.5.9 Start a phone call via Google Voice, MIB screen is in Android Auto mode**
MIB-2_RQ_PJM_832	Precondition: - MIB powered up - Android device is connected as Android Auto device -MIB screen is in Android Auto mode User action: 1. Start Google Voice 2. Utter a command to start a phone call MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements (If in Phone context -> Android Auto phone information is visible) Audio: The resources Mic and Audio are dedicated to Android Auto Phone 1. Call via Android Auto device starts
MIB-2_RQ_PJM_833	**2.3.5.10 Start SDS, MIB is in Android Auto screen**
MIB-2_RQ_PJM_834	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in Android Auto mode - Music playback is active on Android Auto User action: 1. Starting SDS by pressing the PTT button for less than 600 msec MIB reaction shall be: MIB screen: SDS dialog popup is visible with the background being the same Android Auto context but dimmed Cluster screen: No additional requirements Audio: The resources (Mic and Audio) are dedicated to Main Audio (SDS) native HMI 1. Release of the button starts SDS
MIB-2_RQ_PJM_839	**2.3.5.11 Start Google Voice while native HMI SDS is ongoing**
MIB-2_RQ_PJM_840	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in native HMI mode - native HMI SDS is ongoing User action: Try to start Google Voice in the HMI of the AA device MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Audio resource requests for Google Voice are rejected by the system Google Voice doesn't start
MIB-2_RQ_PJM_947	**2.3.5.12 Start native TTS while Google Voice is active**
MIB-2_RQ_PJM_948	Precondition: - MIB powered up - Android device is connected as Android Auto device - MIB screen is in AA mode - Google Voice is active User action: Change into native HMI context and start TTS readout Note: TTS readout might be SMS readout. MIB reaction shall be: MIB screen: Change into native HMI Cluster screen: No additional requirements Audio: Audio resource is requested for native TTS, Google Voice is cancelled Google Voice is stopped
MIB-2_RQ_PJM_854	**2.3.6 FEAT_PJM_HMI**
MIB-2_RQ_PJM_855	native HMI and Android Auto HMI shall exist side by side
MIB-2_RQ_PJM_856	**2.3.6.1 Switch over to Android Auto while a global pop-up is visible**
MIB-2_RQ_PJM_857	Global Popup shall stay visible in Android Auto frame buffer even if context is switched while the popup is already being displayed.
MIB-2_RQ_PJM_858	Precondition: - MIB powered up - Android device is connected as Android Auto device - Screen is in native HMI mode - A global pop-up of native HMI, which expects confirmation is visible User action: 1. Initiate a switch over to Android Auto by press on HK or SK Android Auto MIB reaction shall be: MIB screen: Switches over to Android Auto Cluster screen: No additional requirements Audio: If Android Auto requests Audio, the resource Audio is dedicated to Android Auto. If not, no additional requirement 1. The pop-up is displayed with the given options. 2. The background being the same Android Auto context but dimmed .
MIB-2_RQ_PJM_859	**2.3.6.2 Switch over to Android Auto while a context dependent pop-up is visible**
MIB-2_RQ_PJM_860	Precondition: - MIB powered up - Android device is connected as Android Auto device - Screen is in native HMI mode - A content dependent pop-up of native HMI, which expects confirmation is visible User action: 1. Initiate a switch over to Android Auto by press on HK or SK Android Auto MIB reaction shall be: MIB screen: Switches over to Android Auto Cluster screen: No additional requirements Audio: If Android Auto requests Audio, the resource Audio is dedicated to Android Auto. If not, no additional requirement 1. The pop-up is no longer visible
MIB-2_RQ_PJM_861	**2.3.6.3 Switch over to Android Auto while an info pop-up is visible**

MIB-2_RQ_PJM_862	Precondition: - MIB powered up - Android device is connected as Android Auto device - Screen is in native HMI mode - An info pop-up of native HMI is visible User action: 1. Initiate a switch over to Android Auto by press on HK or SK Android Auto MIB reaction shall be: MIB screen: Switches over to Android Auto Cluster screen: No additional requirements Audio: If Android Auto requests Audio, the resource Audio is dedicated to Android Auto. If not, no additional requirement 1. The pop-up is no longer visible
MIB-2_RQ_PJM_865	**2.3.6.4 RVC while Android Auto has screen focus**
MIB-2_RQ_PJM_866	Precondition: - MIB powered up - Android Auto device is connected as Android Auto device - Screen is in Android Auto mode User action: 1. Activate RVC via reverse gear MIB reaction shall be: MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible
MIB-2_RQ_PJM_869	**2.3.6.5 Emergency Popups while Android Auto has screen focus**
MIB-2_RQ_PJM_870	Precondition: - MIB powered up - Android device is connected as Android Auto device - Screen is in Android Auto mode User action: 1. Native HMI generates an emergency popup MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Emergency popup is visible with the background being the same Android Auto context but dimmed
MIB-2_RQ_PJM_871	**2.3.6.6 Day- and Night Mode**
MIB-2_RQ_PJM_872	Precondition: - MIB powered up - Android device is connected as Android Auto device User action: 1. Switch between Day/Night via global "Setup"/"Screen" 2. Switch over to Android Auto context MIB reaction shall be: MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Android Auto context is in Day-/Night-Mode corresponding to Day/Night global settings.
MIB-2_RQ_PJM_33	**2.4 Google Android Auto Technical Requirements**
MIB-2_RQ_PJM_50	**2.4.1 FEAT_Google Android Auto_General**
MIB-2_RQ_PJM_57	The system shall provide Google Android Auto as described in the Google Android Auto specifications provided by Google.
MIB-2_RQ_PJM_74	A portable C++ library will be provided by Google. This library handles lowlevel protocol packetframing, channel management, authentication, etc.
MIB-2_RQ_PJM_77	C++ STL Support. The base receiver library uses the following STL classes:std::deque, std::map, std::set, std::string, std::vector.
MIB-2_RQ_PJM_34	**2.4.1.1 RQ_Google Android Auto_General**
MIB-2_RQ_PJM_35	The system shall be implemented with the Google Android Auto functionallity as described in the Google Android Auto specifications provided by Google.
MIB-2_RQ_PJM_75	Instrument integration shall not be implemented.
MIB-2_RQ_PJM_76	**2.4.1.2 RQ_Google Android Auto_System_Requirements**
MIB-2_RQ_PJM_78	C++ STL Support. The base receiver library uses the following STL classes:std::deque, std::map, std::set, std::string, std::vector.
MIB-2_RQ_PJM_79	**2.4.2 FEAT_Google Android Auto_SWaP**
MIB-2_RQ_PJM_80	It shall be possible to activate Google Android Auto via Software as Product mechanism. [1]
MIB-2_RQ_PJM_81	**2.4.2.1 RQ_Google Android Auto_SWaP**
MIB-2_RQ_PJM_82	Google Android Auto shall only be available on the HU if activated via SWaP key.
MIB-2_RQ_PJM_83	**2.4.3 FEAT_Google Android Auto_Connection**
MIB-2_RQ_PJM_84	The system shall use Google Android Auto via USB.
MIB-2_RQ_PJM_205	The system shall use Google Android Auto via WiFi-Direct.
MIB-2_RQ_PJM_85	The system shall use Android Open Accessory Protocol (AOAP [3]) to communicate via USB with mobile Android devices.
MIB-2_RQ_PJM_86	The system shall be able to manage the connectivity for MirrorLink, Digital iPod Out and Google Automotive Link devices on the same connection interface at the same time.
MIB-2_RQ_PJM_107	A certificate for authentication shall be stored securely for authentication purposes.
MIB-2_RQ_PJM_87	**2.4.3.1 RQ_Google Android Auto_Transport**
MIB-2_RQ_PJM_88	The system may not block the usage of other display projection methods on the system, interface and mobile device because of the availability of Google Android Auto.
MIB-2_RQ_PJM_89	The system shall present a list of all available devices providing a projection technology (e.g. MirrorLink, Digital iPod Out, Google Automotive Link). Devices providing multiple projection technologies shall be listed with every technology.
MIB-2_RQ_PJM_90	The user shall be able to select his desired technology (i.e. MirrorLink, Google Android Auto, DIO) and device via the HMI.
MIB-2_RQ_PJM_91	The system shall inform the user in case a connection error occurs.
MIB-2_RQ_PJM_92	**2.4.3.2 RQ_Google Android Auto_Transport**
MIB-2_RQ_PJM_93	The system may not block the usage of other display projection methods on the system, interface and mobile device because of the availability of Google Android Auto.
MIB-2_RQ_PJM_94	The system shall present a list of all available devices providing a projection technology (e.g. MirrorLink, Digital iPod Out, Google Automotive Link). Devices providing multiple projection technologies shall be listed with every technology.
MIB-2_RQ_PJM_95	The user shall be able to select his desired technology (i.e. MirrorLink, Google Android Auto, DIO) and device via the HMI.
MIB-2_RQ_PJM_96	The system shall inform the user in case a connection error occurs.
MIB-2_RQ_PJM_97	**2.4.3.3 RQ_Google Android Auto_USB**
MIB-2_RQ_PJM_98	The Google Android Auto stack must run on top of the AOAP to communicate over USB bulk endpoints.
MIB-2_RQ_PJM_99	The systems AOAP must be configured as described in the Google Android Auto specification.
MIB-2_RQ_PJM_100	The different states while connecting a device via AOAP shall be transparent to the user via the HMI.
MIB-2_RQ_PJM_101	The system shall try to connect via AOAP on plugging to signal Google Android Auto support.
MIB-2_RQ_PJM_102	The systen shall be able to disconnect Google Android Auto and AOAP and switch to another USB class (e.g. MTP, mass-storage) without detaching the USB cable.
MIB-2_RQ_PJM_103	The system shall send USB "Set_Configuration" with the information that drawing more current is allowed, when in charging mode.
MIB-2_RQ_PJM_104	**2.4.3.4 RQ_Google Android Auto_Authentication**
MIB-2_RQ_PJM_105	The system shall authenticate itself against the mobile device as described in the Google Android Auto specification.
MIB-2_RQ_PJM_106	The private key and certificate shall be stored securely on the system and shall only be readable by related processes.
MIB-2_RQ_PJM_108	**2.4.3.5 RQ_Google Android Auto_Auto_Launch**
MIB-2_RQ_PJM_109	When connecting a new mobile device capabable of Google Android Auto the user shall be asked via a HMI popup if he wants to switch to Google Android Auto.
MIB-2_RQ_PJM_110	**2.4.4 FEAT_Google Android Auto_Software_Update**
MIB-2_RQ_PJM_111	It shall be possible to update the Google Android Auto functionality via an over the air (OTA) update if an online access is given.
MIB-2_RQ_PJM_123	The supplier shall provide an update at least twice a year without extra charge.
MIB-2_RQ_PJM_124	In case of a serious malfunction in the fieldthe supplier shall provide an "emergency" update within 30 days after notice of failure.
MIB-2_RQ_PJM_125	**2.4.4.1 RQ_Google Android Auto_Software_Update**
MIB-2_RQ_PJM_114	It shall be possible to update the Google Android Auto functionality via an OTA update if an online access is given.
MIB-2_RQ_PJM_126	The user shall be able to load and execute any updates for Google Android Auto functionallities depending on the HU software version.
MIB-2_RQ_PJM_127	The user shall confirm any updates.
MIB-2_RQ_PJM_128	The supplier shall provide an update at least twice a year without extra charge.
MIB-2_RQ_PJM_129	In case of a serious malfunction in the fieldthe supplier shall provide an "emergency" update within 30 days after notice of failure.
MIB-2_RQ_PJM_130	The HMI shall provide a menu item and dialog for all necessary steps in the update process.
MIB-2_RQ_PJM_131	**2.4.5 FEAT_Google Android Auto_Performance**
MIB-2_RQ_PJM_132	The system shall fullfill all perfomance requirements of the Google Android Auto specification.
MIB-2_RQ_PJM_133	The latency between a user control event (e.g. touch event) and the visible reaction on the HU screen is less than 100ms.
MIB-2_RQ_PJM_136	**2.4.6 FEAT_Google Android Auto_Video**
MIB-2_RQ_PJM_137	The system shall be able to display the Google Android Auto video stream according to the Google Android Auto specification.
MIB-2_RQ_PJM_138	The Google Android Autos video stream is h.264 and shall be decoded in hardware.
MIB-2_RQ_PJM_139	The system shall be able to only display a part of the transfered image (i.e. cut out margins on the image's sides).
MIB-2_RQ_PJM_140	The system shall throttle the video stream if resources are scare.
MIB-2_RQ_PJM_141	The HU does not need to scale the video stream. The mobile device delivers the correct pixel ratio.
MIB-2_RQ_PJM_142	**2.4.7 FEAT_Google Android Auto_Audio**
MIB-2_RQ_PJM_143	The system shall be able to receive the Google Android Auto audio streams according to the Google Android Auto specification.
MIB-2_RQ_PJM_144	The system shall integrate Google Android Auto audio streams into the systems audio mixer.

MIB-2_RQ_PJM_145	The system shall provide an audio stream to the mobile device containing the cars microphone data.
MIB-2_RQ_PJM_146	The system shall implement all necessarry audio codecs described in the Google Android Auto specification.
MIB-2_RQ_PJM_147	All Google Android Auto audio streams are of a similar unenhanced volume (linelevel).
MIB-2_RQ_PJM_148	**2.4.7.1 RQ_Google Android Auto_Audio**
MIB-2_RQ_PJM_149	The audio streams from the mobile device shall be mixed in according to the three options described in the Google Android Auto specification (i.e. GAIN, GAIN_TRANSIENT, GAIN_TRANSIENT_MAY_DUCK).
MIB-2_RQ_PJM_151	The system shall integrate the four available audio streams into the audio mixing as follows: ● user interface feedback stream ("UI stream"): ● driver guidance ("guidance stream"): ● conversational voice ("voice stream"): ● cabin media ("media stream"): Only activatable when in Google Android Auto context
MIB-2_RQ_PJM_152	**2.4.8 FEAT_Google Android Auto_Switching**
MIB-2_RQ_PJM_162	The system shall inform the mobile device when switching video from or to the mobile device (i.e. native HMI visible or projection from Google Android Auto visible).
MIB-2_RQ_PJM_163	The system shall inform the mobile device when switching the active audio stream from or to the mobile device.
MIB-2_RQ_PJM_164	**2.4.8.1 RQ_Google Android Auto_Switching**
MIB-2_RQ_PJM_166	Audio switching request from the mobile device shall always be answered with GRANTED or FAILED.
MIB-2_RQ_PJM_153	**2.4.9 FEAT_Google Android Auto_Bluetooth_Integration**
MIB-2_RQ_PJM_169	The system shall use Bluetooth Simple Secure Pairing (SSP) with Out Of Band data (OOB) to pair a mobile device with HFP capability.
MIB-2_RQ_PJM_170	**2.4.9.1 RQ_Google Android Auto_Bluetooth_Integration**
MIB-2_RQ_PJM_171	The system shall use SSP with OOB to pair HFP with a mobile device. The secret is shared via Google Android Auto.
MIB-2_RQ_PJM_172	Bluetooth profile A2DP and the AT+BVRA command shall not be used with the mobile device for the duration of the active Google Android Auto session.
MIB-2_RQ_PJM_173	**2.4.10 FEAT_Google Android Auto_Voice_Control**
MIB-2_RQ_PJM_174	An audio channel from the cars microphone to the mobile shall be opened for voice commands.
MIB-2_RQ_PJM_154	**2.4.11 FEAT_Google Android Auto_Connection_Handling**
MIB-2_RQ_PJM_175	An active Google Android Auto session shall be started via command from the HMI.
MIB-2_RQ_PJM_176	Failure messages from Google Android Auto stack shall be made visible to the user via HMI.
MIB-2_RQ_PJM_177	The Google Android Auto stack shall be commandable to exit Google Android Auto.
MIB-2_RQ_PJM_155	**2.4.12 FEAT_Google Android Auto_Input_Events**
MIB-2_RQ_PJM_178	Touch Events on the Google Android Auto frame buffer should be sent to the mobile device via the Google Android Auto stack.
MIB-2_RQ_PJM_179	DDS events have to be mapped to Google Android Auto key events by the system.
MIB-2_RQ_PJM_180	Special Key Events like MFL buttons have to be mapped to Google Android Auto key events.
MIB-2_RQ_PJM_157	**2.4.13 FEAT_Google Android Auto_HMI_Media_Integration**
MIB-2_RQ_PJM_181	Google Android Auto entry in Media as Short Link to Media Application on phone side.
MIB-2_RQ_PJM_158	**2.4.14 FEAT_Google Android Auto_Locale_Negotiation**
MIB-2_RQ_PJM_182	The system shall implement the locale negotiation according to the Google Android Auto specification.
MIB-2_RQ_PJM_184	**2.4.14.1 RQ_Google Android Auto_Locale_Negotiation**
MIB-2_RQ_PJM_185	The system shall implement the locale negotiation according to the Google Android Auto Specification.
MIB-2_RQ_PJM_186	The system shall be configurable to switch the HMI to the selected language by the mobile device or not. The default should be to not to switch.
MIB-2_RQ_PJM_159	**2.4.15 FEAT_Google Android Auto_Sensors**
MIB-2_RQ_PJM_187	The System shall provide different sensor data to the mobile device as described in the Google Android Auto specifciation.
MIB-2_RQ_PJM_188	**2.4.15.1 RQ_Google Android Auto_Sensors**
MIB-2_RQ_PJM_189	Sensor data shall be send to the mobile device as long as a Google Android Auto connection is active.
MIB-2_RQ_PJM_190	The system shall provide the cars position (e.g. "GPS position") if such a position is available.
MIB-2_RQ_PJM_191	The system shall provide the drive status (i.e. parking, driving).
MIB-2_RQ_PJM_192	The system shall provide "Day/Night Mode".
MIB-2_RQ_PJM_193	The system shall be structured in a way that it is easy to add additional values as long as they are available i.e. on a DSI.
MIB-2_RQ_PJM_194	The system shall not provide any other additional data fields than described here or explicitly added by the principal.
MIB-2_RQ_PJM_160	**2.4.16 FEAT_Google Android Auto_Diagnostic**
MIB-2_RQ_PJM_196	Google Android Auto shall be configurable via diagnostic.
MIB-2_RQ_PJM_197	**2.4.16.1 RQ_Google Android Auto_Diagnostic**
MIB-2_RQ_PJM_198	The system shall configure Google Android Auto settings via diagnostic.
MIB-2_RQ_PJM_199	The system shall be able to configure (i.e. activate/deactivate) the Google Android Auto connection for all physical connections seperatly (i.e. WiFi, USB) via diagnostic.
MIB-2_RQ_PJM_200	**2.4.17 FEAT_Google Android Auto_SAI**
MIB-2_RQ_PJM_201	A Standard App Interface (SAI) relay service shall be implemented as Google Android Auto vendor specific extension.
MIB-2_RQ_PJM_202	**2.4.17.1 RQ_Google Android Auto_SAI**
MIB-2_RQ_PJM_203	The Google Android Auto extension shall access an HU local EXLAP server (SAI server) via IP socket and transfer the ASCII coded connection to the mobile device.
MIB-2_RQ_PJM_204	The extension shall be able to transfer several socket streams.
MIB-2_RQ_PJM_36	**3 Appendix**
MIB-2_RQ_PJM_37	**3.1 Abbreviations**
MIB-2_RQ_PJM_38	

Term	Explanation
Term 1	Explanation 1

MIB-2_RQ_PJM_42	**3.2 Definitions**
MIB-2_RQ_PJM_45	

Abbreviation	Description
A2DP	Advanced Audio Distribution Profile
AA	Android Auto
ABT	Anzeige Bedien Teile/ Main Screen Display
AOAP	Android Open Accessory Protocol
AT+BVRA	BlueTooth Voice Recognition Command
BT	BlueTooth
DDS	Drehdrücksteller / rotary Knob
GAL	Google Automotive Link
GPS	Global Positioning System
HFP	Hands Free Profile
HMI	Human Machine Interface
HK	Hard Key
HU	Head Unit
MAP	Message Access Profile
MFL	Multi Funktions Lenkrad / Multifunctional Steering Wheel
MIB	Modularer Infotainment Baukasten
MD	Mobile Device
MTP	Media Transfer protocol
MSC	Mass Storage Class
OTA	over the air
PBAP	Phone Book Access Profile
PTT	Push To Talk
SAI	Standard App Interface
SDS	Speech Dialogue System
SMS	Short Message Service
SSP	Secure Simple Pairing
SK	Soft Key
SWaP	Software as Product
TTS	Text To Speech
UI	User Interface
USB	Universal Serial BUS
WGS84	World Geodetic System 1984

MIB-2_RQ_PJM_48	**4 Disclaimer**
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Appendix E – Testspecification of MirrorLink

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-11	Prepare CTS tool from the CCC with VW PICS configuration document, connect the HU system to the appropriate CTS tool via USB and start the testing process.	P_1- an appropriate version of the CTS tool from the CCC is installed on a test system. P_2 the CTS tool is configured as described in the CTS-Instruction document provided by CCC. P_3 the CTS tool uses the VW PICS document for configuration.	A_1 Connect CTS server via usb A_2 Start running the CTS testing process.	A_1 CTS server is detected and displayed on MIB´s screen A_2 The CTS test cases are passed with 100% results.
MiLi-TC-134	Follow all IOP test cases from IOP Requirement document provided from the CCC.	P_1 start the CCC IOP test cases Please use the follow web site to registred and to start the CCC IOP test cases: https://cert.mirrorlink.com/iop/	A_1 connect the phone via usb and start all IOP test cases Please note that this test should be performed with defferent servers--> for more information about the used phones please refer to CCC web site	ER_1. All IOP tests with all Servers are passed with 100% results.
MiLi-TC-179	Touch events on the Touchscreen shall be sent to the MirrorLink device.	P_1: ML session is active P_2: ML content is shown	A_1: Perform some touch commands on the MIB's touchscreen	ER_1: Touch commands are sent to the ML device
MiLi-TC-180	The system shall forward multiple simultaneous touch events to the ML device.	P_1: ML session is active P_2: ML content is shown	A_1: Perform a multi-touch zoom on the MIB's touchscreen (e.g. in MAP/Sygic app) A_2: Extend the distance between the two finger positions A_3: Contract the distance between the two finger positions	ER_1: Multi-touch zoom commands are sent to the ML device ER_2: The app shall initiate a zoom in gesture. The effect result shall be linked to the movement of the distance between the two fingers ER_3: The app shall initiate a zoom out gesture. The effect result shall be linked to the movement of the distance between the two fingers
MiLi-TC-182	Areas at the borders of the touchscreen must generate touch events with the correct coordinates.	P_1: ML session is active P_2: ML content is shown	A_1: Perform a touch action at the very border or corner of the MIB's touch screen	ER_1: ML device locates the touch commands at the respective border or corner of the ML device
MiLi-TC-370	Touch events _Swipe left/right	P_1: ML session is active P_2: ML content is shown P_3: one app is active e.g. MAP or Sygic	A_1: Perform an application level Swipe event simply click in Map and move in left or right direction	ER_1: Swipe is working as excepected, the MAP moves to correct position
MiLi-TC-371	Touch events _Double touch/click	P_1: ML session is active P_2: ML content is shown P_3: one app is active e.g. MAP or Sygic	A_1: Perforrm a Double touch/click, simply press and lift the screen two times	ER_1: reaction of Double touch is working e.g. Map move outwards "Zoom in"
MiLi-TC-372	Touch events _Drag event	P_1: ML session is active P_2: ML content is shown P_3: one app is active e.g. MAP or Sygic	A_1: Perform an Drag event, simply Press & hold then move in any direction and release the screen	ER_1: Drag event is working as expected
MiLi-TC-183	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: ML session is active P_2: ML content is shown P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Roll MFL volume up once (Skoda/Seat) / press volume up button (VW)	ER_1: MIB's volume goes up one step. Volume bar is briefly shown in the cluster instrument ER_2: The volume on the ML device itself did not change
MiLi-TC-184	MFL _multimedia key in Mirrorlink_skips to the next song	P_1: ML session is active P_2: Audio app which support MFL is active e.g. "htc one app music", Audio over rtp is running	A_1: Skips to the next song via MFL	ER_1: Reaction of next track via MFL is working, the next track is selected
MiLi-TC-383	MFL _multimedia key in Mirrorlink_skips to the next song_skips to the Previous song	P_1: ML session is active P_2: Audio app which support MFL is active e.g. "htc one app music", Audio over rtp is running	A_1: Skips to the Previous song	ER_2: Reaction of previous track via MFL is working, the previous song is selected
MiLi-TC-185	MFL _multimedia key in Mirrorlink_fast forward song_rewind song	P_1: ML session is active P_2: Audio app which support MFL is active, Audio over rtp is running	A_1: Check fast forward song via MFL	ER_1: Reaction of fast forward song via MFL is working
MiLi-TC-384	MFL _multimedia key in Mirrorlink_fast forward song_rewind song	P_1: ML session is active P_2: Audio app which support MFL is active, Audio over rtp is running	A_1: Check rewind song via MFL	ER_1: Reaction of rewind song via MFL is working
MiLi-TC-186	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: ML session is active P_2: ML content is shown P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Roll scroll buton MFL volume down (Skoda/Seat) / press volume up button (VW) A_2: Release MFL volume down before min volume level is reached	ER_1: MIB's volume decreasing. Decreasing volume bar is displayed in the cluster instrument ER_2: Volume level and volume bar displayed in the cluster instrument do not change anymore. Volume bar disappears after a short time ER_3: The volume on the ML device itself does not change
MiLi-TC-188	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: ML session is active P_2: ML content is shown P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Roll scrool buton MFL volume down once (Skoda/Seat) / press volume down button (VW)	ER_1: MIB's volume decreases until it reaches min volume. Volume bar is displayed in the cluster instrument as long as the volume is changing ER_2: The volume of the ML device itself does not change
MiLi-TC-191	The microphone in the cabin shall provide the voice input to the MirrorLink device for speech recognition and phone calls.	P_1: ML session is active (e.g. HTC one M8)	A_1: Launch htc one app "Speak" A_2: Check the voice command mode e.g. say one of the followed command : - "Call [person's name in phonebook]" - "Play [song title,.." - "Navigate..."	ER_1: Reaction of all voice command mode is working
MiLi-TC-193	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows ML screen P_4: ML playback is not active	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts
MiLi-TC-194	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows native HMI screen	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts
MiLi-TC-198	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device(HTC One M9) is connected to the MIB P_3: ML session is active and MIB shows ML screen P_4: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: Audio over rtp is stopped and SDS starts Note. The music over rtp should be resumed and played again after terminate SDS(Test with HTC One M9)
MiLi-TC-390	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows ML screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1a: If the phone hasn't voice app, in cluster instrument must be info voice control not possible. ER_1b: If the phone has voice app, these app start. Note: Test with HTC phone and app Speak.
MiLi-TC-391	The voice HK on ABT shall have the same functionality as the MFL PTT button.	P_1: MIB powered up P_2: ML device is connected to the MIB P_3: ML session is active and MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1a: If the phone hasn't voice app, in cluster instrument must be info voice control not possible. ER_1b: If the phone has voice app, these app start. Note: Test with HTC phone and app Speak.
MiLi-TC-247	Disable Mirrorlink_Via _Diagnostic	P_1: MIB is powered up P_2: ML feature has been enabled by diagnostic P_3: ODIS diagnostic is connected with the MIB	A_1: Disable the Mirrorlink option via ODIS diagnostic A_2: Try to connect ML device via usb, check if the device is detected as media only and not as ML device	ER_1: Mirrorlink option is disabled, no ML option available on Appconnect after disabling ML via ODIS ER_2: ML device is detected only as Media "MTP" and not as ML device because ML option is disabled
MiLi-TC-385	Enable_Mirrorlink_Via _Diagnostic	P_1: MIB is powered up P_2: ML feature has been disabled by diagnostic P_3: ODIS diagnostic is connected with the MIB	A_1: Enable the Mirrorlink option via ODIS diagnostic A_2: Connect a ML device via usb and try to intiate ML connection check if all ML functionality is available after enabling ML via ODIS	ER_3: Mirrorlink option is enabled via ODIS, ML option is available on Appconnect ER_4: ML connection is established--> ML functionality "Audio over rtp, Audio blocking, ..." is working fine.
MiLi-TC-386	Change Mirrorlink RGB888_Via _Diagnostic	P_1: MIB is powered up P_2: ML option has been enabled by diagnostic P_3: ODIS diagnostic is connected with the MIB P_4: Pixel format set to RGB 565	A_1: Start Odis then change Mirrorlink RGB to 888	ER_1: The Mirrorlink pixel format is changed correctly to RGB 888[Note:For checking use CommonAPI app, section:client info or display parameters]

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-387	Change Mirrorlink RGB565_Via _Diagnostic	P_1: MIB is powered up P_2: ML option has been enabled by diagnostic P_3: ODIS diagnostic is connected with the MIB P_4: Pixel format set to RGB 888	A_1: Start Odis then change Mirrorlink RGB to 565	ER_1: The Mirrorlink pixel format is changed correctly to RGB 888[Note:For checking use CommonAPI app, section:client info or display parameters]
MiLi-TC-410	Disable Mirrorlink	P_1: Mirrolink technology is disabled	A_1: connect phone1 e.g SAM S6 via usb	ER_1: device is detected but only as AA Only AA connection is possible Mirrolink technology should be invisible on client
MiLi-TC-333	Xlap connection should be enabled after Powersycle/bussleep MIB system	P_1: ML session is active P_2 Xlap "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default	A_1: Make a bussleep simply KL15/ S=off A_2: Make KL15/S = ON--> check if Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default A_3: Establish a ML connection with ML Phone1 and launch VW/Skoda app "My guide/Places", check if the Xlap connection is active	ER_1: MIB is shutting down ER_2: "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default ER_3: VW/Skoda app is launchable, and Xlap connection is active Note. the icon for Xlap connection should be shown on the active VW/Skoda app
MiLi-TC-334	Xlap connection should be enabled after MIB factory reset	P_1: ML session is active P_2 Xlap "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default	A_1: Make a MIB factory reset, and check if "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default after reset happens A_2: Establish a ML connection with ML Phone1 and launch VW/Skoda app "My guide/Places", check if the Xlap connection is active	ER_1: MIB reset happened perfectely and "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default ER_2: Vw/Skoda app is launchable, and Xlap connection is active Note. the icon for Xlap connection should be shown on the active VW/Skoda app
MiLi-TC-335	enable/disable Xlap connection "Activate data transfer for VW apps"	P_1: ML session is active P_2 Xlap "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default	A_1: Establish a ML connection with ML Phone1 and launch VW/Skoda app "My guide/Places", check if the Xlap connection is active A_2: Deactivate Xlap connection Appconnect settings and launch VW/Skoda app "My guide/Places"again	ER_1: ML connection is successful, vw/Skoda app is launchable, and Xlap connection is active Note. the icon for Xlap connection should be shown on the active VW/Skoda app ER_2: Xlap connection is deactivated, VW/Skoda app is launchable, and Xlap connection is not active Note. the icon for Xlap connection should be not shown on the active
MiLi-TC-388	enable activate Location Data Service connection	P_1: ML session is active P_2 Xlap "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default At the moment no App supports this (Septempter 2015), you have to use HMI Monitor for test this feature. Is possible use BringGo app	A_1: Establish a ML connection with ML Phone1 and check in HMI monitor the Location Data Service is enabled	ER_1: ML connection is successful, in HMI monitor the Location Data Service should be enabled
MiLi-TC-389	disable activate Location Data Service connection	P_1: ML session is active P_2 Xlap "Activate data transfer for VW/Skoda apps" in Appconnect settings is enabled as default At the moment no App supports this (Septempter 2015), you have to use HMI Monitor for test this feature. Is possible use BringGo app	A_1: Establish a ML connection with ML Phone1 and check in HMI monitor the Location Data Service is enabled A_2: Disable the option "Activate data transfer for VW/Skoda apps"	ER_1: ML connection is successful, in HMI monitor the Location Data Service should be enabled ER_2: Xlap connection is deactivated in HMI monitor the Location Data Service should be disabled
MiLi-TC-252	The system shall set the drive level and park level depending on the vehicle speed.	P_1: Park mode is enabled, ML connection is active P_2: applist is displayed with certified apps e.g. miRoamer	A_1: Enable drive mode v>6KM/hod, check if all certified app are without symbol crossed wheel by the app on MIB screen, launch an certified app e.g. miRoamer	ER_1: . the certified app e.g. miRoamer still without symbol crossed wheel by the app and launchable in drive in Drive mode
MiLi-TC-253	The system shall set the drive level and park level depending on the vehicle speed.	P_1: ML session is active P_2: Car speed is below the limit 6 km/h P_3: Not certified ML app is active	A_1: Enable drive mode v>6KM/hod, check if all not certified app are blocked and a popup appears informing that this app is not startable in drive mode A_2: Enable Park mode again A_3: Enable Drive mode and launch a certified app e.g. miRoamer	ER_1: Not certified apps are blocked in drive mode a popup appears informing that the apps are not startable in park mode ER_2: Not certified app is displayed again after enablaing Park mode ER_3: The certified app e.g. miRoamer still without symbol crossed wheel by the app and launchable in drive mode
MiLi-TC-178	The system shall decode the video stream received from the MirrorLink device and shall display the content on the car`s screen.	P_1: ML session is active	A_1: Check whether ML device's content is displayed on the MIB's touchscreen	ER_1: Device's ML content is displayed on the MIB's touchscreen
MiLi-TC-189	The string "MirrorLink" shall be displayed while MirrorLink is the active Media Source. (language independent)	P_1: ML session is active P_2: ML audio content is played back (e.g. in Aupeo, Audioteka app) P_3: Instrument cluster is in Audio context	A_1: Check whether the instrument cluster shows the string "MirrorLink"	ER_1: Instrument cluster shows the string "MirrorLink"
MiLi-TC-192	The microphone in the cabin shall provide the voice input to the MirrorLink device for speech recognition and phone calls.	P_1: ML device is connected with the MIB as primary HFP device P_2: ML session is active P_3: ML phone call is ongoing (e.g. In People app in HTC)	A_1: Check wheter the called party can hear you when you speak into the car cabin's microphone	ER_1: Called party can hear you when you speak into the car cabin's microphone
MiLi-TC-199	ML context shall still displayed and not changed to radio/media context	P_1: MIB powered up P_2: ML connection is active applist ist displayed	A_1: Launch Audio app e.g. htc app "music" and start music A_2: Stop the music simply press pause SK A_3: Select Radio context and start any radio station A_: Go back to ML context and wait approx. 2 min---> check if the ML context still displayed and not changed to radio/media context	ER_1: App is launchable music is started Audio over rtp is hearable ER_2: Music has been paused ER_3: Radio context is selected, Radio station is hearable ER_4: ML context still displayed and not changed to radio context or media context
MiLi-TC-227	Popups of the native HMI shall be visible even if MirrorLink is the currently active HMI context. The background shall be the same MirrorLink context but dimmed.	P_1: ML session is active P_2: ML context is shown P_3: Change the current driving mode (Sport, Eco, Comfort, etc.) using the driving mode hardkey (popup appears)	A_1a: If popup is not over fullscreen, try to perform some meaningful touches on the ML screen in the background while the MIB popup is displayed A_1b: If popup is over fullscreen, wait till popup disappeared	ER_1a: The touch events in the ML context are ignored as long as the MIB popup is displayed ER_1b: ML context is shown back in the same context
MiLi-TC-230	Popups of the native HMI shall be visible even if MirrorLink is the currently active HMI context. The background shall be the same MirrorLink context but dimmed.	P_1: ML session is active P_2: Go to MIB's Media context, start importing media files from a SD card, USB or CD P_3: Go to ML context while the media import continues in the background P_4: Eject the media from which the media files are being imported (popup appears)	A_1: Try to perform some meaningful touches on the ML screen in the background while the MIB popup is displayed	ER_1: The touch events in the ML context are ignored as long as the MIB popup is displayed
MiLi-TC-238	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if MirrorLink is the current native HMI context.	P_1: ML session is active P_2: ML context is shown P_3: ML's navigation announcement is played back (e.g. in MAP/Sygic app)	A_1: Adjust the volume of ML's the navigation announcement up or down using the rotary button	ER_1: Navigation volume change overlay appears briefly, current ML screen is shown in the background at the normal bightness level
MiLi-TC-242	An MirrorLink device with an ongoing MirrorLink session shall not be selectable as Media Device in native HMI Media context.	P_1: Phone 1 is connected with the MIB using a USB cable P_2: ML session with phone 1 is active P_3: MIB is in Media context	A_1: Try to select phone 1 as media source in the media source pushup menu A_2: Disconnect the ML connection on MIB side and repeat the test A_1	ER_1: Phone 1 cannot be selected as a media source, the USB source should be greyed out on Media ER_2: After disconnecting the ML connection the Phone 1 can be selected as Media (MTP), and music can be played via usb
MiLi-TC-245	The HMI main screen shall not switch to MirrorLink context automatically upon re-connection of a MirrorLink device, unless the device explicitly requests the screen resource.	P_1: ML session with phone 1 is active P_2: MIB is in ML context P_3: End the ML session by disconnecting the USB cable from phone 1 P_4: Switch MIB to another context	A_1: Reconnect the USB cable to phone 1	ER_1: popup for estblishing ML usb connection is appeared and ML connection is performed automatically w/o changing the selected context "MIB stays in the selected context"

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-246	The HMI main screen shall not switch to MirrorLink context automatically upon re-connection of a MirrorLink device, unless the device explicitly requests the screen resource.	P_1: ML session with phone 1 is active over USB2 P_2: MIB is in ML context P_3: End the ML session by connecting a CarPlay device to the CarPlay-compatible USB1 port and start a CarPlay session P_4: While the CarPlay session is running, disconnect the USB cable to phone 1 P_5: End the CarPlay session	A_1: Reconnect the USB cable to phone 1	ER_1: ML session starts ER_2: MIB stays in the selected context. It does not automatically switch to the ML context
MiLi-TC-250	Automatic ML reconnect after Bussslеep	P_1: ML session is active	A_1: Make a bussleep simply KL15 and S=off A_2: make KL15/S = ON--> check if the ML reconnect happens automatically	ER_1: MIB is shuting down ER_2: MIB system started and ML reconnect was performed automatically
MiLi-TC-327	MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible	P_1: ML session with phone 1 is active P_2: ML context is active	A_1: Shift into reverse gear to activate Rearview camera/PDC A_2: Deactivate RVC and check if the ML context is displayed	ER_1: Rearview camera/PDC screen should be visible while rearview camera is active ER_2: RVC is deactivated and ML context with last state is displayed
MiLi-TC-19	Detecting of ML/AA deivce	P_1: MIB system is fully started. P_2: No ML Device connected P_3: MirrorLink is not active running	A_1. connect phone1 via USB Note. phone1 support ML and AA A_2 remove the usb from phone 1	ER_1: the connected device phone 1 should displayed with both technologies "AA" and "ML" ER_2: phone1 disappeared from appconnect list
MiLi-TC-43	Prepare system and ML device. Connect LVDS grabber to the MIB system.	P_1 MIB system is fully started. P_2 ML device is connected P_3 ML connection is acitve	A_1 Start performance test video on the ML device. A_2 Start recording on LVDS grabber A_3 Stop rercording after performance video finished. A_4 Count frames per second and check if the frame performance is accoriding to Spec.	A_4: The expected frame Performance is the followed: MIB STD: Number of counted frames per second shall be at least 10. MIB HIGH: Number of counted frames per second shall be at least 15.
MiLi-TC-114	Deactivate/activate Appconnect via SWAP	P_1 MIB is started and AppConnect conetext is selected	A_1: deactivate Appconnect via SWAP--> and select Appconnect context A_2: Activate Appconnect via SWAP again--> and select Appconnect context	ER_1: a popup displayed informing that Appconnect is not activated..... ER_2: Appconnect is working again
MiLi-TC-115	MirrorLink software update	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen.	A_1. Starts the customer update for MirrorLink.	ER_1: Before the customer update starts, the device shall be disconnected. Customer update completed successful.
MiLi-TC-18	Connect USB device.	P_1: MIB system is fully started. P_2: Appconnect context is not active in foreground. P_3: ML Device is powered on. P_4: MIB system is in non-restricted mode.	A_1: Attach USB cable and connect ML device "Phone1". A_2: select Appconnect context. and try to intiate ML connection with phone 1	ER_1: . phone 1 is detected and both technologies are displayed "ML" and "AA" ER_2: . Establish the connection to the ML USB device. Shows the connecting popup for 2 seconds. 2.a. Connection is established: The main view is displayed with all ML apps. 2.b. Connection failed: Displays a popup informing that the connection could not be established
MiLi-TC-417	black listing of known devices which shall not be displayed on client	P_1: MIB system is fully started. P_2: Appconnect context is not active in foreground. P_3: no device connected	A_1: connect on deivce from black listing of known devices (e.g. D-Link, known non MirrorLink, DIO or GAL devices like usb MP3-Player) Note: All deivce from black list should be not displayed on client	ER_1: All known device from black list are not displayed on client
MiLi-TC-411	Connect a ML device and display ML aware apps in the main view.	P_1 ML device is ready for use P_2At least two ML aware apps are available on the device. P_3MIB system is in non restricted mode	A_1 Connect ML device via USB cable to the MIB system. A_2 Waiting for establishing ML connection.	ER_1. ML connection established ER_2. A list of all available ML aware app appears. Each indivuall app is displayed as an icon and the name of the app.
MiLi-TC-412	Connect a ML device with no ML aware apps.	P_1 ML device is ready for use P_2 ML device does not support application mode. - MIB system is in non restricted mode	A_1 Connect ML device via USB cable to the MIB system. A_2. Waiting for establishing ML connection. A_3. If device screen appears, switching back to the main screen.	ER_1. ML connection established ER_2: 2a. If device supports full access view, the device screen shall be displayed. 2b. If device does not support full access view, it appears a meassage that the device may not support the application mode. ER_3. No app icons are listed. Instead of that it appears the same as in 2b.
MiLi-TC-413	MIB_TC_MiLi_Device_ Connection_USB	P_1 ML device is ready for use P_2Exactly one ML aware app is available on the device. P_3MIB system is in non restricted mode	A_1. Connect ML device via USB cable to the MIB system. A_2. Waiting for establishing ML connection.	P_1. ML connection established P_2. Instead of listing the available apps, the device screen shall be displayed.
MiLi-TC-414	Connect a ML device with many ML aware apps.	P_1 ML device is ready for use P_2 More ML aware apps than are suitable on one page of the app list are available on the device. P_3 MIB system is in non restricted mode	A_1. Connect ML device via USB cable to the MIB system. A_2. Waiting for establishing ML connection.	ER_1. ML connection established ER_2. A list of all available ML aware app appears clustered in a window view.
MiLi-TC-415	Connect a ML device that provides a ML drive certified and compatible app.	P_1 ML device is ready for use P_2 At least one ML drive certified and compatible app is available on the device.	A_1. Connect ML device via USB cable to the MIB system. A_2. Waiting for establishing ML connection. A_3. Switch to the main view if necessary. 4a. Go into non restricted mode and touch on the icon of the drive certified and compatible ML app. 4b. Go into restricted mode and touch on the icon of the drive certified and compatible ML app.	ER_1. ML connection established ER_2. An app icon of the drive certified and compatible ML app shall appear in the app list. ER_3. The app icon has the expected size and quality, the app name is displayed correctly. 4a. The app icon shall be clickable and not "outgreyed" and has no marks for compatibility reasons. 4b. The app icon shall be clickable and not "outgreyed" and has no marks for compatibility reasons.
MiLi-TC-203	When ML session is started, the system shall still connect all Bluetooth connections.	P_1: Phone 1 is connected with the MIB as primary HFP device, with PBAP, MAP P_2: ML session is not yet active P_3: Phone 2 is connected as A2DP device P_4: Phone 3 is connected as a secondary HFP device, with PBAP and MAP	A_1: Start an ML session with phone 4.	ER_1: ML session with phone 4 is successfuly ER_2: Phone 1,2,3 is still connected as HFP devices and A2DP device
MiLi-TC-211	ML media playback continues seamlessly, if HFP is terminated.	P_1: Phone 1 is connected with the MIB as primary HFP device, with PBAP, MAP P_2: ML session with phone 1 is active P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: In MIB's phone setup, deactivate (uncheck) Bluetooth	ER_1: Bluetooth is disabled ER_2: ML media playback continues seamlessly
MiLi-TC-392	When ML session is started, the system shall connect the phone over HFP.	P_1: Switch on BT in the phone P_2: Check autopairing in the SmartLink setting	A_1: Start ML session	ER_1: MIB try pair with the phone over HFP, the pairing should be OK. Note: Isn't wrong, if the pairing isn't OK, but MIB must try the pairing.
MiLi-TC-212	A2DP disconnected after an succssful ML connection	P_1: ML Phone 1 is connected asA2DP, audio over A2DP is running P_2: no ML connection is active	A_1: connect phone 1 via usb and intiate ML connection A_2: try to connect phone 1 as A2DP during an active ML A_3: disconnect ML connection manually and try to connect phone 1 as A2DP again	ER_1: ML connection is successful, and A2DP is disconnected automatically after ML connection happens ER_2: not possible to connect phone 1 as A2DP because ML connection is active ER_3: A2DP connection is successful after disconnecting ML
MiLi-TC-136	Connect USB device.	P_1: MirrorLink context is active in foreground. P_2: No MirrorLink device connection is active. P_3: ML Devices are powered on. P_4: Park mode is enabled	A_1 Attach USB cable and connect more than one ML USB devices that are not selected in the last device mode setting. A_2: Attach USB cable and connect more than one ML devices whereas one of them is selected in the last device mode setting. 2. enable drive mode and repeat steps in alle A_1 and A_2	ER_1: Device are detected in appconnect list with both "ML" and "AA", user needs to perofrm the ML connection manually ER_2: Connection is established automatically The main view is displayed. if Connection failed: popup should be displayed with error reason
MiLi-TC-108	Connect USB device.	P_1: MirrorLink context is active in foreground. P_2: No MirrorLink device connection is active. P_3: USB device is powered on.	A_1 Attach USB cable and connect a common USB device without any MirrorLink functionality.	ER_1: Connection failed a popup displayed informing that device not support ML/AA
MiLi-TC-135	Connect USB device - MIB system and ML device is powered off.	P_1: MIB system is powered off. P_2: ML device is powered off. P_3: USB cable detachted	A_1: Attach USB cable to both units A_2. Power on MIB system and ML device at approximately the same time. A_3: Intiate ML connection.	ER_2: Device ios detected in appconnect menu as "ML" and "AA" ER_3: Ml connection is successful

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-137	Connect USB device - MIB system powered off.	P_1: MIB system is powered off. P_2: ML device is powered on and was already connected as ML P_3: USB cable detachted	A_1: Attach USB cable to both units. A_2: Power on MIB system.	ER_2: ML reconnect is successful after powering on MIB system
MiLi-TC-138	Connect USB device - ML device powered off.	P_1: MIB system is powered on. P_2: ML device is powered off and was already connected as ML P_3: USB cable detachted	A_1: Attach USB cable to both units. A_2: Power on ML device and check if ML connection happens automatically	ER_2: ML reconnect is successful after switching device on
MiLi-TC-331	ML device Switch from Server1 to server 2	P_1: ML session with phone 1 is active over USB1 P_2: ML Phone 2 is connected via usb--> ML not active	A_1: go to appconnect menu and intiate ML connection with Phone 2 during an active ML active session with phone 1	ER_1: the ML connection from phone 1 is disconnected and ML connection with phone 2 is established perfectly Note: phone 1 still detected as Ml and media device
MiLi-TC-332	ML device Switch from Server1 to server 2	P_1: ML session with phone 1 is active over USB1 P_2: ML Phone 2 is connected via usb--> ML not active	A_1: go to appconnect menu and intiate ML connection with Phone 2, wait till the popup for establishing usb is shown, then remove the usb cable again from phone2 While the popup is shown	ER_1: 1- the popup for estblishing ML with phone 2 disappeared when the usb cable is disconnected
MiLi-TC-330	The popup for estblishing ML connection should be disappeared after removing usb	P_1: ML session with phone 1 is active over USB1 P_2: MIB is in ML context P_3: End the ML session by disconnecting the USB cable from phone 1	A_1: Reconnect the USB cable to phone 1, wait till the popup for establishing usb is shown, then remove the usb cable again While the popup is shown	ER_1: the popup dissappears immediatellly when the usb cable is disconnected Note: test case is failed if the popup for establishing usb connection still appeared after dettaching usb
MiLi-TC-272	MIB screen: The appconnect context shall remain active Cluster screen: any ML specific content is not displayed any longer The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is not connected with the MIB in any way P_2: Media playback is active on phone 1	A_1: Go to AppConnect context, start an ML session with phone 1, A_2: End the ML session using the AppConnect HMI -> disconnect Softkey--> check in Medai conext if phone 1 is selectable as usb	ER_1: ML connection is successful, Music over USB in Media is stopped ER_2: ML is disconnected--> music over usb with Phone 1 is possible after disconnecting ML
MiLi-TC-257	The system shall switch to AppConnect context if MirrorLink device is disconnected while MirrorLink is active system context.	P_1: ML session is active P_2: MIB is in ML context	A_1: Disconnect the USB cable to the ML device	ER_1: ML session ends ER_2: MIB falls back to AppConnect context
MiLi-TC-258	Screen shall stay in native HMI mode when MirrorLink device is unplugged while MIB shows native HMI mode.	P_1: ML session is active P_2: MIB is in Radio context, radio station is hearable	A_1: Disconnect the USB cable to the ML device	ER_1: ML is disconnected successfuly, popup for disconnecting ML should be displayed in radio context Please repeat this test in different MIB context e.g. "Navigation, Media phone..."
MiLi-TC-111	Disconnect USB device.	P_1: ML device is connected to HU, ML is acitve P_2: ML App is running and is displayed on MIB screen.	A_1: Detach the USB cable to disconnect the ML device.	ER_1: ML disconnecting should be successful, a popup for disconnecting should be shown, and ML device should be disapeared from Appconnect menu
MiLi-TC-112	Disconnect USB device	P_1: ML device is connected to HU P_2: MIB system displays the main view.	A_1: Detach the USB cable to disconnect the ML device. A_2: Disconnect the ML device by pressing the close connection button.	ER_1: ML disconnecting should be successful, a popup for disconnecting should be shown, and ML device should be disapeared from Appconnect menu ER_2: ML disconnected Device still detected as ML deivce in Appconnect menu
MiLi-TC-113	Disconnect USB device	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen.	A_1: powercycle the MIB system	ER_1: --> Ml connection is disconnect by power down --> ML reconnect is successful after Power on
MiLi-TC-139	Disconnect USB device	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen.	A_1. Power off the connected ML device. A_2: power on the ML device again	ER_1: ML connection is disconnected apopup apprears informing that ML is disconnected ER_2: ML reconnect is successful after power on the connected device
MiLi-TC-215	If the MirrorLink session is ended, phone call proceeds seamlessly.	P_1: Phone 1 is connected with the MIB as HFP device P_2: Connect phone 1 with MIB with a USB cable P_3: Start an ML session with phone 1 P_4: Initiate a phone call with phone 1 in using ML	A_1: End the ML session during the phone call	ER_1: ML session ends ER_2: Phone call proceeds seamlessly because the HFP connection with phone 1 is kept intact
MiLi-TC-128	Activate/Deactivate the restricted mode.	P_1: phone 1 is a ML deivce 1.1, certified apps are installed in phone1 P_2: phone 1 is connected as ML P_3: Park mode is enabled	A_1: launch certified app A_2: enable Drive mode A_3: go to applist and launch a region app A_4 enable Park mode and repeat step A_3 A_5: enable drive mode A_6: go back to applist and launch a certified app	ER_1: certified app is launchable ER_2: certified app still displayed after enabling Drive mode ER_3: App is blocked a popup appears informing that app is not allowed in this region ER_4: region app is lauchable in Park mode ER_5: region app is blocked ER_6: certified app is launchable in drive mode
MiLi-TC-109	DAP test cases	P_1: MirrorLink context is active in foreground. P_2: No MirrorLink device connection is active. P_3: ML device is powered on. P_4: Drive mode is enabled	A_1: Attach USB cable and connect a ML USB device with DAP support. A_2: Attach USB cable and connect a ML USB device without DAP support or a device with an old ML version 1.0.	ER_1: DAP succeed, all drive certified apps are without symbol crossed wheel by the app and launchable in drive mode ER_2: DAP failed: An error message occurs which describes that DAP failed. All apps are not startable in drive mode
MiLi-TC-269	Both devices are available in the device list in Appconnect and also visible in the Media context	P_1: Phone 1 and phone 2 (both are ML devices) have not yet been connected to MIB (reset MIB to factory settings if necessary) P_2: Connect phone 1 and 2 to the MIB at the using a USB cable for each of them P_3: Go to Media context P_4: See the list of sources (root of the folder hierarchy of Media browser)	A_1: Connect phone 1 and 2 to the MIB at the using a USB cable for each of them A_2: go to Media context and check if Pohne 1 and phone 2 are listed as MTP	ER_1: Phone 1 and 2 are detected as ML device´s in appconnect List ER_2: Phone 1 and 2 are listed in Media context "USB1 and 2 are highlighted"
MiLi-TC-273	1. The 2nd connected device has no effect on the active ML session	P_1: ML session with phone 1 is active	A_1: Connect phone 2 (ML device) to MIB using a USB cable	ER_1: Phone 2 is detected as ML device on Appconnect, ML session with phone 2 does not start, ML connection with phone 1 still active ER_2: Phone 2 is visible in Media source pushup as a usual USB device ER_3: Phone 2 is visible in Media source list as a usual USB device ER_4: Phone 2 has no effect on the ML session with phone 1
MiLi-TC-25		P_1: More than one ML device "phone1" and "phone2" are available. P_2: No last selected device is available.	A_1: Select Appconnect A_2: connect phone1 as ML A_3: make a user switch simply connect Phone 2 as ML and remove the usb from phone 1 during perofming ML connection	ER_1: Displays the list of all available devices with both technologies "ML" and "AA" ER_2: ML connection with phone 1 is successful ER_2: ML connection with phone 2 is successful, phone 1 is disappeared from appconnect list
MiLi-TC-29	Connection failed with non ML device	P_1: More than one device is available. phone 1 is non ML device, Phone 2 is ML device P_2: The list of all available devices is displayed.	A_1: try to connect phone 1 as ML A_2: try to connect phone 2 as ML	ER_1 : ML connection not possible, ap popup displayed informing that device not support ML ER_2: ML connection is successful, Applist is displayed with all apps
MiLi-TC-127	MirrorLink context is in Day-/Night-Mode corresponding to Day/Night global settings	P_1: ML session with phone 1 is active P_2: ML context is active (e.g. in MAP/Sygic app) Note: For test you can use MirrorLink test application	A_1: Open setup and change from Night mode to Day mode. Check the ML context	ER_1: ML context(MAP/Sygic) is in Day mode according to MIB
MiLi-TC-176	MirrorLink context is in Day-/Night-Mode corresponding to Day/Night global settings	P_1: ML session with phone 1 is active P_2: ML context is active (e.g. in MAP/Sygic app) Note: For test you can use MirrorLink test application	A_1: Open setup and change from Day mode to Night mode. Check the ML context	ER_1: ML context(MAP/Sygic) is in Night mode according to MIB
MiLi-TC-255	change the Context from Phone context to MirrorLink context after terminate call	P_1: Phone 1 is connected as HFP P_2: phone 1 is connected as ML, Ml connection is active---> ML context is selected	A_1: Try to create an active incoming call--> accept the call in ML context A_2: Terminate the call in phone context	ER_1: phone context ist displayed after accepting the call in ML context ER_2: ML context is displayed again directly after terminate the active call in phone context

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-129	Start ML device in lock mode.	P_1: ML context is active and ready to use P_2: Device supports lock mode	A_1: Lock the ML device (e.g. need to enter a PIN) A_2: Connect the ML device with the MIB system and start some app(Aupeo, Audioteka) A_3: Unlock the ML device by entering the correct PIN	ER_2: ML connection is successful, after start app MIB screen displayed that „Device locked. Can´t display Mirrorlink currently.“ ER_3: MIB screen displayed app
MiLi-TC-133	Connect a ML device and display ML aware apps in the main view and install/deinstall a ML app.	P_1: ML device is ready for use P_2: At least two ML aware apps are available on the device.	A_1: Connect ML device via USB cable and initiate ML connection A_2: Install a new ML app on the device, while it is connected to the HU. A_3: Deinstall a ML app on the device, while it is conntected to the HU.	ER_1: ML connection established, applist is displayed with all apps. icon and name of apps are displayed correctly ER_2: After the new ML app is installed it shall appear in the app list on the HU. ER_3: After the ML app is deinstalled it shall disappear in the app list on the HU.
MiLi-TC-61	Connect a ML device with one single ML app.	P_1: no device connected P_1: ML device " phone 1", only one ML app is installed on phone	A_1: Connect ML device via USB cable to the MIB system A_2: intiate ML connection with phone 1	ER_1: phone 1 is detected in appconnect menu as "ML" and "AA" ER_2: Ml connection is successful, App is launched automatically after ML connection happens
MiLi-TC-63	Connect a ML device with many ML aware apps.	P_1: ML device is ready for use P_2: ML device does not support application mode P_3: MIB system is in non restricted mode	A_1: Connect ML device via USB cable to the MIB system A_2: Waiting for establishing ML connection	ER_1: ML connection established ER_2: A list of all available ML aware app appears clustered in a window view
MiLi-TC-65	Connect a ML device that provides a ML drive certified and compatible app.	P_1: ML device is ready for use P_2: At least one ML drive certified and compatible app is available on the device	A_1: Connect ML device via USB cable to the MIB system A_2: Waiting for establishing ML connection A_3: Switch to the main view if necessary A_4a: Go into non restricted mode and touch on the icon of the drive certified and compatible ML app A_4b: Go into restricted mode and touch on the icon of the drive certified and compatible ML app	ER_1: ML connection established ER_2: An app icon of the drive certified and compatible ML app shall appear in the app list ER_3:The app icon has the expected size and quality, the app name is displayed correctly ER_4a: The app icon shall be clickable and without symbol crossed wheel by the app and has no marks for compatibility reasons ER_4b: The app icon shall be clickable and without symbol crossed wheel by the app and has no marks for compatibility reasons
MiLi-TC-416	A launched app shall appear in the close app list.	P_1 ML device is ready for use P_2 At least one launchable ML aware apps is available on the device. P_3 MIB system is in non restricted mode	A_1. Connect ML device via USB cable to the MIB system. A_2. Waiting for establishing ML connection. A_3. Switch to the main view if necessary. A_4. Touch on an app icon to launch the app A_5. Switch to the close app list.	ER_1. ML connection established ER_2. The launched app shall appear in the close app list.
MiLi-TC-66	Connect a ML device that provides a ML drive certified but not compatible app. (Note: compatible means e.g. wrong certified region or wrong display size)	P_1: ML device is ready for use P_2: At least one ML drive certified and non-compatible app is available on the device	A_1: Connect ML device via USB cable to the MIB system A_2: Waiting for establishing ML connection A_3: Switch to the main view if necessary A_4a: Go into non restricted mode and touch on the icon of the drive certified and non-compatible ML app A_4b: Go into restricted mode and touch on the icon of the drive certified and non-compatible ML app	ER_1: ML connection established ER_2: An app icon of the drive certified and non-compatible ML app shall appear in the app list ER_3: The app icon has the expected size and quality, the app name is displayed correctly ER_4a: The app icon shall be clickable and without symbol crossed wheel by the app and has no marks for compatibility reasons ER_4b: The app icon shall be clickable and with symbol crossed wheel by the app and has a mark for compatibility reasons
MiLi-TC-67	Connect a ML device that provides a non-certified ML app.	P_1: ML device is ready for use P_2: At least one non-certified app is available on the device. P_3: Park mode is enabled	A_1: Connect ML device via USB cable to the MIB system and intiate ML connection---> check the size, name and icon of apps A_2: launch the non certified app A_3: enable drive mode A_4: go to Applist and launch the app again A_5: enablePark mode agian and launch the app	ER_1: ML connection established, An app icon of the non-certified ML app shall appear in the app list. The app icon has the expected size and quality, the app name is displayed correctly. The app icon shall be clickable and not Highlighted in Park mode ER_2: App is launchable in Park mode ER_3: App is blocked a screen appears informing that this app is not avaialble while driving ER_4. app is not launchable, a popup appears informing that app is not available in drive mode ER_5: app is launchable in Park mode
MiLi-TC-68	Connect a ML device that provides both a ML non-drive certified and certified app.	P_1: ML device is ready for use P_2: a ML non-drive certified and certified app are already installed on ML device P_3: Park mode is enabled	A_1: Connect ML device via USB cable to the MIB system and intiate ML connection---> check the size, name and icon of apps A_2: launch the non certified app A_3: enable drive mode A_4: go to applist again and launch a certified app e.g. miRoamer	ER_1: ML connection established, An app icon of the non-certified ML app shall appear in the app list. The app icon has the expected size and quality, the app name is displayed correctly. The app icon shall be clickable and with symbol crossed wheel by the app in Park mode ER_2: App is launchable in Park mode ER_3: App is blocked a screen appears informing that this app is not avaialble while driving ER_4: app is launchable in drive mode
MiLi-TC-69	Connect a ML device that provides a ML region app	P_1: ML device is ready for use P_2: At least one ML non-drive certified "region " app is installed P_3: Park mode is enabled	A_1: Connect ML device via USB cable to the MIB system and intiate ML connection---> check the size, name and icon of apps A_2: go to app list and check the region app A_3: launch the region app A_4: enable drive mode A_5: go to Applist and launch the app again A_6: enablePark mode agian and launch the app	ER_1: ML connection established, An app icon of the non-certified ML app shall appear in the app list. The app icon has the expected size and quality, the app name is displayed correctly. The app icon shall be clickable and not Highlighted in Park mode ER_2: Region app is displayed correctly. an exclamation mark „!“ indicated that the app is for this region not allowed. ER_3: App is launchable in Park mode ER_4: App is blocked a screen appears informing that this app is not avaialble while driving ER_4. app is not launchable, a popup appears informing that app is not allowed in this region ER_5: app is launchable in Park mode
MiLi-TC-70	A launched app shall appear in the close app list.	P_1: ML device is ready for use P_2: At least one launchable ML aware apps is available on the device P_3: MIB system is in non restricted mode	A_1: Connect ML device via USB cable to the MIB system A_2: Waiting for establishing ML connection A_3: Switch to the main view if necessary A_4: Touch on an app icon to launch the app A_5: Switch to the close app list	ER_1: ML connection established ER_2: The launched app shall appear in the close app list
MiLi-TC-73	Display a common ML app in normal mode.	P_1: ML device is connected to HU P_2: ML app is installed and available on ML device P_3: MIB system is in non restricted mode	A_1: Launch the ML app A_2: If needed press the fullscreen-mode button to switch back to the normal mode in the app view A_3: Set the controlbar on the top A_4: Set the controbal on the bottom	ER_1: The normal app mode shall appear which shows beside the device display a controlbar ER_2: The controlbar has following elements: Back-Button, Change controlbar position button and phone keys ER_3a: By pressing the "controlbar positon button" the controlbar should appear on the top. The framebuffer position might be adjusted archieving the smallest overlapping to the controlbar ER_3b: By pressing the "controlbar positon button" the controlbar should appear on the bottom. The framebuffer position might be adjusted archieving the smallest overlapping to the controlbar
MiLi-TC-74	Display MIB Controlbar	P_1: ML device is connected to HU P_2: ML app is installed and available on ML device. P_3: MIB system is in non restricted mode	A_1: Connect ML device via USB cable to the MIB system and intiate ML connection---> check the size, name and icon of apps A_2. Launch app A_3: bring the fingers near to display in order to activate proximity sensor. A_4: bring the fingers far form display in order to deactivate proximity sensor	ER_1: ML connection established, An app icon of the non-certified ML app shall appear in the app list. The app icon has the expected size and quality, the app name is displayed correctly. The app icon shall be clickable and not Highlighted in Park mode ER_2: App is launchable ER_3: Controlbar should be appeared ER_4: Controlbar should be disapeared after a few sec.
MiLi-TC-76	Launch an ML app.	P_1: ML device is connected to HU P_2: ML app is installed and available on ML device P_3: The ML app is installed but not running on the device P_4: MIB system is in non restricted mode	A_1: Launch the ML app	ER_1: While the app gets launched it appears an "app loading" screen on the MIB display ER_2: After the app is fully loaded it is displayed on the MIB display ER_3: If the app loading failed, it appears an error message

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-77	Display a drive-level certified and compatible ML app in restricted mode. (Note: compatible means e.g. certified region or compatible for the HU in general)	P_1: ML device is connected to HU P_2: Drive-level certified and compatible ML app is installed and available on ML device. P_3: Park mode is enabled	A_1: Launch the drive-level certified and compatible ML app. A_2:Switch to the restricted mode. 3. Switch back to the non-restricted mode. 4. Repeat step 1, 2 and 3 for following setups: a. App is CCC drive-level certified b. App is VW certified and system variant is a VW variant. c. App is Seat certified and system variant is a Seat variant. d. App is Skoda certified and system variant is a Skoda variant. e. OEM certificate does not match to the system variant.	ER_1: App is launchable in park mode ER_2: By switching to the restricted mode the framebuffer is still displayed on the MIB screen. ER:_3: By switching back to the non-restricted mode the framebuffer is displayed on the MIB screen. ER_4: a-d. Framebuffer is not blocked. 4 e. If the OEM certificate does not match to the system variant the system shall consider it as a not certfied app. In this case the framebuffer is blocked and a text message for the reason appears.
MiLi-TC-79	Display a non-drive certified ML app in restricted mode.	P_1:ML device is connected to HU P_2: Non-Drive-level certified ML app is installed and available on ML device. P_3: Park mode is enabled	A_1: . Launch a non-drive-level certified ML app. A_2: Switch to the restricted mode. A_3: Switch back to the non-restricted mode.	ER_1: App is launchable in park mode ER_2. By switching to the restricted mode the framebuffer is blocked and a text message for the reason appears. ER_3: By switching back to the non-restricted mode the framebuffer is displayed again on the MIB screen.
MiLi-TC-131	Switch to another context while MirrorLink is active.	P_1: ML device is connected to HU P_2: MIB system is in non restricted mode P_3: The framebuffer is displayed as the active context on the MIB screen	A_1: Switch to another view inside the MirrorLink context A_2: Switch back to the MirrorLink app view A_3: Switch to another MIB context outside of MirrorLink A_4: Switch back to the MirrorLink app view	ER_1: ML device gets informed that the framebuffer is blocked by the MIB system, because view is not anymore in foreground. The ML device may reduce the video data output to save some ressources ER_2: ML device gets informed that the framebuffer is not anymore blocked. The device shall resume streaming the video data ER_3: ML device gets informed again that the framebuffer is blocked by the MIB system, because view is not anymore in foreground. The ML device may reduce the video data output to save some ressources ER_4: ML device gets informed that the framebuffer is not anymore blocked. The device shall resume streaming the video data
MiLi-TC-132	Stream a content attestated video via MirrorLink.	P_1: ML device is connected to HU P_2: MIB system is in non restricted mode P_3: The framebuffer is displayed as the active context on the MIB screen P_4: ML device supports content attestation	A_1: Play a content attested video	ER_1: The content attestated video shall be played ER_2: If the content attestation failed, the framebuffer shall be blocked
MiLi-TC-85	Launch apps	P_1: ML device is connected to HU P_2: apps is installed and available on ML device. P_3: MIB system is in non restricted mode	A_1: go to applist and launch drive certified app A_2: enable drive mode and repeat A_1	ER_1: --> App will be loaded. If this takes a while it appears a "App loading" screen. --> App loading was successful. The launched app will be displayed on the HU screen, --> App loading failed. The user gets an error message and does not display the device screen on the HU screen. Instead it shall be displayed the app list. ER_2: same result like ER_1
MiLi-TC-88	Launch a drive certified ML app which is not certfied for the region of the system variant.	P_1: ML device is connected to HU P_2: drive certified ML app with a wrong region is installed and available on ML device. - MIB system is in restricted mode	A_1: Launch a drive certified and ML app with a wrong region from the App List.	ER_1. . It appears a popup message that this application is certified for a wrong region and can not be launched.
MiLi-TC-90	Close a common ML app.	P_1: ML device is connected to HU P_2: A common ML app is installed and available on ML device P_3: ML app is not part of the ML server like a Car Mode app P_4: MIB system is in non restricted mode	A_1: Launch a common ML app from the App List A_2: Open the close app list A_3: Select the launched app to terminate the app	ER_1: If no error occurs the common ML app shall be terminated on the ML device ER_2: If the app streams some audio like playing a music title the audio playback shall be stopped
MiLi-TC-93	Connect a ML device that does not provide phone keys.	P_1: ML device is connected to HU P_2: ML device does not support phone keys for remote control P_3: A common ML app is installed and available on ML device	A_1: Launch a common ML app and activate the MIB control bar check if the Device keys are not displayed	ER_1: In the control bar shall not appear any phone key Only two Softkeys should be displayed "Back" and "change Position"
MiLi-TC-94	Use back button to leave the app view.	P_1: ML device is connected to HU P_2: app is installed and available on ML device.	A_1: go tob applist and launch app A_2: press the back SK on the control bar.	ER_1: app is launchable ER_2: Applist is displayed again after pressing the back SK on the control bar.
MiLi-TC-99	Send a single touch event to a ML device.	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen P_3: Running ML app supports touch gestures for dragging a context like a map, images, etc	A_1: Touch the MIB display with one finger on an element to drag inside the framebuffer of the ML app Move the finger to another position without releasing the touch screen A_3: Release the touch event by removing the finger from the touch display	ER_1: The dragged element shall directly follow the finger movement ER_3: After the release event the dragged element shall be placed on the new position
MiLi-TC-100	Send a single touch move event to a ML device.	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen. P_3: Running ML app supports touch gestures for dragging a context like a map, images, etc.	A_1: Touch the MIB display with one finger on an element to drag inside the framebuffer of the ML app and Move the finger to another position without releasing the touch screen. A_2: Release the touch event by removing the finger from the touch display.	ER_1: The dragged element shall directly follow the finger movement. ER_2: After the release event the dragged element shall be placed on the new position.
MiLi-TC-101	Send a long press touch event to a ML device.	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen. P_3: Running ML app supports long press event.	A_1: --> Touch the MIB display with one finger on a long press element inside the framebuffer of the ML app. Important: The finger shall not move, it must hold the same position. -->Hold the position for at least 5 seconds. -->Release the touch event by removing the finger from the touch display.	ER_1: The long press element of the ML app shall react on the long press event. This effect may depends on the used ML app.
MiLi-TC-102	Send a double touch event to a ML device.	P_1: ML device is connected to HU P_2: ML App is running and is displayed on MIB screen. P_3: Running ML app supports double touch events like a map for zoom gestures.	A_1: Send two touch events in a row on the same position inside the framebuffer of the ML app to initiate a zook gesture.	ER_1: The ML app shall recognize the double touch event, e.g. a zoom gesture for a navigation map.
MiLi-TC-103	Send a two finger zoom gesture to a ML device.	P_1: ML device is connected to HU P_2: ML device supports multi touch events P_3: ML App is running and is displayed on MIB screen. P_4: Running ML app supports multi touch events for zoom gestures (e.g. a map, images).	A_1: Touch the MIB display with two finger on different positions inside the framebuffer of the ML app. 1_a. Extend the distance between the two finger positions. 1_b. Contract the distance between the two finger positions.	ER_1: 1_a. The app shall initiate a zoom in gesture. The effect result shall be linked to the movement of the distance between the two fingers. 1_b. The app shall initiate a zoom out gesture. The effect result shall be linked to the movement of the distance between the two fingers.
MiLi-TC-104	Switch the framebuffer orientation	P_1: ML device is connected to HU, ML connection is active Device should support orientation and app which support orientation shoud be installed Please use for this test case SAMSUNG nexus from realvnc SW: 2.6.5	A_1: launch app which support e.g. music A_2: go to setting and Change the orientation to portrait	ER_1: The ML app is launchable and should be displayed in Landscape mode ER_2. The protrait mode is selected in settings and the app is dispalyed in portrait mode
MiLi-TC-105	Switch the framebuffer rotation	P_1: ML device is connected to HU, ML connection is active Device should support orientation and app which support orientation shoud be installed Please use for this test case SAMSUNG nexus from realvnc SW: 2.6.5	A_1: launch app which support e.g. music A_2. try to rotate on Mobile from Landscape to Portrait	ER_1: The ML app is launchable and should be displayed in Landscape mode ER_2. The MIB displayed the app in Protrait mode
MiLi-TC-36	Audio Blocking/unblocking	P_1: ML connection is active P_2. ML audio app is installed on device	A_1: launch audio app e.g. htc one app "music" and play a song A_2: reduce the volume to zero on MIB A_3: increase the Volume on MIB	ER_1: App is launchable, music is playing, audio over rtp is running ER_2: Audio over rtp is stopped, music app is in pause ER_3: Audio is resumed and hearable
MiLi-TC-345	Audio Blocking/unblocking by switching Context	P_1: ML connection is active P_2. ML audio app is installed on device	A_1: launch audio app e.g. htc one app "music" or "miRoamer" and play a song or radio streaming A_2: select radio context and listen to any radio station A_3: go back to ML context	ER_1: App is launchable, music is playing, audio over rtp is running ER_2: Audio over rtp is blocked, Radio station is hearable ER_3: Radio is blocked Audio over rtp is running and hearable

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-346	Audio Blocking/unblocking by switching Context	P_1: ML connection is active P_2. ML audio app is installed on device	A_1: launch audio app e.g. htc one app "music" or "miRoamer" and play a song or radio streaming A_2: Stop the music app by pressing "Pause" then select radio context and listen to any radio station A_3: go back to ML context	ER_1: App is launchable, music is playing, audio over rtp is running ER_2: Audio over rtp is stpped, Radio station is hearable ER_3: Radio station still hearable after switching to ML context
MiLi-TC-347	Audio Blocking/unblocking by incoming call	P_1:Device connted as ML and HFP, ML connection is active P_2. ML audio is installed on device	A_1: launch audio app e.g. htc one app "music" or "miRoamer" and play a song or radio streaming A_2: create an incoming call and accept the call on ML context A_3: Disconnect the call on phone context	ER_1: App is launchable, music is playing, audio over rtp is running ER_2: pohne context is displayed after accepting call, Audio over rtp is blocked, call is active and hearable on carkit ER_3: the context switched to ML context directly after release call, the Audio over rtp is resumed
MiLi-TC-348	Audio Blocking/unblocking by incoming call	P_1:Device connted as ML and HFP, ML connection is active P_2. ML audio app is installed on device	A_1: launch audio app e.g. htc one app "music" or "miRoamer" and play a song or radio streaming A_2: stopp the music app by pressing "Pause" then create an incoming call and accept the call on ML context A_3: Disconnect the call on phone context	ER_1: App is launchable, music is playing, audio over rtp is running ER_2: pohne context is displayed after accepting call, Audio over rtp is stopped, call is active and hearable on carkit ER_3: the context switched to ML context directly after release call, the Audio over rtp still stopped
MiLi-TC-349	Audio Blocking/unblocking by starting two ML audio app	P_1:Device connted as ML and HFP, ML connection is active P_2. at least 3 ML audio apps are installed on device	A_1: launch audio app e.g. htc one app "music" and play a song or radio streaming A_2: go back to app list and launch other Audio app "miRoamer" start radio streaming over ML A_3: go back to applist and launch other Audio app "shared audio" and play music	ER_1: music app is launchable, music is playing, audio over rtp is running ER_2: music app is blocked and stopped to play, miRoamer app is launchable, radio streaming over ML is hearable ER_3: radio streaming over ML stopped playing, Shared audio app is launchable, and music over rtp is running
MiLi-TC-351	Audio Blocking/unblocking by starting SDS	P_1:Device connted as ML and HFP, ML connection is active P_2. at least 3 ML audio apps are installed on device	A_1: launch audio app e.g. htc one app "music" and play a song or radio streaming A_2: Start SDS via MFL and say some voice command A_3: try to end SDS	ER_1: music app is launchable, music is playing, audio over rtp is running ER_2: music or radio streaming is blocked, SDS starts ER_3: Audio over rtp (music or radio streaming) is resumed after stopping SDS
MiLi-TC-40	Prepare system and ML device. A2DP should be disconnected after establishing ML.	P_1: phone 1 connected via usb, ML not active P_2: phone 1 connected as A2DP, music over A2DP is running	A_1: try to intiate ML connection A_2: Launch audio app, and play a song A_3: Disconnect the ML manualy, and try to connect phone 1 as A2DP again	ER_1: ML connection is successful, A2DP connection is disconnected automatically after ML connection happens, a popup appears informing that the A2DP already disconnected ER_2: music is loaded, audo over rtp is running ER_3: A2DP connection is possible after disconnecting ML
MiLi-TC-57	Prepare system and ML device.	P_1: ML connection is active P_2. ML audio app is installed on device	A_1: Play music from ML device A_2: Enter menu HK of MIB. A_3. Return to previous context.	ER_1: Music shall play. audio over rtp is hearable ER_2: Menu context is selected Music shall not be interupted. ER_3. ML context should be displayed with last mode
MiLi-TC-59	Prepare system and ML device.	P_1: ML connection is active P_2. ML audio app and Navi app e.g. sygicare installed on device	A_1: Launch audio app, and play a song A_2 launch sygic app and Start navigation on ML device.	ER_1: Music shall play. audio over rtp is hearable ER_2: Music shall play and volume should be reduced by an active navi announcements.
MiLi-TC-34	Prepare system and ML device.	P_1: MIB system is fully started P_2: ML device connected P_3: At least one App with audio backgroud (e.g. in Aupeo, Audioteka app) has to be available P_4: BT on ML device is off	A_1: Connect ML device by cable and go to Mirrorlink context A_2: Start audio App on ML device via MIB (e.g. in Aupeo, Audioteka app) A_3: Start App with voice input trigger e.g. HTC one app "speak" A_4: Invoke the Voice input	ER_2: The Mirrorlink audio source should be heard ER_3: After triggering the user's voice input, the system shall mute the Mirrorlink audio source and should wait for user's voice commands ER_3: The voice commands should be recognized by phone ER_4: After finishing the voice input, the last active Mirrorlink source should continue
MiLi-TC-218	In the mini MediaPlayer in native HMI the string "MirrorLink" shall be visible when MirrorLink is the active audio source.	P_1: ML session is active P_2: ML audio content is played back (e.g. in Aupeo, Audioteka app)	A_1: Press Navigation context HK and Check whether MirrorLink is written in "Media" SK as source audio A_2: Press CAR context HK and Check whether MirrorLink is written in "Media" as source audio	ER_1: MirrorLink is displayed in the media SK as an active source audio ER_2: MirrorLink is displayed in the media SK as an active source audio
MiLi-TC-281	MirrorLink turn by turn announcements shall be audible during native HMI media source is active	P_1: ML session with phone 1 is active P_2: MIB media playback is active P_3: ML route guidance is active(e.g. MAP/Sygic app) P_4: ML navigation announcement is played back	A_1: Check whether ML navigation announcement is audible (MIB media playback ducks)	ER_1: ML navigation announcement is audible (MIB media playback ducks)
MiLi-TC-299	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: ML session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app) P_4: ML context is active	A_1a: Switch to Phone context by pressing the hardkey Phone A_1b: Switch to Navigation context by pressing the hardkey Nav A_1c: Switch to Traffic context by pressing the hardkey Traffic A_1d: Switch to Car context by pressing the hardkey Car A_1e: Switch to Menu context by pressing the hardkey Menu	ER_1a: Phone context is shown ER_1b: Navigation context is shown ER_1c: Traffic context is shown ER_1d: Car context is shown ER_1e: Menu context is shown ER_2: ML playback continues seamlessly
MiLi-TC-307	USB in media source_during an active ML connection	P_1: ML session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux), remember the last MIB media source P_3: ML audio content is played back (e.g. in Aupeo, Audioteka app) P_4: ML context is active P_5: Instrument cluster is in Audio context	A_1a: Try to select ML device as usb media source in the media source pushup menu A_1b: Disconnect ML connection and try to play music over USB in Media context	ER_1a: ML device cannot be selected as usb media source in the pushup menu during an active ML connection--> usb is gryed out in media source ER_1b: Music can be selected in Media over usb after disconnecting ML
MiLi-TC-310	Media playback of native HMI shall be paused, if MirrorLink requests media audio	P_1: ML session with phone 1 is active P_2: Media playback from SD1 is active repeat this test by P_2 (SD2, USB1, USB2, CD, DVD,AUX, BT, TVtuner, Radio)	A_1: Go to ML context and start ML audio content (e.g. in Aupeo, Audioteka app) A_2: Select Cluster instrument and check if Mirrolink is displayed as active audio source	ER_1: SD1 playback pauses, and Audio over rtp is running
MiLi-TC-125	Prepare system and ML device.	- KL 15 on, KL30 on. - MIB system is fully started. - ML device connected - at least one App with audio backgroud (music player, internet radio etc.) and one navi app with audio navi commands has to be available - BT on ML device is off (RTP connection will be used)	1.1.Start audio playback on MIB from media e.g. SD1 1.2. Connect ML device by cable and go to Mirrorlink context. 1.3.Start Mirrorlink audio app and play some audio content. 1.4 select Media context again	1.1. The MIB audio source should be heard through infotainment system. 1.2. The MIB audio source should be still hearable and most not be muted. 1.3. The MIB audio source should be muted and Mirrorlink audio source should be active. 1.4. The Mirrorlink audio source should be muted and MIB audio source from SD1 should become active.
MiLi-TC-355	Notification should be visible on the MirrorLink Client screen_Applist	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: go back to applist A_4.: Perform necessary steps to create a notification	ER_1: ML connection is successful ER_2: App is launchable ER_3. Applist is displayed with all aps ER_4: Notification visible on the MirrorLink Client screen "Applist"
MiLi-TC-356	Notification should be visible on the MirrorLink Client screen_Applist	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Intiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: Select Radio context A_4.: Perform necessary steps to create a notification	ER_1: ML connection is successful ER_2: App is launchable ER_3. Radio context is displayed with all aps ER_4: Notification visible
MiLi-TC-374	Notification _ change action_list_Okey_Button	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"->"action list" then select "Okey" A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if "Okey" displayed in notification popup A_5: press "okey" to confirm the notification popup	ER_1: ML connection is successful ER_2: App is launchable ER_3. "okey" is selected in notification settings ER_4: Notification is displayed with the correct action softkey button "okey" ER_5: Notification screen is confirmed after pressing "Okey"

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-375	Notification _ change action_list_Okey/cancel_ button	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"->"action list" then select A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if "Okey, cancel" displayed in notification popup A_5: press "okey, cancel" to confirm the notification popup	ER_1: ML connection is successful ER_2: App is launchable ER_3. "okey, cancel" is selected in notification settings ER_4: Notification is displayed with the correct action softkey button "okey, cancel" ER_5: Notification screen is confirmed after pressing "Okey, cancel"
MiLi-TC-376	Notification _ change action_list_Abort_button	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"->"action list" then select "Abort" A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if "Abort" button displayed in notification popup A_5: press "Button" to confirm the notification popup	ER_1: ML connection is successful ER_2: App is launchable ER_3. "Abort" soft button is selected in notification settings ER_4: Notification is displayed with the correct action softkey button "Abort" ER_5: Notification screen disappeared after pressing "Abort" softbutton
MiLi-TC-377	Notification _ received text_MaxLenght_limit	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"->"action list" -->"body" then write a text with the maximum supported lenght/characters A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if the text is displayed completely in Client	ER_1: ML connection is successful ER_2: App is launchable ER_3. Text with correct maximum lenght limits is written ER_4: Notification is displayed Text appears completely with all chararcter from step3
MiLi-TC-378	Notification _ received text_more _than_maxLenght	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"-->"body" then write a text with more then maximum supported lenght/characters A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if the text is displayed not completely in Client	ER_1: Ml connection is successful ER_2: App is launchable ER_3. Text with more than maximum supported lenght/characters limits is written ER_4: Notification is displayed Text appears not completely only the maximum supported lenght/characters are displayed on client
MiLi-TC-379	Notification _ received Tittel_more _than_MaxLenght	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification" -->"Title" then write a text with more than maximum supported lenght/characters A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if the text is displayed not completely in Client	ER_1: ML connection is successful ER_2: App is launchable ER_3. Text with more than maximum supported lenght/characters limits is written ER_4: Notification is displayed Text appears not completely im titel only the maximum supported lenght/characters are displayed on client
MiLi-TC-380	Notification _ received Titel_MaxLenght_limit	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"-->"Title" then write a text with the maximum supported lenght/characters A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if the text is displayed completely in Client	ER_1: ML connection is successful ER_2: App is launchable ER_3. Text with correct maximum lenght limits is written ER_4: Notification is displayed Text appears completely with all chararcter from step3
MiLi-TC-381	Notification _ received Titel_with_special_charac ter	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"-->"Title" then write a text with special characters e.g. "*#" '()[ ] &%$§"!^°,;:-_=\{\}< >*\\" A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if all special charcaters displayed in Client	ER_1: ML connection is successful ER_2: App is launchable ER_3. Text with correct maximum lenght limits is written ER_4: Notification is displayed, all special charcaters displayed on Client
MiLi-TC-382	Notification _ received Text_with_special_charac ter	P_1: Device and App should support notification P_2. Park mode is enabled Please use for this test cases HTC one m9 as server and CCC ML test application	A_1: Initiate ML connection with HTC one m9 A_2: Launch app which support notification e.g. CCC ML test application A_3: select--> "mirrorlink send notification"-->"body" then write a text with special characters e.g. "*#" '()[ ] &%$§"!^°,;:-_=\{\}< >*\\" A_4.: Perform necessary steps to create a notificationv simply press send notification, and check if all special charcaters displayed in Client	ER_1: ML connection is successful ER_2: App is launchable ER_3. Text with correct maximum lenght limits is written ER_4: Notification is displayed, all special charcaters displayed on Client
MiLi-TC-395	Audio announcement with MirrorLink navi App guidance.	P_1: Sony xperia Z3 or Z5 connected as Mirrolink P_2. Park mode is enabled	A_1 launch app sygic and create a Navigation announcement A_2 enable drive mode and create Navigation announcemant	ER_1: app is startable, Navigation announcement is audible ER_2: Navigation announcement is audible in drive mode
MiLi-TC-396	Audio announcement with MirrorLink navi App guidance.	P_1: Samsung S6,S7, connected as Mirrolink P_2. Park mode is enabled Please repeat this test with defferent server e.g HTC, LG	A_1 launch app sygic and create a Navigation announcement A_2 enable drive mode and create Navigation announcement	ER_1: app is startable, Navigation announcement is audible ER_2: Navigation announcement is audible in drive mode
MiLi-TC-397	Navigation via ML during an active Radio station	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable	A_1: Select radio context and check if Navigation announcementt is audible during an active radio station	ER_1: Navigation announcement is audible during an active radio station. The MIB system shall be able to provide audio mixing feature. It shall be possible to mix internal MIB audio sources (e.g. Radio) source with MirrorLink navi App guidance.
MiLi-TC-404	mix internal MIB audio sources CD with MirrorLink navi App guidance.	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable	A_1: Select Media context play music over CD source and check if Navigation announcementt is audible during an active radio station	ER_1: Navigation announcement is audible during an active music over CD
MiLi-TC-398	Navigation via ML during an active A2DP station	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable P_4: Phone2 connected as A2DP	A_1 selct Media context and play music over A2DP A_2: check if Navigation announcement is audible during an active radio station	ER_2: Navigation announcement is audible during an active A2DP The MIB system shall be able to provide audio mixing feature. It shall be possible to mix internal MIB audio sources (e.g. A2DP) source with MirrorLink navi App guidance.
MiLi-TC-399	Navigation via ML during an active music via SD card	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable P_4: music over SD is hearable	A_1 selct Media context and play music over SD A_2: check if Navigation announcement is audible during an active music via SD	ER_2: Navigation announcement is audible during an active music The MIB system shall be able to provide audio mixing feature. It shall be possible to mix internal MIB audio sources (e.g. SD) source with MirrorLink navi App guidance.
MiLi-TC-400	Daul Audio: 2 Apps, ENT and NAV: Navigation via ML during an active music via ML	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: music over "shared audio" is playing	A_1: check if Navigation announcement is audible during an active music over shared audio	ER_1: Navigation announcement is audible while music is playing via shared audio
MiLi-TC-401	2 Apps, ENT and NAV: Navigation via ML during an active music via ML	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: RockScout - Spotify playing	A_1: check if Navigation announcement is audible during an active music Rockscout	ER_1: Navigation announcement is audible while music is playing via RockScout
MiLi-TC-402	2 Apps, ENT and NAV: Navigation via ML during an active music via ML	P_1: ML session is active with Htc one m8 or 9 P_2: Navigation app "sygic" is acitve P_3:" music" app is started and playing	A_1: check if Navigation announcement is audible during an active music	ER_1: Navigation announcement is audible while music is playing
MiLi-TC-403	audio lowering/ducking on the entertainment/Nav audio source	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable P_4: music over SD is hearable	A_1 selct Media context and play music over SD A_2: check if Navigation announcement is audible during an active music via SD A_3: check audio lowering/ducking on the entertainment audio source during audio mixing. ENT/NAV	ER_2: Navigation announcement is audible during an active music ER_3: -> Audio stream routed to NAV when Nav announcement is audible --> Audio stream is routed to ENT if no Nav stream available --> ENT audio is lower when Nav announcement is active

DOORS ID	Test Case Description	Precondition	Action	Expected Result
MiLi-TC-405	audio lowering/ducking on the entertainment/Nav audio source	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable P_4: Phone2 connected as A2DP	A_1 selct Media context and play music over A2DP A_2: check if Navigation announcement is audible during an active radio station A_3: check audio lowering/ducking on the entertainment audio source during audio mixing. ENT/NAV	ER_2: Navigation announcement is audible during an active A2DP ER_3: -> Audio stream routed to NAV when Nav announcement is audible --> Audio stream is routed to ENT if no Nav stream available --> ENT audio is lower when Nav announcement is active
MiLi-TC-406	audio lowering/ducking on the entertainment/Nav audio source	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Mirrolink context is selectable	A_1: Select radio context and check if Navigation announcementt is audible during an active radio station A_3: check audio lowering/ducking on the entertainment audio source during audio mixing. ENT/NAV	ER_1: Navigation announcement is audible during an active radio station ER_2: -> Audio stream routed to NAV when Nav announcement is audible --> Audio stream is routed to ENT if no Nav stream available --> ENT audio is lower when Nav announcement is active
MiLi-TC-407	Navigation via ML + incoming call	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Phone 2 connected as HFP	A_1: Select phone context and and create an active incoming call A_2: release call and check if nav announcement is audible after ending the call	ER_1: call is active Navigation via Mirrolink inaudible ER_2: Navigation announcement via Mirrolink is audible after ending the call
MiLi-TC-408	Navigation via ML + outgoing call	P_1: ML session is active P_2: Navigation app "sygic" is acitve P_3: Phone 2 connected as HFP	A_1: Select phone context and and create an active outgoing call A_2: release call and check if nav announcement is audible after ending the call	ER_1: call is active Navigation via Mirrolink inaudible ER_2: Navigation announcement via Mirrolink is audible after ending the call
MiLi-TC-409	Fbu performance for active Navigation via ML	P_1: ML session is active	A_1: Start Navigation via Mirrolink "Sgic" for a moment 7 minutes and check fbu perfomence	ER_1: ->Navigation announcement via Mirrolink is audible -> fbu perfomence is good, sygic map not stoped

Appendix F – Testspecification of CarPlay

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73724	The MIB shall decode the H264 stream received from the CarPlay device and shall display the content on the car's screen.	P_1: CarPlay session is active	A_1: Check whether CarPlay device's content is displayed on the MIB's touchscreen	ER_1: Device's CarPlay content is displayed on the MIB's touchscreen	MIB-2_RQ_DPO_191
CarPlay-TC-73725	Touch events on the Touchscreen shall be sent to the CarPlay device.	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Perform some touch commands on the MIB's touchscreen.	ER_1: Touch commands are sent to the CarPlay device.	MIB-2_RQ_DPO_192
CarPlay-TC-73727	The rotary button control mode for CarPlay shall also be activated for anabling the usage (rotating or pressing) the DDS. (Note: This will lead to highlighted SKs or list position.)	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Rotate the right DDS one tick clockwise	ER_1: If any softkey or list position was highlighted, the next one is highlighted now, if not, the first softkey or list position is highlighted	MIB-2_RQ_DPO_197
CarPlay-TC-73728	The rotary button control mode for CarPlay shall also be activated for anabling the usage (rotating or pressing) the DDS. (Note: This will lead to highlighted SKs or list position.)	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Rotate the right DDS one tick counter-clockwise	ER_1: If any softkey or list position was highlighted, the previous one is highlighted now, if not, the first softkey or list position is highlighted	MIB-2_RQ_DPO_197
CarPlay-TC-74226	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS clockwise	ER_1: Softkey or list item highlight moves forward one step per DDS tick	MIB-2_RQ_DPO_198
CarPlay-TC-74227	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS counter-clockwise	ER_1: Softkey or list item highlight moves backward one step per DDS tick.	MIB-2_RQ_DPO_198
CarPlay-TC-74228	Pressing the DDS activates the highlighted item	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay is in DDS mode (a softkey or list item is highlighted)	A_1: Press the DDS	ER_1: The highlighted softkey or list item is activated.	MIB-2_RQ_DPO_199
CarPlay-TC-73734	Areas at the borders of the touchscreen must generate touch events with the correct coordinates.	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Perform a touch action at the very border or corner of the MIB's touch screen	ER_1: CarPlay device locates the touch commands at the respective border or corner of the CarPlay device	MIB-2_RQ_DPO_205
CarPlay-TC-73735	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press/Roll MFL volume up once.	ER_1: MIB's volume goes up one step. Volume bar is briefly shown in the cluster instrument. ER_2: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73736	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press/Roll MFL volume down once.	ER_1: MIB's volume goes down one step. Volume bar is briefly shown in the cluster instrument. ER_2: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73737	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Longpress/Roll scroll buton MFL volume up. A_2: Release MFL volume up before max volume level is reached.	ER_1: MIB's volume is increasing. Increasing Volume bar is displayed in the cluster instrument. ER_2: Volume level and volume bar displayed in the cluster instrument do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73738	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back P_4: Playback volume is high.	A_1: Longpress/Roll scroll buton MFL volume down. A_2: Release MFL volume down before min volume is reached.	ER_1: MIB's volume decreasing. Decreasing volume bar is displayed in the cluster instrument. ER_2: Volume level and volume bar displayed in the cluster instrument do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73741	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press and hold/Roll scroll buton MFL volume up.	ER_1: MIB's volume increases until it reaches max volume. Volume bar is displayed in the cluster instrument as long as the volume is changing. ER_2: The volume of the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73739	MFL volume buttons control CarPlay volume	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay audio content is played back	A_1: Press and hold/Roll scroll buton MFL volume down.	ER_1: MIB's volume decreases until it reaches min volume. Volume bar is displayed in the cluster instrument as long as the volume is changing. ER_2: The volume of the CarPlay device itself does not change	MIB-2_RQ_DPO_213
CarPlay-TC-73745	Accept phone call by MFL	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Initiate an incoming call to connected CarPlay phone A_1: Accept phone call by MFL phone button	ER_1: Phone call is accepted	MIB-2_RQ_DPO_212
CarPlay-TC-73747	End phone call by MFL	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Active CarPlay phone call	A_1: End phone call by MFL phone button	ER_1: Phone call ends.	MIB-2_RQ_DPO_212
CarPlay-TC-73750	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback	A_1: Press MFL Next once	ER_1: Playback skips to the next music title.	MIB-2_RQ_DPO_218
CarPlay-TC-73751	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is > 3 s	A_1: Press MFL Previous once	ER_1: Playback skips to the beginning of the current music title.	MIB-2_RQ_DPO_218
CarPlay-TC-73752	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is < 3 s	A_1: Press MFL Previous once	ER_1: Playback skips to the beginning of the previous music title.	MIB-2_RQ_DPO_218
CarPlay-TC-73753	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is < 3 s	A_1: Longpress MFL Next	ER_1: Fast forward playback of the current music title.	MIB-2_RQ_DPO_217
CarPlay-TC-73754	Long press on one of the MFL Skip-Buttons shall Fast Forward or Fast Backward the just running song	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback P_4: Elapsed time is < 3 s	A_1: Longpress MFL Previous	ER_1: Fast backward playback of the current music title.	MIB-2_RQ_DPO_217
CarPlay-TC-73812	At the CarPlay_Cluster_Phone_Screen there shall be the string "Apple CarPlay" visible (language independent)	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Cluster instrument is in Phone context	A_1: Check if the cluster instrument shows the string "Apple CarPlay"	ER_1: cluster instrument screen contains the string "Apple CarPlay" (in all languages)	MIB-2_RQ_DPO_1238 MIB-2_RQ_DPO_235 MIB-2_RQ_DPO_1345

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74282	Once a CarPlay phone call is incoming, the cluster screen shall switch over to the phone context The fall back mechanism after the end of CarPlay phone calls shall be the same as for Bluetooth phone calls.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Cluster instrument is not in phone context (e. g. Media or Car Info)	A_1: Initiate an incoming call to connected CarPlay device A_2: Accept call A_3: End call	ER1: CI context changes to phone context and shows the incoming CarPlay call ER_2: CI context remains in phone context ER_3: CI context changes to last shown context before call	MIB-2_RQ_DPO_1453 MIB-2_RQ_DPO_1454
CarPlay-TC-74283	Once a CarPlay phone call is incoming, the cluster screen shall switch over to the phone context The fall back mechanism after the end of CarPlay phone calls shall be the same as for Bluetooth phone calls.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Cluster instrument is not in phone context (e. g. Media or Car Info)	A_1: Initiate an incoming call to connected CarPlay device A_2: Decline call	ER1: CI context changes to phone context and shows the incoming CarPlay call ER_2: CI context changes to last shown context before call	MIB-2_RQ_DPO_1453 MIB-2_RQ_DPO_1454
CarPlay-TC-73815	If the name of the caller/telephone is available, it shall be displayed in the cluster instrument phone context.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context P_4: Incoming phone call of known contact (phonebook)	A_1: Check CI phone context	ER_1: Contact name of the caller is displayed	MIB-2_RQ_DPO_231
CarPlay-TC-74284	If the name of the caller/telephonee is not available but the phone number is available, the phone number shall be displayed in the cluster instrument phone context.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context P_4: Incoming phone call of unknown contact (phone number is sent)	A_1: Check CI phone context	ER_1: Phone number of the caller is displayed	MIB-2_RQ_DPO_1455
CarPlay-TC-74285	If neither name nor number of the caller is available, "unknown" shall be displayed in the cluster instrument phone context. This string shall be language dependend.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context P_4: Incoming phone call of unknown contact (no name + number)	A_1: Check CI phone context	ER_2: "Unknown" should be visible in CI phone context	MIB-2_RQ_DPO_1456
CarPlay-TC-74286	Call state of the call shall be displayed. I.e.: ringing/waiting, active, dialing, on hold	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Initiate an outgoing call via CarPlay A_2: Wait for Call accept on the far end A_3: Set call on hold A_4: End call	ER_1: Phone context of CI should show the dialing state of outgoing call ER_2: When call is active, phone context of CI should show active state of call ER_3: On hold state should be visible in CI ER_4: CI shows phone context in idle state	MIB-2_RQ_DPO_1457 MIB-2_RQ_DPO_1458
CarPlay-TC-74291	Call state of the call shall be displayed. I.e.: ringing/waiting, active, dialing, on hold	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Initiate an incoming call via CarPlay A_2: Accept incoming call A_3: Set call on Hold A_4: End call	ER_1: Phone context of CI should show information of incoming call ER_2: When call is active, phone context of CI should show active state of call ER_3: On hold state should be visible in CI ER_4: CI shows phone context in idle state	MIB-2_RQ_DPO_1457 MIB-2_RQ_DPO_1458
CarPlay-TC-73821	Provider shall be visible	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if name of network provider is visible in phone context of CI	ER_1: Name of network provider is visible	MIB-2_RQ_DPO_236
CarPlay-TC-74287	USB connection method icon shall be visible if call state is IDL.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if USB connection icon is visible in phone context of CI	ER_1: USB connection icon is visible in phone context of CI	MIB-2_RQ_DPO_1459
CarPlay-TC-73822	Signal strength (without info of cellular communication standard) shall be visible	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if signal strength bar is shown in phone context of CI	ER_1: Signal strength bar is shown in phone context of CI	MIB-2_RQ_DPO_237
CarPlay-TC-73823	There is no Battery Level visible!	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if NO battery level visible in phone context of CI	ER_1: NO battery level is visible in phone context of CI	MIB-2_RQ_DPO_238
CarPlay-TC-74288	There is no Call Stack List available/!	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if NO call stack list is availbale in phone context of CI, using MFL buttons	ER_1: NO call stack list is available in phone context of CI	MIB-2_RQ_DPO_1460
CarPlay-TC-74289	There is no Call Option List available!	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if NO call option list is availbale in phone context of CI, using MFL buttons	ER_1: NO call option list is available in phone context of CI	MIB-2_RQ_DPO_1461
CarPlay-TC-74290	There is no Missed Call Indication visible!	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows phone context	A_1: Check if NO missed call indication is availbale in phone context of CI, using MFL buttons	ER_1: NO missed call indication is available in phone context of CI	MIB-2_RQ_DPO_1462
CarPlay-TC-73759	The string "Apple CarPlay" shall be displayed while CarPlay is the active Media Source. (language independent)	P_1: CarPlay session is active P_2: CarPlay music playback	A_1: Check the media source in Cluster Instrument	ER_1: Media source in cluster instrument is "Apple CarPlay" (language independent)	MIB-2_RQ_DPO_583
CarPlay-TC-74296	USB connection method icon shall be displayed while CarPlay is the active Media Source.	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CI shows audio context P_4: CarPlay music playback	A_1: Check if the CI audio context shows USB connection icon	ER_1: Audio context shows USB connection icon	MIB-2_RQ_DPO_1463
CarPlay-TC-73763	At the cluster screen of non-FPKs the compass shall be visible in Navigation context while CarPlay route guidance is running.	P_1: CarPlay session is active P_2: Active CarPlay route guidance	A_1: Check the cluster instrument's Navigation context (no FPK)	ER_1: Cluster instrument's display shows the compass.	MIB-2_RQ_DPO_1275
CarPlay-TC-73762	The FPK in combination with the system shall show a compass while CarPlay route guidance is running.	P_1: CarPlay session is active P_2: Start the smarphone's navigation in CarPlay P_3: Start Route guidance in CarPlay's navigation	A_1: Check FPK's Navigation context	ER_1: FPK shows the compass.	MIB-2_RQ_DPO_276
CarPlay-TC-73760	The FPK in combination with the system shall show a string "Smartphone Navigation active" in the navigation context while CarPlay route guidance is running. Translated in all languages which are supported by MIB	P_1: CarPlay session is active P_2: Start the smarphone's havigation in CarPlay P_3: Start Route guidance in CarPlay's navigation	A_1: Check FPK's Navigation context	ER_1: FPK shows "Smarphone Navigation active" (in the currently set language).	MIB-2_RQ_DPO_275
CarPlay-TC-73767	The voice HK shall have the same functionality as the MFL PTT button.	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Longpress hardkey Voice	ER_1: Siri is activated.	MIB-2_RQ_DPO_1279
CarPlay-TC-73769	Audio output of media player	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Start music playback by CarPlay Media player A_2: Check whether audio is audible	ER_1: Media playback starts ER_2: Audio is audible	MIB-2_RQ_DPO_297
CarPlay-TC-73770	Audio output of CarPlay call	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1:Initiate an outgoing / incoming CarPlay call A_2: Check whether audio is audible (you should hear the called party)	ER_1: CarPlay call is active ER_2: Audio is audible	MIB-2_RQ_DPO_297
CarPlay-TC-73771	Audio output of Siri	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Start Siri (Longpress PTT (Voice)) A_2: Check whether Siri is audible	ER_1: Siri starts ER_2: Siri is audible	MIB-2_RQ_DPO_297
CarPlay-TC-73772	Audio output of Facetime	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Initiate a Facetime call A_2: Check whether audio is audible (you should hear the called party)	ER_1: Facetime call is active ER_2: Audio is audible	MIB-2_RQ_DPO_297
CarPlay-TC-73775	Audio output of CarPlay media player then CarPlay call	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback	A_1: Initiate a phone call through CarPlay A_2: Check whether only one audio source is audible	ER_1: Active CarPlay phone call ER_2: Only one audio source is audible	MIB-2_RQ_DPO_296
CarPlay-TC-73776	Audio output of CarPlay media player then Siri	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: CarPlay music playback	A_1: Start Siri by a longpress on one PTT-button A_2: Check whether only one audio source is audible	ER_1: Siri session is active ER_2: Only one audio source is audible	MIB-2_RQ_DPO_296
CarPlay-TC-73780	Audio output of native HMI media player than CarPlay call	P_1: CarPlay session is active P_2: Music playback by one of MIB's media sources (e.g. AUX, CD, Radio) P_3: CarPlay content is shown	A_1: Initiate an incoming / outgoing CarPlay call A_2: Check whether only one audio source is audible	ER_1: CarPlay call gets active ER_2: Only one audio source is audible	MIB-2_RQ_DPO_296
CarPlay-TC-73783	Siri while active CarPlay call	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Active CarPlay phone call	A_1: Try to start Siri (longpress on ABT or MFL PTT button) A_2: Check whether only one audio source is audible	ER_1: Siri doesn't start ER_2: Only one audio source is audible	MIB-2_RQ_DPO_296

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73786	native HMI media while active CarPlay call	P_1: CarPlay session is active P_2: CarPlay content is shown P_3: Active CarPlay call	A_1: Try to start Media playback by native HMI Media source (SD, USB, FM-Radio) A_1: Check whether only one audio source is audible	ER_1: Media playback don't start ER_2: Only one audio source is audible	MIB-2_RQ_DPO_296
CarPlay-TC-73787	native HMI media then Siri	P_1: CarPlay session is active P_2: MIB Media source is playing (e.g. AUX, CD, Radio) P_3: CarPlay content is shown	A_1: Start Siri A_2: Check whether only one audio source is audible	ER_1: Siri session is active ER_2: Only one audio source is audible	MIB-2_RQ_DPO_296
CarPlay-TC-73791	CarPlay Alternate Audio sources shall be: 1.UI Sound 2.Nav Guidance, audio of route guidance instructions 3.Alerts	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Perform an action causing a UI sound (e.g. keyboard typing sound, in Maps App) A_2: Check whether CarPlay UI sound is playing through the car speakers	ER_1: Keyboard opened ER_2: CarPlay UI sound is playing through the car speakers	MIB-2_RQ_DPO_300
CarPlay-TC-73792	CarPlay Alternate Audio sources shall be: 1.UI Sound 2.Nav Guidance, audio of route guidance instructions 3.Alerts	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Start a route guidance in CarPlay A_2: Check whether the car speakers play the navigation announcements	ER_1: Route guidance is active ER_2: Car speakers play the navigation announcements	MIB-2_RQ_DPO_300
CarPlay-TC-73793	CarPlay Alternate Audio sources shall be: 1.UI Sound 2.Nav Guidance, audio of route guidance instructions 3.Alerts	P_1: CarPlay session is active P_2: CarPlay content is shown	A_1: Cause an alert sound on the CarPlay device (e.g. receive a text message (SMS)) A_2: Check whether car speakers play the alert or notification sounds	ER_1: Car speakers play the alert or notification sounds	MIB-2_RQ_DPO_300
CarPlay-TC-73794	In addition to the CarPlay Alternate Audio sources UI Sound, Nav Guidance (audio of route guidance instructions) or Alerts an Audio Lowering (Ducking) shall be supported by the system.	P_1: CarPlay session is active P_2: Active route guidance in CarPlay P_3: During a navigation announcement, cause an alert sound on the CarPlay device (e.g. receive a text message (SMS))	A_1: Check whether the navigation announcement volume is temporarily lowered (ducked) for the duration of the alert sound	ER_1: Navigation announcement volume is temporarily lowered (ducked) for the duration of the alert sound	MIB-2_RQ_DPO_1341
CarPlay-TC-73797	CarPlay Audio Connection(s) shall be released from HMI by Disconnect of Device	P_1: CarPlay session is active P_2: CarPlay music playback	A_1: Disconnect the device in MIB's HMI (i.e. do not disconnect the cable) A_2: Check whether any CarPlay sounds are played through the car speakers	ER_1: CarPlay device gets disconnected ER_2: No CarPlay device sounds are played through the car speakers	MIB-2_RQ_DPO_334
CarPlay-TC-73838	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context	A_1: Perform a search for POIs offline A_2: Open a POI with a phone number (e.g. a restaurant) A_3: Try to dial the number from MIB's Nav context via "Dial number" button	ER_1: Result of offline POI search are shown ER_2: POI details are shown ER_3: Button for dialling the phone number is greyed out and cannot be pressed	MIB-2_RQ_DPO_1372
CarPlay-TC-73909	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context	A_1: Disconnect the CarPlay device (Open AppConnect and disconnect the CarPlay device) A_2: Connect BT-device or insert SIM-card and connect to a mobile network A_3: Perform a search for POIs offline A_4: Open a POI with a phone number (e.g. a restaurant) A_5: Try to dial the number from MIB's Nav context via "Dial number" button	ER_1: CarPlay session ends ER_2: Phone is connected or SIM is insered and Network connection is established ER_3: Result of offline POI search are shown ER_4: POI details are shown ER_5: MIB dials number of POI	MIB-2_RQ_DPO_1372
CarPlay-TC-73910	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context	A_1: Disconnect the CarPlay device (Disconnect the Lightning cable) A_2: Connect BT-device or insert SIM-card and connect to a mobile network A_3: Perform a search for POIs offline A_4: Open a POI with a phone number (e.g. a restaurant) A_5: Try to dial the number from MIB's Nav context via "Dial number" button	ER_1: CarPlay session ends ER_2: Phone is connected or SIM is insered and Network connection is established ER_3: Result of offline POI search are shown ER_4: POI details are shown ER_5: MIB dials number of POI	MIB-2_RQ_DPO_1372
CarPlay-TC-73843	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context	A_1: Perform a search for POIs offline A_2: Open a POI with a phone number (e.g. a restaurant) A_3: Try to dial the number from MIB's Nav context via SDS and say:"Dial number"	ER_1: Result of offline POI search are shown ER_2: POI details are shown ER_1: SDS refuses to dial the number	MIB-2_RQ_DPO_1372
CarPlay-TC-73911	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context	A_1: Disconnect the CarPlay device (Open AppConnect and disconnect the CarPlay device) A_2: Connect BT-device or insert SIM-card and connect to a mobile network A_3: Perform a search for POIs offline A_4: Open a POI with a phone number (e.g. a restaurant) A_5: Try to dial the number from MIB's Nav context via SDS and say:"Dial number"	ER_1: CarPlay session ends ER_2: Phone is connected or SIM is insered and Network connection is established ER_3: Result of offline POI search are shown ER_4: POI details are shown ER_5: MIB dials number of POI	MIB-2_RQ_DPO_1372
CarPlay-TC-73912	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context	A_1: Disconnect the CarPlay device (Unplug the USB cable) A_2: Connect BT-device or insert SIM-card and connect to a mobile network A_3: Perform a search for POIs offline A_4: Open a POI with a phone number (e.g. a restaurant) A_5: Try to dial the number from MIB's Nav context via SDS and say:"Dial number"	ER_1: CarPlay session ends ER_2: Phone is connected or SIM is insered and Network connection is established ER_3: Result of offline POI search are shown ER_4: POI details are shown ER_5: MIB dials number of POI	MIB-2_RQ_DPO_1372
CarPlay-TC-73839	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context P_3: Online POI search is available	A_1: Perform a search for POIs online A_2: Open a POI with a phone number (e.g. a restaurant) A_3: Try to dial the number from MIB's Nav context via "Dial number" button	ER_1: Result of offline POI search are shown ER_2: POI details are shown ER_3: Button for dialling the phone number is greyed out and cannot be pressed	MIB-2_RQ_DPO_1372
CarPlay-TC-73913	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context P_3: Online POI search is available	A_1: Disconnect the CarPlay device (Open AppConnect and disconnect the CarPlay device) A_2: Connect BT-device or insert SIM-card and connect to a mobile network A_3: Perform a search for POIs offline A_4: Open a POI with a phone number (e.g. a restaurant) A_5: Try to dial the number from MIB's Nav context via "Dial number" button	ER_1: CarPlay session ends ER_2: Phone is connected or SIM is insered and Network connection is established ER_3: Result of offline POI search are shown ER_4: POI details are shown ER_5: MIB dials number of POI	MIB-2_RQ_DPO_1372
CarPlay-TC-73916	Phone relevant functionality in other native HMI contexts (e.g. Navigation POI with phone numbers) shall be blocked as long as a CarPlay phone call is ongoing (call state non-idle).	P_1: CarPlay session is active P_2: MIB shows NAV context P_3: Online POI search is available	A_1: Disconnect the CarPlay device (Disconnect lightning cable) A_2: Connect BT-device or insert SIM-card and connect to a mobile network A_3: Perform a search for POIs offline A_4: Open a POI with a phone number (e.g. a restaurant) A_5: Try to dial the number from MIB's Nav context via "Dial number" button	ER_1: CarPlay session ends ER_2: Phone is connected or SIM is insered and Network connection is established ER_3: Result of offline POI search are shown ER_4: POI details are shown ER_5: MIB dials number of POI	MIB-2_RQ_DPO_1372
CarPlay-TC-73860	In native HMI Phone context the information shall be visible that a CarPlay phone is present.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Check whether there is any information that a CarPlay device is connected	ER_1: MIB's Phone context shows information that a CarPlay device is connected	MIB-2_RQ_DPO_1374
CarPlay-TC-73954	In native HMI Phone context the information shall be visible that a CarPlay phone is present.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: Check whether there is no information that a CarPlay device is connected	ER_2: MIB's Phone context shows no information that a CarPlay device is connected	MIB-2_RQ_DPO_1374
CarPlay-TC-73955	In native HMI Phone context the information shall be visible that a CarPlay phone is present.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Disconnect the CarPlay device via unplugging the cable A_2: Check whether there is no information that a CarPlay device is connected	ER_2: MIB's Phone context shows no information that a CarPlay device is connected	MIB-2_RQ_DPO_1374

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73861	In native HMI Phone context the information shall be visible that there is no BT phone functionality while an active CarPlay session.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Perform a search for bluetooth devices A_2: Select one device and try to establish a connection A_3: Check whether there is any information that Bluetooth is not available during a CarPlay session	ER_1: Available bluetooth devices are shown in a list ER_2: Bluetooth profiles are checked ER_3: There is information that Bluetooth is not available during a CarPlay session	MIB-2_RQ_DPO_1379 MIB-2_RQ_DPO_1365
CarPlay-TC-73956	In native HMI Phone context the information shall be visible that there is no BT phone functionality while an active CarPlay session.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: Perform a search for bluetooth devices A_3: Select one device and try to establish a connection A_4: Check whether the Phone context no longer shows any information that Bluetooth is not available during a CarPlay session	ER_1: CarPlay session ends ER_2: Available bluetooth devices are shown in a list ER_3: Bluetooth profiles are checked ER_4: Phone context no longer shows any information that Bluetooth is not available during a CarPlay session	MIB-2_RQ_DPO_1379
CarPlay-TC-73957	In native HMI Phone context the information shall be visible that there is no BT phone functionality while an active CarPlay session.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Disconnect the CarPlay device by unplugging the USB cable A_2: Perform a search for bluetooth devices A_3: Select one device and try to establish a connection A_4: Check whether the Phone context no longer shows any information that Bluetooth is not available during a CarPlay session	ER_1: CarPlay session ends ER_2: Available bluetooth devices are shown in a list ER_3: Bluetooth profiles are checked ER_4: Phone context no longer shows any information that Bluetooth is not available during a CarPlay session	MIB-2_RQ_DPO_1379
CarPlay-TC-73862	In native HMI Phone context there shall be no text like: “No phone connected” while CarPlay is running!	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Check whether there is no text like: "No phone connected"	ER_1: There is no text like: "No phone connected"	MIB-2_RQ_DPO_362
CarPlay-TC-73869	When a CarPlay session is active, there shall be a direct link (SoftKey) in the MIB phone context to switch over to the CarPlay phone context.	P_1: CarPlay session is active P_2: MIB shows native HMI phone context	A_1: Check whether there is a softkey which leads to the CarPlay phone context	ER_1: There is a softkey which leads to the CarPlay phone context	MIB-2_RQ_DPO_1283
CarPlay-TC-73962	If no CarPlay session is active, the direct link SK to the CarPlay phone context shall not be present.	P_1: CarPlay session is active	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: Go to native HMI phone context A_3: Check whether there is any softkey which leads to the CarPlay phone context	ER_1: CarPlay session ends ER_2: Native HMI phone context is shown ER_3: There is no softkey which leads to the CarPlay phone context	MIB-2_RQ_DPO_366
CarPlay-TC-73963	If no CarPlay session is active, the direct link SK to the CarPlay phone context shall not be present.	P_1: CarPlay session is active	A_1: Disconnect the CarPlay device by unplugging the usb cable A_2: Go to native HMI phone context A_3: Check whether there is any softkey which leads to the CarPlay phone context	ER_1: CarPlay session ends ER_2: Native HMI phone context is shown ER_3: There is no softkey which leads to the CarPlay phone context	MIB-2_RQ_DPO_366
CarPlay-TC-73873	During an active CarPlay session the pairing of Bluetooth devices shall be blocked.	P_1: MIB's Bluetooth ID is visible for all P_2: CarPlay session is active	A_1: From another Bluetooth device which is not yet paired with the MIB, try to pair it with MIB	ER_1: MIB does not pair with any Bluetooth device	MIB-2_RQ_DPO_1376 MIB-2_RQ_DPO_1354
CarPlay-TC-73874	During an active CarPlay session the pairing of Bluetooth devices shall be blocked.	P_1: MIB's Bluetooth ID is visible for all P_2: CarPlay session is active	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: From another Bluetooth device which is not yet paired with the MIB, try to pair it with MIB	ER_1: CarPlay session ends ER_2: MIB can pair with the Bluetooth device	MIB-2_RQ_DPO_1376 MIB-2_RQ_DPO_1354
CarPlay-TC-73875	During an active CarPlay session the pairing of Bluetooth devices shall be blocked.	P_1: MIB's Bluetooth ID is visible for all P_2: CarPlay session is active	A_1: Disconnect the CarPlay device by unplugging the usb A_2: From another Bluetooth device which is not yet paired with the MIB, try to pair it with MIB	ER_1: CarPlay session ends ER_2: MIB can pair with the Bluetooth device	MIB-2_RQ_DPO_1376 MIB-2_RQ_DPO_1354
CarPlay-TC-73881	During an active CarPlay session incoming connections of Bluetooth devices shall be blocked.	P_1: MIB's Bluetooth ID is visible for all P_2: CarPlay session is active	A_1: From another Bluetooth device which is already paired but currently not connected with the MIB, try to connect it with MIB	ER_1: MIB does not connect with any Bluetooth device	MIB-2_RQ_DPO_1378
CarPlay-TC-73882	During an active CarPlay session incoming connections of Bluetooth devices shall be blocked.	P_1: MIB's Bluetooth ID is visible for all P_2: CarPlay session is active	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: From another Bluetooth device which is already paired but currently not connected with the MIB, try to connect it with MIB	ER_1: CarPlay session ends ER_2: MIB can connect with the Bluetooth device	MIB-2_RQ_DPO_1378
CarPlay-TC-73883	During an active CarPlay session incoming connections of Bluetooth devices shall be blocked.	P_1: MIB's Bluetooth ID is visible for all P_2: CarPlay session is active	A_1: Disconnect the CarPlay device by unplugging the USB A_2: From another Bluetooth device which is already paired but currently not connected with the MIB, try to connect it with MIB	ER_1: CarPlay session ends ER_2: MIB can connect with the Bluetooth device	MIB-2_RQ_DPO_1378
CarPlay-TC-73966	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI NAV context	A_1: Open the mini media player in the Navigation button bar	ER_1: The mini media player in Navigation context shows the string "Apple CarPlay"	MIB-2_RQ_DPO_374
CarPlay-TC-73972	In the mini MediaPlayer in native HMI no MetaData shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI NAV context	A_1: Open the mini media player in the Navigation button bar	ER_1: The mini media player shows no metadata about the content which is being played back	MIB-2_RQ_DPO_375
CarPlay-TC-73973	In the mini MediaPlayer in native HMI no control buttons shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI NAV context	A_1: Open the mini media player in the Navigation button bar	ER_1: The mini media player shows no control buttons Next or Previous	MIB-2_RQ_DPO_376
CarPlay-TC-73967	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI NAV context	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: Open the mini media player in the Navigation button bar	ER_1: CarPlay session ends ER_2: The mini media player in Navigation context shows the current audio source and buttons Next and Previous which behave as expected	MIB-2_RQ_DPO_374 MIB-2_RQ_DPO_375 MIB-2_RQ_DPO_376
CarPlay-TC-73968	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI NAV context	A_1: Disconnect the CarPlay device by unplugging the usb A_2: Open the mini media player in the Navigation button bar	ER_1: CarPlay session ends ER_2: The mini media player in Navigation context shows the current audio source and buttons Next and Previous which behave as expected	MIB-2_RQ_DPO_374 MIB-2_RQ_DPO_375 MIB-2_RQ_DPO_376
CarPlay-TC-73969	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI CAR context	A_1: Open the mini media player in the Car button bar	ER_1: The mini media player in Car context shows the string "Apple CarPlay" ER_2: The mini media player shows no metadata ER_3: The mini media player shows no control buttons like Next / Previous track	MIB-2_RQ_DPO_374 MIB-2_RQ_DPO_375 MIB-2_RQ_DPO_376

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73970	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI CAR context	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable) A_2: Open the mini media player in the Car button bar	ER_1: CarPlay session ends ER_2: The mini media player in Navigation context shows the current audio source and buttons Next and Previous which behave as expected	MIB-2_RQ_DPO_374 MIB-2_RQ_DPO_375 MIB-2_RQ_DPO_376
CarPlay-TC-73971	In the mini MediaPlayer in native HMI the string "Apple CarPlay" shall be visible when CarPlay is the active audio source.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: MIB shows native HMI CAR context	A_1: Disconnect the CarPlay device by unplugging the usb cable A_2: Open the mini media player in the Car button bar	ER_1: CarPlay session ends ER_2: The mini media player in Navigation context shows the current audio source and buttons Next and Previous which behave as expected	MIB-2_RQ_DPO_374 MIB-2_RQ_DPO_375 MIB-2_RQ_DPO_376
CarPlay-TC-73976	Popups of the native HMI shall be visible even if CarPlay is the currently active HMI context. The background shall be the same CarPlay context but dimmed.	P_1: CarPlay session is active P_2: CarPlay context is shown	A_1: Change the current driving mode (Sport, Eco, Comfort, etc.) using the driving mode hardkey (popup appears) A_2: Check whether the popup's background is the current CarPlay screen, just dimmed	ER_1: The popup's background is the current CarPlay screen, just 100% dimmed	MIB-2_RQ_DPO_378 MIB-2_RQ_DPO_893
CarPlay-TC-73977	Popups of the native HMI shall be visible even if CarPlay is the currently active HMI context. The background shall be the same CarPlay context but dimmed.	P_1: CarPlay session is active P_2: CarPlay context is shown	A_1: Change the current driving mode (Sport, Eco, Comfort, etc.) using the driving mode hardkey (popup appears) A_2: Wait until the driving mode popup has disappeared, check the CarPlay context	ER_1: Drive Mode popup is shown ER_2: Current CarPlay screen is shown at the normal brightness level	MIB-2_RQ_DPO_378 MIB-2_RQ_DPO_893
CarPlay-TC-73978	Popups of the native HMI shall be visible even if CarPlay is the currently active HMI context. The background shall be the same CarPlay context but dimmed.	P_1: CarPlay session is active P_2: MIB shows native HMI media context	A_1: Start importing media files from a SD card, USB or CD to the Jukebox A_2: Go to CarPlay context while the media import continues in the background A_3: Eject the media from which the media files are being imported (popup appears) A_4) Confirm the popup about the interrupted media import	ER_1: Import of media files starts ER_2: CarPlay context is shown ER_3: A popup is shown, that the download is aborted. ER_4: Current CarPlay screen is shown at the normal brightness level	MIB-2_RQ_DPO_378 MIB-2_RQ_DPO_893
CarPlay-TC-73981	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: CarPlay session is active P_2: MIB's media source is playing (e.g. Radio, SD card, CD) P_3: CarPlay context is shown	A_1: Adjust the volume of MIB's media source up or down using the rotary button	ER_1: Media volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal brightness level	MIB-2_RQ_DPO_380
CarPlay-TC-74232	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: CarPlay session is active P_2: CarPlay music playback P_3: CarPlay context is shown	A_1: Adjust the volume of CarPlay's media source up or down using the rotary button	ER_1: Media volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal brightness level	MIB-2_RQ_DPO_380
CarPlay-TC-73982	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: CarPlay session is active P_2: CarPlay context is shown P_3: MIB's navigation announcement is played back	A_1: Adjust the volume of the navigation announcement up or down using the rotary button	ER_1: Navigation announcement volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal brightness level	MIB-2_RQ_DPO_380
CarPlay-TC-74231	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: CarPlay session is active P_2: CarPlay context is shown P_3: CarPlay's navigation announcement is played back	A_1: Adjust the volume of the navigation announcement up or down using the rotary button	ER_1: Navigation announcement volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal brightness level	MIB-2_RQ_DPO_380
CarPlay-TC-73983	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: CarPlay session is active P_2: CarPlay context is shown P_3: Active CarPlay call	A_1: Adjust the volume of the Phone call up or down using the rotary button	ER_1: Phone call volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal bightness level	MIB-2_RQ_DPO_380
CarPlay-TC-74233	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: CarPlay session is active P_2: CarPlay context is shown P_3: SDS is active	A_1: Adjust the volume of the SDS up or down using the rotary button	ER_1: SDS volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal bightness level	MIB-2_RQ_DPO_380
CarPlay-TC-74234	On volume change: native HMI volume bar shall be visible as an overlay, without dimmed background, even if CarPlay is current native HMI context.	P_1: FM Tuner is tuned to a station broadcasting traffic announcements P_2: Traffic Programme is turned on in Radio setup P_3: CarPlay session is active P_4: CarPlay context is shown P_5: Traffic announcement is audible	A_1: Adjust the volume of the traffic announcement up or down using the rotary button	ER_1: Traffic announcement volume change overlay appears briefly, current CarPlay screen is shown in the background at the normal bightness level	MIB-2_RQ_DPO_380
CarPlay-TC-73789	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: SDS is coded via diagnosis P_2: MIB powered up P_3: CarPlay device is connected to the MIB, CarPlay session is active P_4: MIB shows CarPlay screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389 MIB-2_RQ_DPO_210
CarPlay-TC-74277	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: SDS is uncoded via diagnosis P_2: MIB powered up P_3: CarPlay device is connected to the MIB, CarPlay session is active P_4: MIB shows CarPlay screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms A_2: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Siri shall start ER_2: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389 MIB-2_RQ_DPO_210
CarPlay-TC-73790	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: SDS is coded via diagnosis P_2: MIB powered up P_3: CarPlay device is connected to the MIB, CarPlay session is active P_4: MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389 MIB-2_RQ_DPO_210
CarPlay-TC-74278	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: SDS is uncoded via diagnosis P_2: MIB powered up P_3: CarPlay device is connected to the MIB, CarPlay session is active P_4: MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms A_2: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Siri shall start ER_2: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389 MIB-2_RQ_DPO_210

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-73894	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active and MIB shows CarPlay screen P_4: Music playback by CarPlay	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Audio is handled by CarPlay ER_2: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389 MIB-2_RQ_DPO_210
CarPlay-TC-73895	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active and MIB shows a native HMI screen screen P_4: Music playback by native HMI	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Audio is handled by CarPlay ER_2: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389 MIB-2_RQ_DPO_210
CarPlay-TC-73892	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active and MIB shows CarPlay screen	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389
CarPlay-TC-73893	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active and MIB shows a native HMI screen	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389
CarPlay-TC-73896	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active and MIB shows CarPlay screen P_4: Music playback by CarPlay	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Audio is handled by CarPlay ER_2: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389
CarPlay-TC-73897	Long press > 600ms on any of the car's PTT buttons shall start Siri. (The system shall not wait for the button release but start Siri after expiry of the 600ms timer).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active and MIB shows a native HMI screen P_4: Music playback by native HMI	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Audio is handled by CarPlay ER_2: Siri shall start	MIB-2_RQ_DPO_386 MIB-2_RQ_DPO_389
CarPlay-TC-73898	While the Siri session is active, all PTT button events (press and release) shall be sent to the CarPlay device (raw events without interpretation of the button events). Note: They shall not be interpreted by the internal SDS.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active P_4: Siri session is active	A_1: Press the PTT (Voice) button on the MFL	ER_1: No reaction of the internal SDS, handling of PTT button event by CarPlay	MIB-2_RQ_DPO_1195
CarPlay-TC-73899	While the Siri session is active, all PTT button events (press and release) shall be sent to the CarPlay device (raw events without interpretation of the button events). Note: They shall not be interpreted by the internal SDS.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB P_3: CarPlay session is active P_4: Siri session is active	A_1: Press the PTT (Voice) button on the ABT	ER_1: No reaction of the internal SDS, handling of PTT button event by CarPlay	MIB-2_RQ_DPO_1195
CarPlay-TC-73799	The system shall perform BT disconnection to the CarPlay device, when BT disconnect is requested by the CarPlay device.	P_1: MIB powered up P_2: no CarPlay device connected P_3: Device was previously connected and CarPlay session has been activated via AppConnect P_4: Device is connected via HFP to MIB	A_1: Connect the CarPlay device via CarPlay compatible USB port to the system	ER_1: CarPlay session starts ER_2: Bluetooth disconnection to the CarPlay device when requested by the CarPlay device ER_3: CarPlay device is no longer connected as BT phone to native HMI	MIB-2_RQ_DPO_1361
CarPlay-TC-73801	Reconnect of BT to the connected CarPlay device shall be blocked by the system. The system shall prevent connection of Bluetooth devices while a CarPlay session is active.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Try to connect CarPlay device to MIB via bluetooth	ER_1: Bluetooth connnection should be blocked by the MIB	MIB-2_RQ_DPO_1366 MIB-2_RQ_DPO_1353
CarPlay-TC-73804	The system shall disconnect any other Bluetooth device upon establishment of a CarPlay session.	P_1: MIB powered up P_2: No CarPlay device connected P_3: Device was previously connected and CarPlay session has been activated via AppConnect	A_1: Connect CarPlay Device via CarPlay compatible USB port to the system	ER_1: CarPlay session starts ER_2: Bluetooth disconnection to any other Bluetooth device upon establishment of a Carplay Session ER_3: Any other Bluetooth device is no longer connected as BT phone to native HMI	MIB-2_RQ_DPO_1350 MIB-2_RQ_DPO_1351
CarPlay-TC-73806	A "Voice & Data" connection using a SIM-card and the internal phone module shall fall back to "Data only" upon establishment of a CarPlay session and the user shall be informed about the mode change.	P_1: MIB powered up P_2: No CarPlay device connected P_3: SIM card is inserted and in Data and Voice Mode	A_1: Connect CarPlay Device via CarPlay compatible USB port to the system. Start a CarPlay session	ER_1: CarPlay session starts ER_2: SIM Mode changes from Data and Voice Mode to Data Mode upon establishment of a Carplay Session	MIB-2_RQ_DPO_1352
CarPlay-TC-73809	During an active CarPlay session, it shall not be possible to change the SIM mode to "Voice & Data".	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode P_4: SIM card is inserted and in Data Mode	A_1: Open native HMI Phone context A_2: Try to change the SIM mode to Data and Voice mode	ER_1: Phone context is shown ER_2: An Infomessage should be shown that the SIM settings are not changeable while the CarPlay device is active	MIB-2_RQ_DPO_1357
CarPlay-TC-73810	If the CarPlay session is ended and the reason for ending the session is not the start of an android auto session the system shall reconnect other Bluetooth devices or reactivate the internal phone module like on system startup.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Disconnect CarPlay device by disconnecting the USB cable	ER_1: CarPlay session ends ER_2: Native HMI PhoneContext is available ER_3: Previously connected bluetooth devices will reconnect automatically like on system startup	MIB-2_RQ_DPO_1355
CarPlay-TC-73820	If the CarPlay session is ended and the reason for ending the session is not the start of an android auto session the system shall reconnect other Bluetooth devices or reactivate the internal phone module like on system startup.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable)	ER_1: CarPlay session ends ER_2: Native HMI PhoneContext is available ER_3: Previously connected bluetooth devices will reconnect automatically like on system startup	MIB-2_RQ_DPO_1355
CarPlay-TC-73811	If the CarPlay session is ended and the reason for ending the session is not the start of an android auto session and the system used an internal SIM card in "Voice & Data" mode before the CarPlay session, "Voice & Data" shall be reactived.	P_1: MIB powered up P_2: SIM is inserted in Data and Voice Mode P_3: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_4: MIB screen is in CarPlay mode	A_1: Disconnect CarPlay device by disconnecting the USB cable	ER_1: CarPlay session ends ER_2: Native HMI PhoneContext is available ER_3: Inserted SIM remains in Data Only mode	MIB-2_RQ_DPO_1356
CarPlay-TC-73824	If the CarPlay session is ended and the reason for ending the session is not the start of an android auto session and the system used an internal SIM card in "Voice & Data" mode before the CarPlay session, "Voice & Data" shall be reactived.	P_1: MIB powered up P_2: SIM is inserted in Data and Voice Mode P_3: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_4: MIB screen is in CarPlay mode	A_1: Disconnect the CarPlay device in MIB's HMI (i.e. do not disconnect the cable)	ER_1: CarPlay session ends ER_2: Native HMI PhoneContext is available ER_3: Inserted SIM remains in Data Only mode	MIB-2_RQ_DPO_1356

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74309	While a phone call is ongoing on a BT connected phone or internal phone module it shall not be possible to start a CarPlay session. After a phone call on a BT connected phone or internal phone module is ended the CarPlay session is started by HMI.	P_1: MIB powered up P_2: HFP-Phone is connected P_3: Active HFP call P_4: CarPlay device is available, but not connected	A_1: Connected CarPlay device to CarPlay compatible USB port and try to start CarPlay session manually via AppConnect A_2: End call	ER_1: CarPlay session doesn't start automatically and there is no possibility to start CarPlay session manually ER_2: CarPlay session starts or can be started manually	MIB-2_RQ_DPO_1465 MIB-2_RQ_DPO_1466
CarPlay-TC-74312	While a phone call is ongoing on a BT connected phone or internal phone module it shall not be possible to start a CarPlay session. After a phone call on a BT connected phone or internal phone module is ended the CarPlay session is started by HMI.	P_1: MIB powered up P_2: SIM is inserted and in Data and Voice mode P_3: Active call on inserted SIM P_4: CarPlay device is available, but not connected	A_1: Connected CarPlay device to CarPlay compatible USB port and try to start CarPlay session manually via AppConnect A_2: End call	ER_1: CarPlay session doesn't start automatically and there is no possibility to start CarPlay session manually ER_2: CarPlay session starts or can be started manually	MIB-2_RQ_DPO_1465 MIB-2_RQ_DPO_1466
CarPlay-TC-73857	The call state of calls on an external phone module shall be communicated to the CarPlay device by the system.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Call on external phone modul (OCU, eCall)	EP_1: Information on CarPlay device of callstate of the external phone modul	MIB-2_RQ_DPO_1347
CarPlay-TC-73900	The system shall end the CarPlay session upon initiation of an OCU-ACN-Call (Automatic-Crash-Notification Call).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: ACN-Call on external phone modul (OCU, eCall)	EP_1: CarPlay session should end	MIB-2_RQ_DPO_1285
CarPlay-TC-74299	If the respective audio connection for an OCU Call (Info-Call, Road Side Assistance, Manual Emergency Call, E-Call or ACN) becomes active during an incoming or outgoing or ongoing CarPlay-Call, the present CarPlay-Call shall be terminated by VW HMI.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode P_4: Active CarPlay call	A_1: OCU-Call	EP_1: CarPlay session should end	MIB-2_RQ_DPO_1468
CarPlay-TC-74300	The system shall block CarPlay session start while an OCU-Call is outgoing, incoming or ongoing.	P_1: MIB powered up P_2: Active OCU-call	A_1: Try to start a CarPlay session via connecting the USB to CarPlay compatible USB port or / and starting CarPlay via AppConnect manually	ER_1: CarPlay session cannot be established	MIB-2_RQ_DPO_1469
CarPlay-TC-74301	The system shall end the CarPlay session upon initiation of a legal OCU-MEC (Manual-Emergency-Call).	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: OCU-MEC call	ER_1: CarPlay session ends	MIB-2_RQ_DPO_1381
CarPlay-TC-74302	The system shall restart the CarPlay session after the end of an OCU-ACN-Call (Automatic-Crash-Notification Call) if the CarPlay session was active before the OCU-ACN-Call.	P_1: MIB powered up P_2: CarPlay device is connected and CarPlay session was active before OCU-ACN-Call P_3: OCU-ACN-Call is active and ends	A_1: Check wether CarPlay session restarts automatically after OCU-ACN-Call	ER_1: CarPlay session restarts automatically after OCU-ACN-Call	MIB-2_RQ_DPO_1382
CarPlay-TC-74303	The system shall restart the CarPlay session after the end of a legal OCU-MEC (Manual-Emergency- Call) if the CarPlay session was active before the legal OCU-MEC.	P_1: MIB powered up P_2: CarPlay device is connected and CarPlay session was active before OCU-MEC-Call P_3: OCU-MEC-Call is active and ends	A_1: Check wether CarPlay session restarts automatically after OCU-MEC-Call	ER_1: CarPlay session restarts automatically after OCU-MEC-Call	MIB-2_RQ_DPO_1470
CarPlay-TC-73853	The system shall end an ongoing CarPlay phone call upon initiation of a call on an external phone module. (Note: e.g. OCU or eCall box)	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode P_4: Active CarPlay phone call	A_1: Initiate an call on an external phone modul. (OCU or eCall box)	ER_1: CarPlay call shall end	MIB-2_RQ_DPO_1285
CarPlay-TC-74304	The system shall end the CarPlay session upon an incoming CarPlay call while an OCU-CALL is outgoing or ongoing.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Initiate an OCU-Call	ER_1: OCU-Call gets active and CarPlay session ends	MIB-2_RQ_DPO_1472
CarPlay-TC-74305	The CarPlay session shall be started again if a present OCU-Call disappears and the CarPlay session has been ended caused by combination of incoming CarPlay call during active OCU call.	P_1: MIB powered up P_2: CarPlay device is connected and CarPlay session was active before OCU-Call P_3: OCU-Call is active and ends	A_1: Check wether CarPlay session restarts automatically after OCU-Call	ER_1: CarPlay session restarts automatically after OCU-Call	MIB-2_RQ_DPO_1473
CarPlay-TC-73864	Starting route guidance via native HMI while having active route guidance in CarPlay shall cause the CarPlay route guidance to stop and vice versa.	P_1: MIB powered up P_2: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode P_4: CarPlay route guidance is active	A_1: Start route guidance in native HMI navigation context to a destination	ER_1: CarPlay route guidance should stop ER_2: Cluster shows pre-defined MIB Nav context	MIB-2_RQ_DPO_409
CarPlay-TC-73867	Starting route guidance via native HMI while having active route guidance in CarPlay shall cause the CarPlay route guidance to stop and vice versa.	P_1: MIB powered up P_2: native HMI route guidance is active P_3: CarPlay device is connected to the MIB as CarPlay device and CarPlay session is active P_4: MIB screen is in CarPlay mode	A_1: Start route guidance in CarPlay context to a destination	ER_1: Native HMI route guidance should stop ER_2: Cluster shows compass	MIB-2_RQ_DPO_409
CarPlay-TC-73865	Connecting a CarPlay device with an active route guidance shall end an active route guidance that is currently running in the native HMI.	P_1: MIB powered up P_2: Native HMI route guidance is running P_3: no CarPlay device is connected P_4: Device was previously connected and a CarPlay was active	A_1: Connect such CarPlay device with an active route guidance to MIB via CarPlay compatible USB port	ER_1: Route guidance of native HMI stops, cluster shows compass in Nav context ER_2: Route guidance of CarPlay is still active	MIB-2_RQ_DPO_1287 MIB-2_RQ_DPO_1091
CarPlay-TC-74072	Connecting a CarPlay device with an active route guidance shall end an active route guidance that is currently running in the native HMI.	P_1: MIB powered up P_2: Native HMI route guidance is running P_3: no CarPlay device is connected P_4: A device was not yet connected and a CarPlay was not active (reset to factory settigns, if necessary)	A_1: Connect such CarPlay device with an active route guidance to MIB via CarPlay compatible USB port	ER_1: Route guidance of native HMI stops, cluster shows compass in Nav context ER_2: Route guidance of CarPlay is still active	MIB-2_RQ_DPO_1287 MIB-2_RQ_DPO_1091
CarPlay-TC-73877	A CarPlay device with an ongoing CarPlay session shall not be selectable as Media Device in native HMI Media context	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Press Media HK A_2: Open source list in native HMI Media context	ER_1: Connected CarPlay device is not listed or not selectable as Media device	MIB-2_RQ_DPO_1288
CarPlay-TC-73878	While in CarPlay context, the Rearview Camera pop-up shall always be visible when activated	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Shift into reverse gear to activate Rearview camera / PDC	ER_1: Rearview camera / PDC pop-up should be visible while rearview camera is active ER_2: When Rearview camera / PDC isn't active, the pop-up should be invisible	MIB-2_RQ_DPO_421
CarPlay-TC-74023	While in CarPlay context, the Rearview Camera pop-up shall always be visible when activated	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Activate Rearview Camera / PDC manually	ER_1: Rearview camera / PDC pop-up should be visible while rearview camera is active ER_2: When Rearview camera / PDC isn't active, the pop-up should be invisible	MIB-2_RQ_DPO_421
CarPlay-TC-73879	Connect a CarPlay Device	P_1: MIB powered up P_2: no CarPlay device connected P_3: Device was previously connected and CarPlay session has been activated via AppConnect	A_1: Connect CarPlay Device via Apple Lightning Cable to CarPlay compatible USB port of the system A_2: Start a CarPlay session	ER_1: CarPlay session starts and gets active ER_2: MIB shows CarPlay screen ER_3: Touchscreen is useable as UserInterface ER_4: Microphone is useable ER_5: Audio output via Car's loudspeaker	MIB-2_RQ_DPO_428
CarPlay-TC-74216	The system shall support a diagnosis-switch which activates/deactivates the CarPlay functionality.	P_1: Diagnosis session is active P_2: CarPlay feature is turned on in diagnosis	A_1: Check whether MIB has CarPlay features	ER_1: MIB has CarPlay features	MIB-2_RQ_DPO_1296
CarPlay-TC-74217	The system shall support a diagnosis-switch which activates/deactivates the CarPlay functionality.	P_1: Diagnosis session is active P_2: CarPlay feature is turned off in diagnosis	A_1: Check whether MIB has no CarPlay features	ER_1: MIB has no CarPlay features	MIB-2_RQ_DPO_1296

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74223	In case the CarPlay diagnosis switch is set to "deactivated" there shall be no CarPlay Logo in AppConnect welcome screen	P_1: CarPlay feature is turned off in diagnosis P_2: MIB shows the AppConnect welcome screen	A_1: Check whether any CarPlay logo is visible	ER_1: There is no CarPlay logo visible in the AppConnect welcome screen	MIB-2_RQ_DPO_472
CarPlay-TC-74222	In case the CarPlay diagnosis switch is set to "deactivated" it shall not be possible to start a CarPlay session on any device	P_1: CarPlay feature is turned off in diagnosis P_2: CarPlay Device is connected in CarPlay-compatible USB port	A_1: Try to start a CarPlay session	ER_1: CarPlay session cannot be started.	MIB-2_RQ_DPO_473
CarPlay-TC-74221	In case the CarPlay diagnosis switch is set to "deactivated" any connected CarPlay device shall be identified as media device if supported by the system.	P_1: CarPlay feature is turned off in diagnosis P_2: MIB is powered up	A_1: Connect a CarPlay Device to a CarPlay-compatible USB port	ER_1: CarPlay device is recognized as a regular USB media device	MIB-2_RQ_DPO_474
CarPlay-TC-74238	There shall be a SWAP protection for the function "Apple CarPlay" with the FS-ID 00060800	P_1:	A_1:	ER_1:	MIB-2_RQ_DPO_478
CarPlay-TC-74239	If the SWAP ID for CarPlay is not activated, a message shall be displayed when the customer tries to start CarPlay.	P_1: SWAP ID for CarPlay is deactivated P_2: MIB is powered up and running	A_1: Try to use CarPlay, establish a connection with an CarPlay device	ER_1: MIB informs the user that CarPlay is deactivated	MIB-2_RQ_DPO_479
CarPlay-TC-74240	In case the SWAP ID for CarPlay is not activated it shall not be possible to start a CarPlay session on any device	P_1: SWAP ID for CarPlay is deactivated P_2: MIB is powered up and running	A_1: Try to use CarPlay, establish a connection with an CarPlay device	ER_1: It is not possible to start an CarPlay session on the MIB	MIB-2_RQ_DPO_1298
CarPlay-TC-74242	In case the SWAP ID for CarPlay is not activated any connected CarPlay device shall be identified as media device if supported by the system.	P_1: SWAP ID for CarPlay is deactivated P_2: MIB is powered up and running	A_1: Connect a CarPlay device to the USB port of the MIB	ER_1: CarPlay device is recognized as a usual USB media device ER_2: CarPlay is not avialable for this device	MIB-2_RQ_DPO_1299
CarPlay-TC-74214	There shall be a CarPlay section in GEM.	P_1: MIB shows the Green Engineering Menu	A_1: See if the GEM has a CarPlay section	ER_1: GEM has a CarPlay section	MIB-2_RQ_DPO_1300
CarPlay-TC-74213	Version of Apple Communication PlugIn shall be visible in GEM	P_1: MIB shows the Green Engineering Menu	A_1: Find the version number of the Apple Communication Plugin	ER_1: Version number of the Apple Communication Plugin is visible in GEM	MIB-2_RQ_DPO_486
CarPlay-TC-74211	A function to activate and deactivate DDS control functionality shall be available in GEM	P_1: DDS (rotary knob) control feature for CarPlay is deactivated in GEM P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB shows CarPlay context	A_1: End and restart CarPlay session (don't restart system) A_2: Try to use the DDS in CarPlay context	ER_2: DDS has no function	MIB-2_RQ_DPO_488
CarPlay-TC-74210	A function to activate and deactivate DDS control functionality shall be available in GEM	P_1: DDS (rotary knob) control feature for CarPlay is activated in GEM P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB shows CarPlay context	A_1: Try to use the DDS in CarPlay context	ER_1: DDS works as expected	MIB-2_RQ_DPO_488
CarPlay-TC-73901	If CarPlay has been the last active HMI context, it shall be active again after a restart of the system, given that the CarPlay device is still connected and available as CarPlay device.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active	A_1: Turn off MIB (clamp 15 and clamp s) A_2: Wait until bussleep A_3: CarPlay device is still connected to MIB A_4: Turn on MIB (clamp 15 and clamp s)	ER_1: MIB turns off ER_4: After startup the CarPlay device is connected as CarPlay device again and in an active session. CarPlay screen is shown	MIB-2_RQ_DPO_490
CarPlay-TC-73902	If CarPlay has been the last active HMI context, but the CarPlay device is no longer available after a restart of the system, native HMI shall start with AppConnect context.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active	A_1: Turn off MIB (clamp 15 and clamp s) A_2: Wait until bussleep A_3:Disconnect CarPlay Device by disconnecting the USB cable A_4: Turn on MIB (clamp 15 and clamp s)	ER_1: MIB turns off ER_4: After startup the native HMI context is shown	MIB-2_RQ_DPO_491
CarPlay-TC-73903	If music is playing on the CarPlay device at the moment of establishing the CarPlay session, the system's audio source shall switch over to CarPlay device, independent from former lastmode.	P_1: MIB powered up P_2: no CarPlay device connected P_3: Device was previously connected and CarPlay session has been activated via AppConnect	A_1: Connect CarPlay device with active music playback	ER_1: Connection established and music playback on CarPlay device goes on and is audible via Car's loudspeaker.	MIB-2_RQ_DPO_492
CarPlay-TC-73906	CarPlay calls shall trigger transitions from and to MMI_ON_TEL just like calls on the internal phone module or a connected Bluetooth phone would	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: Active CarPlay call	A_1: Turn off clamp 15 A_2: Turn off clamp s A_3: End call after some time	ER_1: CarPlay call is still active ER_2: CarPlay session with active CarPlay call remains active ER_3: After call ends, MIB turns off	MIB-2_RQ_DPO_1336
CarPlay-TC-73907	The system shall support all CarPlay functionality under the same power management conditions under which USB connections would be possible	P_1: MIB powered up P_2: Active CarPlay session	A_1: Check wether the powermanagement for CarPlay is same like for another USB device	ER_1: Same Powermanagement like USB	MIB-2_RQ_DPO_1380
CarPlay-TC-74024	The car shall provide CarPlay whether it is left or right hand drive via Info Message Key: rightHandDrive.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Change form left hand drive to right hand drive via diagnosis connection	ER_1: Home button and information bar should change form the left side to the right side	MIB-2_RQ_DPO_1305
CarPlay-TC-74027	The car shall provide CarPlay whether it is left or right hand drive via Info Message Key: rightHandDrive.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode	A_1: Change form right hand drive to left hand drive via diagnosis connection	ER_1: Home button and information bar should change form the right side to the left side	MIB-2_RQ_DPO_1305
CarPlay-TC-73926	The car shall provide the CarPlay device with the information about Day/Night-Mode.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode and shows maps app	A_1: Open setup and change form Day mode to Night mode	ER_1: Changing from Day mode to Night mode should be visible on CarPlay screen	MIB-2_RQ_DPO_1207
CarPlay-TC-74028	The car shall provide the CarPlay device with the information about Day/Night-Mode.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode and shows maps app	A_1: Open setup and change form Night mode to Day mode	ER_1: Changing from Night mode to Day mode should be visible on CarPlay screen	MIB-2_RQ_DPO_1207
CarPlay-TC-74307	The system shall provide PASCD with an Update rate of 10Hz to the CarPlay device.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode P_4: CarPlay Maps app is shown	A_1: Check if PASCD data updates are available with a rate of 10 Hz in ATS-Trace	ER_1: PASCD data updates are available with a rate of 10 Hz	MIB-2_RQ_DPO_513
CarPlay-TC-74308	The system shall provide PAGCD (at least yaw rate) with an Update rate of 10Hz to the CarPlay device.	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: MIB screen is in CarPlay mode P_4: CarPlay Maps app is shown	A_1: Check if PAGCD data updates are available with a rate of 10 Hz in ATS-Trace	ER_1: PAGCD data updates are available with a rate of 10 Hz	MIB-2_RQ_DPO_514
CarPlay-TC-73920	Use GPS signal of the car	P_1: MIB powered up P_2: CarPlay Device is connected as CarPlay device and CarPlay session is active P_3: Turn off location services of the CarPlay device P_4: MIB screen is in CarPlay mode	A_1: Open CarPlay App Maps A_2: Check if GPRMC and GPGGA Data are available in Apple Trace	ER_1: Current position should be shown on Maps App. ER_2: GPRMC and GPGGA Data are available in Apple Trace	MIB-2_RQ_DPO_510 MIB-2_RQ_DPO_509 MIB-2_RQ_DPO_511
CarPlay-TC-73915	The customer shall be able to update the CarPlay software component of the MIB via the Customer Update Process.	P_1: MIB is powered up P_2: Prepare a data medium with a customer update for updating CarPlay on the MIB	A_1: Press Menu HK and enter setup and open system information A_2: Insert data medium (SD card) A_3: Select Update Software button	ER_1: MIB shall update CarPlay and inform the user about a successful update procedure	MIB-2_RQ_DPO_1310
CarPlay-TC-74029	If a CarPlay device is connected to a non-OTG capable USB-port it shall be available as a media device in native HMI media context.	P_1: MIB is powered up	A_1: Connect a CarPlay device via Apple Lightning Cable to a CarPlay *incompatible* USB port of the system A_2: Check whether the CarPlay Device has been recognized as a USB media source	ER_2: CarPlay Device has been recognized as a USB media source.	MIB-2_RQ_DPO_1069

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74030	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, FM-Radio playback active P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port A_2: Confirm the first connection message with OK to start the CarPlay session	ER_1: MIB shows CarPlay first connection message ER_2: CarPlay session starts, CarPlay screen is shown ER_3: Music playback by radio goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74032	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Radio context is shown P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port, start the CarPlay session	ER_1: CarPlay session starts. ER_2: MIB switches to CarPlay context ER_3: Music playback by radio goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74033	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Media context is shown P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port A_2: Confirm the first connection message with OK to start the CarPlay session	ER_1: MIB shows CarPlay first connection message ER_2: CarPlay session starts, CarPlay screen is shown ER_3: Music playback by media goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74034	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Media context is shown P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port, start the CarPlay session	ER_1: CarPlay session starts. ER_2: MIB switches to CarPlay context ER_3: Music playback by native HMI media goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74035	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, TV tunver context is shown P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port A_2: Confirm the first connection message with OK to start the CarPlay session	ER_1: MIB shows CarPlay first connection message ER_2: CarPlay session starts, CarPlay screen is shown ER_3: Music playback by TV goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74036	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, TV context is shown P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port, start the CarPlay session	ER_1: CarPlay session starts. ER_2: MIB switches to CarPlay context ER_3: Music playback by native HMI TV goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74046	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Phone context is shown P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port A_2: Confirm the first connection message with OK to start the CarPlay session	ER_1: MIB shows CarPlay first connection message ER_2: CarPlay session starts, CarPlay screen is shown ER_3: Music playback by previous media source goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74047	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Phone context is shown P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port, start the CarPlay session	ER_1: CarPlay session starts. ER_2: MIB switches to CarPlay context ER_3: Media playback on CarPlay device is in Pause mode, native HMI media playback is still active	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74048	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Navigation context is shown P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port A_2: Confirm the first connection message with OK to start the CarPlay session	ER_1: MIB shows CarPlay first connection message ER_2: CarPlay session starts, CarPlay screen is shown ER_3: Music playback by previous media source goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74049	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Navigation context is shown P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port, start the CarPlay session	ER_1: CarPlay session starts. ER_2: MIB switches to CarPlay context ER_3: Media playback on CarPlay device is in Pause mode, native HMI media playback is still active	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74056	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Car-Net context is shown P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port A_2: Confirm the first connection message with OK to start the CarPlay session	ER_1: MIB shows CarPlay first connection message ER_2: CarPlay session starts, CarPlay screen is shown ER_3: Music playback by previous media source goes on, music on CarPlay device is in Pause mode.	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74057	CarPlay audio shall be audible after CarPlay session is started and playback was ongoing on CarPlay device	P_1: MIB is powered up, Car-Net context is shown P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device available with active music playback	A_1: Connect the CarPlay device to CarPlay compatible USB-Port, start the CarPlay session	ER_1: CarPlay session starts. ER_2: MIB switches to CarPlay context ER_3: Media playback on CarPlay device is in Pause mode, native HMI media playback is still active	MIB-2_RQ_DPO_1071 MIB-2_RQ_DPO_1326
CarPlay-TC-74058	Connect CarPlay device while call is running on it. iPhone phone call shall switch over to CarPlay after CarPlay is started	P_1: MIB is powered up P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: Start a phone call on the CarPlay device P_4: MIB phone call is not active	A_1: Connect the CarPlay device with MIB via CarPlay compatible USB-Port, start the CarPlay session during the phone call	ER_1: CarPlay session starts. ER_2: CarPlay phone call is audible through the car speakers	MIB-2_RQ_DPO_1079
CarPlay-TC-74059	Connect CarPlay device while call is running on it. iPhone phone call shall switch over to CarPlay after CarPlay is started	P_1: MIB is powered up P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: Start a phone call on the CarPlay device P_4: MIB phone call is not active	A_1: Connect the CarPlay device with MIB via CarPlay compatible USB-Port, start the CarPlay session during the phone call	ER_1: CarPlay session starts. ER_2: CarPlay phone call is audible through the car speakers	MIB-2_RQ_DPO_1079
CarPlay-TC-74062	Connect CarPlay device while call is running on it. On MIB is an active call by native HMI phone.	P_1: MIB is powered up P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: Start a phone call on the MIB via connected HFP phone	A_1: Connect the CarPlay device with active phone call with MIB via CarPlay compatible USB-Port, try to manually start a CarPlay session during the MIB phone call	ER_1: CarPlay session does not start automatically and cannot be started manually. A popup is shown, that connection cannot be established while active call.	MIB-2_RQ_DPO_1079
CarPlay-TC-74064	Connect CarPlay device while call is running on it. On MIB is an active call by native HMI phone.	P_1: MIB is powered up P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: Start a phone call on the MIB via connected HFP phone	A_1: Connect the CarPlay device with active phone call with MIB via CarPlay compatible USB-Port, try to manually start a CarPlay session during the MIB phone call	ER_1: CarPlay session does not start automatically and cannot be started manually. A popup is shown, that connection cannot be established while active call.	MIB-2_RQ_DPO_1079
CarPlay-TC-74063	Connect CarPlay device while call is running on it and native HMI has another running call. iPhone phone call shall keep on the iPhone after CarPlay is started and native HMI phone call is ongoing	P_1: MIB is powered up P_2: HFP phone is connected to MIB and call is active on MIB P_3: CarPlay device is available with active call on itself, but not connected to MIB via CarPlay	A_1: Connect available CarPlay device with active call on itself to CarPlay compatible USB port of MIB A_2: End call on MIB and connect available CarPlay device again, with active call on itself	ER_1: CarPlay session does not start automatically and cannot be started manually. A popup is shown, that connection cannot be established while active call. The call on the CarPlay device remains active ER_2: HFP call ends and CarPlay session can be started, the active call on CarPlay device is routed to MIB	MIB-2_RQ_DPO_1081
CarPlay-TC-74067	Disconnect a CarPlay device which had previously been connected as HFP. CarPlay session ends, HFP connection is re-established.	P_1: MIB is powered up P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device is connected via HFP (no USB plugged in)	A_1: Connect CarPlay device to MIB via CarPlay compatible USB port and start CarPlay session A_2: Disconnect the CarPlay device by disconnecting in AppConnect	ER_1: CarPlay session starts, CarPlay device gets disconnected in HFP and A2DP ER_2: CarPlay session ends and BT connections to all devices within reach are automatically re-established	

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74069	Disconnect a CarPlay device which had previously been connected as HFP. CarPlay session ends, HFP connection is re-established.	P_1: MIB is powered up P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device is connected via HFP (no USB plugged in)	A_1: Connect CarPlay device to MIB via CarPlay compatible USB port and start CarPlay session A_2: Disconnect the CarPlay device by unplugging the USB cable	ER_1: CarPlay session starts, CarPlay device gets disconnected in HFP and A2DP ER_2: CarPlay session ends and BT connections to all devices within reach are automatically re-established	
CarPlay-TC-74065	Connect CarPlay device which is connected as HFP.	P_1: MIB is powered up P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: CarPlay device is connected via HFP (no USB plugged in) P_4: Active HFP-call to/from connected CarPlay device	A_1: Connect the CarPlay device with MIB, try to start the CarPlay session	ER_1: Active phone call remains active in HFP, a CarPlay Session can't be established during a call.	MIB-2_RQ_DPO_1085
CarPlay-TC-74066	Connect CarPlay device which is connected as HFP.	P_1: MIB is powered up P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: CarPlay device is connected via HFP (no USB plugged in) P_4: Active HFP-call to/from connected CarPlay device	A_1: Connect the CarPlay device with MIB, try to start the CarPlay session manually	ER_1: Active phone call remains active in HFP, a CarPlay Session can't be established during a call.	MIB-2_RQ_DPO_1085
CarPlay-TC-74070	Connect CarPlay device while Siri is running on it	P_1: MIB is powered up P_2: CarPlay device has not yet been connected with the MIB (reset MIB to factory settings, if necessary) P_3: Siri session is running on the CarPlay device	A_1: Connect CarPlay device to MIB via CarPlay compatible USB port	ER_1: CarPlay session starts ER_2: Siri session stops	
CarPlay-TC-74071	Connect CarPlay device while Siri is running on it	P_1: MIB is powered up P_2: CarPlay device was previously connected with the MIB, but is currently disconnected P_3: Siri session is running on the CarPlay device	A_1: Connect CarPlay device to MIB via CarPlay compatible USB port	ER_1: CarPlay session starts ER_2: Siri session stops	
CarPlay-TC-74073	The system shall switch to AppConnect context if CarPlay device is disconnected while CarPlay is active system context.	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay context	A_1: Unplug the USB cable	ER_1: CarPlay session ends ER_2: MIB shows AppConnect context	
CarPlay-TC-74074	Screen shall stay in native HMI mode when CarPlay device is unplugged	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows Radio context	A_1: Unplug USB of CarPlay device	ER_1: CarPlay session ends ER_2: MIB shows Radio context	
CarPlay-TC-74075	Screen shall stay in native HMI mode when CarPlay device is unplugged	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows Media context	A_1: Unplug USB of CarPlay device	ER_1: CarPlay session ends ER_2: MIB shows Media context	
CarPlay-TC-74076	Screen shall stay in native HMI mode when CarPlay device is unplugged	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows Phone context	A_1: Unplug USB of CarPlay device	ER_1: CarPlay session ends ER_2: MIB shows Phone context	
CarPlay-TC-74077	Screen shall stay in native HMI mode when CarPlay device is unplugged	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows Navigation context	A_1: Unplug USB of CarPlay device	ER_1: CarPlay session ends ER_2: MIB shows Navigation context	
CarPlay-TC-74081	Screen shall stay in native HMI mode when CarPlay device is unplugged	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows Car-Net context	A_1: Disconnect the cable to the CarPlay device	ER_1: CarPlay session ends ER_2: MIB shows Car-Net context	
CarPlay-TC-74263	Unplug CarPlay device while ongoing CarPlay phone call	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: CarPlay phone call is active	A_1: Disconnect the Apple CarPlay device by unplugging the USB cable AND (2nd try) disconnecting the CarPlay device via AppConnect	ER_1: Phonecall on iPhone stays active on the phone (Handover)	
CarPlay-TC-74087	Phone call at HFP connected phone shall stay on the HFP connected phone (private mode) even if CarPlay device is disconnected while the call is omgoing at the phone.	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: CarPlay phone call is active P_4: Previous connected bluetooth phone is in reach, BT is on with active call on it	A_1: Disconnect the Apple CarPlay device by unplugging the USB cable AND (2nd try) disconnecting the CarPlay device via AppConnect	ER_1: Phonecall on iPhone stays active on the phone (Handover) ER_2: Phonecall of the available BT-phone is routed to the MIB	
CarPlay-TC-74243	2 CarPlay devices at the same time	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active	A_1: Connect a second CarPlay device to the non-OTG-Port	ER_1: Second CarPlay device can be used for media playback in native HMI media context, but not as CarPlay device	
CarPlay-TC-74090	If the user trys to activate a native HMI entertainment source during an ongoing CarPlay phone call the system audio shall stay by the CarPlay phone call until CarPlay phone call is ended and switch to the selected audio source afterwards.	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Ongoing CarPlay phone call	A_1: Try to start media playback from one of MIB's media sources (e.g. SD, USB, CD) A_2: End the CarPlay phone call	ER_1: No media playback during call ER_2: Playback of the MIB's media source starts automatically	MIB-2_RQ_DPO_996
CarPlay-TC-74091	If the user trys to activate a native HMI entertainment source during an ongoing CarPlay phone call the system audio shall stay by the CarPlay phone call until CarPlay phone call is ended and switch to the selected audio source afterwards.	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Ongoing CarPlay phone call	A_1: Try to start MIB's SDS by pressing the hardkey Voice on the ABT	ER_1: MIB's SDS does not start	MIB-2_RQ_DPO_1000
CarPlay-TC-74092	If the user trys to activate a native HMI entertainment source during an ongoing CarPlay phone call the system audio shall stay by the CarPlay phone call until CarPlay phone call is ended and switch to the selected audio source afterwards.	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Ongoing CarPlay phone call	A_1: Try to start MIB's SDS by pressing PTT key on the MFL	ER_1: MIB's SDS does not start	MIB-2_RQ_DPO_1000
CarPlay-TC-74264	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI FM-radio context	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Call ends, MIB shows native HMI screen like before call Audio output from media context like before call	
CarPlay-TC-74266	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI Media context	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Call ends, MIB shows native HMI screen like before call Audio output from media context like before call	
CarPlay-TC-74267	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI Phone context	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Call ends, MIB shows native HMI screen like before call Audio output from media context like before call	

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74268	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI Nav context P_4: No route guidance active	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Call ends, MIB shows native HMI screen like before call Audio output from media context like before call	
CarPlay-TC-74269	Receiving a phone call on CarPlay while using native HMI functions	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI Nav context P_4: Native HMI route guidance is active	A_1: Initiate in incoming call to the connected CarPlay device A_2: Accept the call. A_3: Navigation announcements A_4: End call	ER_1: Incoming call is shown in native HMI screen ER_2: Call is active and MIB shows call informations and audible via car's loudspeakers ER_3: Navigation announcements are audible while active Phone call ER_4: Call ends, MIB shows native HMI screen like before call, Media like before phone call	
CarPlay-TC-74244	Initiate a call from the connected CarPlay device	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active	A_1: Initiate a phone call by starting phone call on the iPhone	ER_1: Phonecall is audible via car's loudspeakers, CarPlay session shows Call screen	
CarPlay-TC-74279	It shall be possible to answere an incomming CarPlay phone call using the Hook button on MFL	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active	A_1: Initiate an incoming call to connected CarPlay device A_2: Accept call via phone button on MFL (Call can only be accepted by hook button, all other buttons on MFL having no function)	ER_1: Phonecall is shown on MIB and on CI and ringing ER_2: Call is active.	
CarPlay-TC-74110	There shall be the option to end an outgoing CarPlay phone call via the cluster phone context	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Active CarPlay call	A_1: Press Phone button on MFL to end active CarPlay call. (All other MFL buttons have no function while active CarPlay call)	ER_1: CarPlay call ends	MIB-2_RQ_DPO_1041
CarPlay-TC-74245	Incoming call while active CarPlay call	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Active call on the CarPlay device	A_1: Initiate another incoming call to the CarPlay device A_2: Accept second call	ER_1: Secondary call is shown ER_2: First call is on Hold state, second call is active	MIB-2_RQ_DPO_1058
CarPlay-TC-74187	CarPlay turn by turn announcements shall be audible during native HMI media source is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Music playback via native HMI media context (Radio, SD, USB, ...) P_4: CarPlay turn by turn navigaition route guidance is active	A_1: Check whether CarPlay navigation announcements are audible during MIB media playback A_2: Check suitable level of navigation announcements	ER_1: CarPlay navigation announcements are audible during native HMI media playback (incl. ducking) ER_2: CarPlay navigation announcements are audible during very loud MIB media playback	MIB-2_RQ_DPO_954
CarPlay-TC-74188	Route guidance of native HMI shall stop if CarPlay route guidance starts even if in rubberband manipulation mode	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB's route guidance is active P_4: Modify the route using the rubberband manipulation mode	A_1: Start CarPlay route guidance	ER_1: MIB's route guidance stops, CarPlay route guidance starts	MIB-2_RQ_DPO_1340
CarPlay-TC-74189	PNav shall stay active in the backround while CarPlay route guidance is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB's predictive silent route guidance (PNav) is active	A_1: Start CarPlay route guidance	ER_1: CarPlay route guidance starts ER_2: MIB's predictive silent route guidance is still active in the background	MIB-2_RQ_DPO_1244
CarPlay-TC-74207	Waypoint Mode shall stay active in the backround while CarPlay route guidance is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB's offroad route guidance is active P_4: MIB's waypoint mode (WPM) "default" is active	A_1: Start CarPlay route guidance	ER_1: CarPlay route guidance starts ER_2: MIB's waypoint mode (WPM) is still active in the background	MIB-2_RQ_DPO_1247
CarPlay-TC-74190	Offroad route guidance shall stop and waypoint Mode shall stay active in the backround while CarPlay route guidance is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB's offroad route guidance is active P_4: MIB's waypoint mode (WPM) "drive" is active	A_1: Start CarPlay route guidance	ER_1: MIB's offroad route guidance stops ER_2: CarPlay route guidance starts ER_3: MIB's waypoint mode (WPM) is still active in the background	MIB-2_RQ_DPO_1250
CarPlay-TC-74192	Record shall stop and shall be saved and waypoint Mode shall stay active in the backround while CarPlay route guidance is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB's offroad route guidance is active P_4: MIB's waypoint mode (WPM) "record" is active	A_1: Start CarPlay route guidance	ER_1: MIB's offroad route guidance stops and is saved ER_2: CarPlay route guidance starts ER_3: MIB's waypoint mode (WPM) is still active in the background	MIB-2_RQ_DPO_1253
CarPlay-TC-74191	Native HMI route guidance calculation shall stop if CarPlay route guidance starts	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB is currently calculating a route	A_1: Start CarPlay navigation while the MIB is calculating a route	ER_1: MIB's route calculation stops ER_2: CarPlay route guidance starts	MIB-2_RQ_DPO_1256
CarPlay-TC-74193	Native HMI multiple routes context shall close when CarPlay route guidance starts	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Multiple routes suggestions is on P_4: Calculate a route P_5: Multiple routes suggestion screen is shown	A_1: Start CarPlay navigation	ER_1: Multiple routes suggestion screen closes ER_2: MIB's route guidance does not start ER_3: CarPlay navigation starts	MIB-2_RQ_DPO_1259
CarPlay-TC-74248	Removing any accessory from the system during route guidance of CarPlay is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: CarPlay route guidance is active	A_1: Remove any accessory from the system, like SD-card, USB-Stick, SIM card (if available), CD	ER_1: No influence on CarPlay functionality	MIB-2_RQ_DPO_962
CarPlay-TC-74249	Connecting any Media device to the system during route guidance of CarPlay is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: CarPlay route guidance is active	A_1: Connecting any accessory to the system, like SD-card, USB-Stick, SIM card (if available), CD	ER_1: No influence on CarPlay functionality	MIB-2_RQ_DPO_964
CarPlay-TC-74250	Switch over from CarPlay to Phone, Navigation, Traffic, Car or Menu context of native HMI	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active	A_1: Switch over from CarPlay context to other native HMI context like Nav, Phone, Media, FM-Radio	ER_1: Check wether native HMI context is shown correctly	
CarPlay-TC-74270	Switch over from CarPlay to Media context of native HMI	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Music playback by CarPlay music app	A_1: Press HK Media and play some music from different sources (SD, USB, AUX, ...)	ER_1: Music playback by CarPlay should stop, native HMI music playback is audible	
CarPlay-TC-74271	Switch over from CarPlay to Radio or TV Tuner context of native HMI	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Music playback by CarPlay music app	A_1: Press HK Radio and play some music	ER_1: Music playback by CarPlay should stop, native HMI music playback is audible	
CarPlay-TC-74203	Media playback of native HMI shall be paused, if CarPlay requests main audio	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Media playback on the MIB is running	A_1: Start music in CarPlay context	ER_1: Media playback on the MIB is paused ER_2: CarPlay music starts	MIB-2_RQ_DPO_977
CarPlay-TC-74204	native HMI media playback shall not start during an ongoing CarPlay phone call	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: CarPlay phone call is ongoing	A_1: Start playback from one of MIB's media sources	ER_1: Media playback on the MIB does not start ER_2: CarPlay phone call is still ongoing	MIB-2_RQ_DPO_979
CarPlay-TC-74206	Siri shall stop by incomming CarPlay phone call	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: Siri session is active	A_1: Receive a phone call while Siri session is running	ER_1: Siri session stops ER_2: Incoming phone call is audible	MIB-2_RQ_DPO_929
CarPlay-TC-74251	Start music playback via Siri, MIB screen is not in a native HMI entertainment source context	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay screen	A_1: Start a Siri session A_2: Start a music playback via Siri	ER_1: Siri session is active ER_2: Music playback of CarPlay device starts. Music is audible on car's loudspeakers	

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
CarPlay-TC-74252	Start music playback via Siri, MIB screen is in a native HMI entertainment source context	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI screen (Media context)	A_1: Start a Siri session A_2: Start a music playback via Siri	ER_1: Siri session is active ER_2: Music playback of CarPlay device starts. Music is audible on car's loudspeakers	
CarPlay-TC-74253	Start navigation via Siri, MIB screen is in native HMI mode	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI screen (Media or Nav context)	A_1: Start a Siri session A_2: Start a route guidance via Siri	ER_1: Siri session is active ER_2: Route guidance starts, navigations announcements are audible via car's loudspeakers	
CarPlay-TC-74255	Start navigation via Siri, MIB screen is in CarPlay mode	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay screen	A_1: Start a Siri session A_2: Start a route guidance via Siri	ER_1: Siri session is active ER_2: Route guidance starts, navigations announcements are audible via car's loudspeakers	
CarPlay-TC-74254	Start a phone call via Siri, MIB screen is in native HMI mode	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI screen (Media or Nav context)	A_1: Start a Siri session A_2: Start a call via Siri	ER_1: Siri session is active ER_2: Call starts, call is audible via car's loudspeakers	
CarPlay-TC-74256	Start a phone call via Siri, MIB screen is in CarPlay mode	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay context	A_1: Start a Siri session A_2: Start a call via Siri	ER_1: Siri session is active ER_2: Call starts, call is audible via car's loudspeakers	
CarPlay-TC-74272	Start SDS, MIB is in CarPlay mode	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay context	A_1: Start SDS by using Voice or PTT button	ER_1: SDS should start, CarPlay should stay active in the backgroud	
CarPlay-TC-74275	Start SDS, MIB is in CarPlay mode and CarPlay music playback is active	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay context P_4: CarPlay music playback via music app	A_1: Start SDS by using Voice or PTT button	ER_1: SDS should be audible and reacts on commands	
CarPlay-TC-74274	Start Siri while native HMI SDS is ongoing	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay context P_4: Siri session is active	A_1: Start SDS using one of the relevant buttons	ER_1: SDS could not start, the VOICE and PTT buttons are used for the Siri session, when Siri is active	
CarPlay-TC-74257	Using the messaging app on CarPlay	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay context	A_1: Open Messages app A_2: Write a message with the help of Siri and send it A_3: Let Siri Read Message from your Inbox	ER_1: CarPlay Messages context is shown ER_2: Message is send ER_3: Message is read out	MIB-2_RQ_DPO_911
CarPlay-TC-74258	Context change while using the messaging app in CarPlay	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows CarPlay-Messages context P_4: Siri is active	A_1: Change to native HMI context	ER_1: Siri session stops, Music playback by source before Siri session, native HMI context is shown	MIB-2_RQ_DPO_915
CarPlay-TC-74276	Incoming message on Carplay	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI screen (Radio, Media, Phone, Nav context)	A_1: Incoming message on CarPlay device	ER_1: CarPlay screen is shown and user is informed about a new message. After a short time the native HMI screen, like before the message, is shown	
CarPlay-TC-74259	Switch over to CarPlay while a global pop-up is visible	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI with an global Pop-Up which expects confirmation	A_1: Change to CarPlay context, via SK in menu or initiate an incoming CarPlay call	ER_1: CarPlay session is shown in the background, Pop-Up is shown witch expected Confirmation	MIB-2_RQ_DPO_894
CarPlay-TC-74260	Switch over to CarPlay while a context dependent pop-up is visible	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI with an context dependent Pop-Up which expects confirmation	A_1: Change to CarPlay context, via SK in menu or initiate an incoming CarPlay call	ER_1: CarPlay session is shown in the background, Pop-Up is shown witch expected Confirmation	MIB-2_RQ_DPO_896
CarPlay-TC-74261	Switch over to CarPlay while an info pop-up is visible	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI with info Pop-Up	A_1: Change to CarPlay context, via SK in menu or initiate an incoming CarPlay call	ER_1: CarPlay session is shown, info Pop Up is no longer shown	MIB-2_RQ_DPO_898
CarPlay-TC-74262	Switch over to CarPlay while an emergency pop-up is visible	P_1: MIB is powered up P_2: CarPlay device is connected to MIB, CarPlay session is active P_3: MIB shows native HMI with emergency Pop-Up	A_1: Change to CarPlay context, via SK in menu or initiate an incoming CarPlay call	ER_1: CarPlay session is shown in the background. Emergency Pop Up is shown in the foreground	MIB-2_RQ_DPO_906

Appendix G – Testspecification of Android Auto

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73714	The system shall decode the H264 stream received from the Android Auto device and shall display the content on the car's screen.	P_1: AA session is active	A_1: Check whether AA device's content is displayed on the MIB's touchscreen	ER_1: Device's AA content is displayed on the MIB's touchscreen	MIB-2_RQ_PJM_223
AndroidAuto-TC-73715	Touch events on the Touchscreen shall be sent to the Android Auto device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform some touch commands on the MIB's touchscreen.	ER_1: Touch commands are sent to the AA device.	MIB-2_RQ_PJM_224
AndroidAuto-TC-73716	The system shall forward multiple simultaneous touch events to the AA device.	P_1: AA session is active P_2: AA content is shown	A_1: Perform a multi-touch zoom on the MIB's touchscreen (e.g. in Android's navigation map)	ER_1: Multi-touch zoom commands are sent to the AA device.	MIB-2_RQ_PJM_899
AndroidAuto-TC-73718	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in touch mode (no softkeys or list items highlighted)	A_1: Rotate the DDS one tick clockwise	ER_1: Softkey or list position is highlighted	MIB-2_RQ_PJM_227
AndroidAuto-TC-73719	The rotary button control mode for Android Auto shall also be activated for enabling the usage of the DDS (rotating or pressing) (Note: This will lead to highlighted SKs or list position.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in touch mode (no softkeys or list items highlighted)	A_1: Rotate the DDS one tick counter-clockwise	ER_1: Softkey or list position is highlighted	MIB-2_RQ_PJM_227
AndroidAuto-TC-73720	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS clockwise	ER_1: Softkey or list item highlight moves forward one step per DDS tick	MIB-2_RQ_PJM_228
AndroidAuto-TC-73721	The user shall be able to navigate across SKs or lists via the rotary knob function	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Rotate the DDS counter-clockwise	ER_1: Softkey or list item highlight moves backward one step per DDS tick	MIB-2_RQ_PJM_228
AndroidAuto-TC-73722	Pressing the DDS shall activate the highlighted object	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Press the DDS	ER_1: The highlighted softkey or list item is activated	MIB-2_RQ_PJM_229
AndroidAuto-TC-73723	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted)	A_1: Initiate a touch event on MIB's touchscreen	ER_1: DDS control mode ends (softkey or list item is no longer highlighted)	MIB-2_RQ_PJM_230
AndroidAuto-TC-73724	Touch event or context change shall end rotary button control mode (Note: This will lead to no highlighted SKs or list positions.)	P_1: AA session is active P_2: AA content is shown P_3: AA is in DDS mode (a softkey or list item is highlighted) P_4: Change context (e.g. to native Phone or Media)	A_1: Return to AA context	ER_1: DDS control mode ends (softkey or list item is no longer highlighted)	MIB-2_RQ_PJM_230
AndroidAuto-TC-73725	Areas at the borders of the touchscreen must generate touch events with the correct coordinates.	P_1: AA session is active P_2: AA content is shown	A_1: Perform a touch action at the very border or corner of the MIB's touch screen	ER_1: AA device locates the touch commands at the respective border or corner of the AA device (you may want activate "show touches" and "show pointer location" in the Android device's developer options to see where the device perceives the MIB's touch commands)	MIB-2_RQ_PJM_233
AndroidAuto-TC-73726	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll MFL volume up once	ER_1: MIB's volume goes up one step. Volume bar is briefly shown in the instrument cluster ER_2: The volume on the Android device itself did not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73727	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll MFL volume down once	ER_1: MIB's volume goes down one step. Volume bar is briefly shown in the instrument cluster ER_2: The volume on the Android device itself did not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73728	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume up A_2: Release MFL volume up before max volume level is reached	ER_1: MIB's volume is increasing. Increasing Volume bar is displayed in the instrument cluster. ER_2: Volume level and volume bar displayed in the instrument cluster do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73729	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume down A_2: Release MFL volume down before min volume is reached	ER_1: MIB's volume decreasing. Decreasing volume bar is displayed in the instrument cluster. ER_2: Volume level and volume bar displayed in the instrument cluster do not change anymore. Volume bar disappears after a short time. ER_3: The volume on the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73730	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume up	ER_1: MIB's volume increases until it reaches max volume. Volume bar is displayed in the instrument cluster as long as the volume is changing. ER_2: The volume of the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73731	The MFL volume buttons shall control the volume of the car's amplifier.	P_1: AA session is active P_2: AA content is shown P_3: AA audio content is played back	A_1: Roll scroll buton MFL volume down	ER_1: MIB's volume decreases until it reaches min volume. Volume bar is displayed in the instrument cluster as long as the volume is changing ER_2: The volume of the Android device itself does not change	MIB-2_RQ_PJM_239
AndroidAuto-TC-73732	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308
AndroidAuto-TC-73733	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308
AndroidAuto-TC-73737	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows a native HMI screen screen P_4: Music playback by native HMI	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Audio is handled by AA ER_2: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308
AndroidAuto-TC-73736	It shall be possible to start and control the Android Auto Google Voice via the PTT button on the MFL	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows Android Auto screen P_4: Music playback by AA	A_1: Press the PTT (Voice) button on the MFL for more than 600 ms	ER_1: Audio is handled by AA ER_2: Google Voice starts	MIB-2_RQ_PJM_242 MIB-2_RQ_PJM_308

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73740	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows a context other than Audio	A_1: Short-press the MFL button Next	ER_1: AA device skips to the next playable title	MIB-2_RQ_PJM_248
AndroidAuto-TC-73741	Short press on one of the MFL Skip-Buttons shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows a context other than Audio	A_1: Short-press the MFL button Previous	ER_1: AA device skips to the previous playable title or the start of the current title (depends on how the media player running on the Android device interprets the button press)	MIB-2_RQ_PJM_248
AndroidAuto-TC-73742	Short press on one of the MFL Up/Down-Buttons while being in Audio context in cluster shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows Audio (Media) context	A_1: Short-press the MFL button Up	ER_1: AA device skips to the next playable title	MIB-2_RQ_PJM_945
AndroidAuto-TC-73743	Short press on one of the MFL Up/Down-Buttons while being in Audio context in cluster shall skip music title	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster shows Audio (Media) context	A_1: Short-press the MFL button Down	ER_1: AA device skips to the previous playable title or the start of the current title (depends on how the media player running on the Android device interprets the button press)	MIB-2_RQ_PJM_945
AndroidAuto-TC-74133	The string “Android Auto” shall be displayed while Android Auto is the active Media Source. (language independent)	P_1: AA session is active P_2: AA media content is being played back P_3: Instrument cluster is in Audio context	A_1: Check whether the instrument cluster shows the string "Android Auto"	ER_1: Instrument cluster shows the string "Android Auto"	MIB-2_RQ_PJM_291
AndroidAuto-TC-73750	The FPK in combination with the system shall show a string “Smartphone Navigation active” in the navigation context while Android Auto route guidance is running. Translated in all languages which are supported by the system	P_1: AA session is active P_2: AA route guidance is active P_3: FPK is in Navigation context	A_1: Check whether FPK shows "Smartphone Navigation active" (check the translation of this for each language you speak well)	ER_1: FPK shows "Smartphone Navigation active" in the language currently set	MIB-2_RQ_PJM_299
AndroidAuto-TC-73751	The FPK in combination with the system shall show a compass while Android Auto route guidance is running	P_1: AA session is active P_2: AA route guidance is active P_3: FPK is in Navigation context	A_1: Check whether FPK shows a compass	ER_1: FPK shows a compass	MIB-2_RQ_PJM_300
AndroidAuto-TC-73752	At the cluster screen of Non-FPKs the compass shall be visible in Navigation context while Android Auto route guidance is running	P_1: AA session is active P_2: AA route guidance is active P_3: Instrument cluster is in Navigation context	A_1: Check whether instrument cluster shows a compass	ER_1: Instrument cluster shows a compass	MIB-2_RQ_PJM_301
AndroidAuto-TC-73753	The microphone in the cabin shall provide the voice input to the Android Auto device for speech recognition and phonecalls	P_1: AA session is active P_2: Google Voice is listening	A_1: Check wheter Google Voice can hear you when you speak into the car cabin's microphone	ER_1: Google Voice can hear you when you speak into the car cabin's microphone	MIB-2_RQ_PJM_306 MIB-2_RQ_PJM_334
AndroidAuto-TC-73754	The microphone in the cabin shall provide the voice input to the Android Auto device for speech recognition and phonecalls	P_1: AA session is active P_2: AA phonecall is ongoing	A_1: Check wheter the called party can hear you when you speak into the car cabin's microphone	ER_1: Called party can hear you when you speak into the car cabin's microphone	MIB-2_RQ_PJM_306 MIB-2_RQ_PJM_334
AndroidAuto-TC-73738	ABT HKs are always linked with the native HMI contexts, even if Android Auto is displayed on the MIB screen. An exception is the HK Voice	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen P_4: AA playback is not active	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Google Voice starts	MIB-2_RQ_PJM_308 MIB-2_RQ_PJM_312
AndroidAuto-TC-73755	ABT HKs are always linked with the native HMI contexts, even if Android Auto is displayed on the MIB screen. An exception is the HK Voice	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen P_4: AA media is being played back	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Google Voice starts ER_2: Audio is handled by AA	MIB-2_RQ_PJM_308 MIB-2_RQ_PJM_312
AndroidAuto-TC-73756	ABT HKs are always linked with the native HMI contexts, even if Android Auto is displayed on the MIB screen. An exception is the HK Voice	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Google Voice starts	MIB-2_RQ_PJM_308 MIB-2_RQ_PJM_312
AndroidAuto-TC-73757	ABT HKs are always linked with the native HMI contexts, even if Android Auto is displayed on the MIB screen. An exception is the HK Voice	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen P_4: MIB's media source is playing	A_1: Press the PTT (Voice) button on the ABT for more than 600 ms	ER_1: Google Voice starts ER_2: Audio is handled by AA	MIB-2_RQ_PJM_308 MIB-2_RQ_PJM_312
AndroidAuto-TC-73758	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73759	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73760	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen P_4: Music playback by native HMI	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73761	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen P_4: Music playback by AA	A_1: Short-press the PTT (Voice) button on the MFL	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73762	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen P_4: AA playback is not active	A_1: Short-press the PTT (Voice) button on the ABT	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73764	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows AA screen P_4: AA media is being played back	A_1: Short-press the PTT (Voice) button on the ABT	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73765	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen	A_1: Short-press the PTT (Voice) button on the ABT	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-73766	The voice HK on ABT shall have the same functionality as the MFL PTT button	P_1: MIB powered up P_2: AA device is connected to the MIB P_3: AA session is active and MIB shows native HMI screen P_4: Music playback by native HMI	A_1: Short-press the PTT (Voice) button on the ABT	ER_1: SDS starts	MIB-2_RQ_PJM_312
AndroidAuto-TC-74136	After deactivating native SDS hint screen, AA context must be shown again (SOP3)	P_1: AA session is active P_2: MIB is in AA context P_3: Start MIB's native SDS P_4: MIB shows SDS command suggestions	A_1: End MIB's native SDS	ER_1: AA context is shown	found in early SOP3 sample
AndroidAuto-TC-73929	The system shall inform the user about the connected Android Auto device in native ABT phone context. This information is identical to the one defined for the Bluetooth telephony functionality. This is specified in [8]	P_1: Connect phone 1 as an AA device P_2: AA session with phone 1 is active	A_1: Check the Phone context	ER_1: AA device is created like a usual HFP device in Phone context	MIB-2_RQ_PJM_392 MIB-2_RQ_PJM_464

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73768	When an AA session is started, the system shall disconnect all its Bluetooth connections, except for already existing HFP,PBAP and MAP connections to the AA device	P_1: AA device (phone 1) is conntected with the MIB as primary HFP device, with PBAP, MAP. P_2: AA session is not yet active P_3: Phone 2 is connected as A2DP device P_4: Phone 3 is connected as a secondary HFP device, with PBAP and MAP	A_1: Start an AA session with phone 1.	ER_1: Phones 2 and 3 are disconnected ER_2: AA session starts ER_3: Phone 1 is still connected as HFP device, with PBAP, MAP ER_4: There is no A2DP device connected	MIB-2_RQ_PJM_886
AndroidAuto-TC-74126	When an AA session is started, the system shall disconnect all its Bluetooth connections, except for already existing HFP,PBAP and MAP connections to the AA device	P_1: AA device (phone 1) is conntected with the MIB as primary HFP device, with PBAP, MAP. P_2: AA session is not yet active P_3: Phone 2 is connected as secondary HFP and A2DP device, with PBAP and MAP	A_1: Start an AA session with phone 1.	ER_1: Phone 2 is disconnected ER_2: AA session starts ER_3: Phone 1 is still connected as HFP device, with PBAP, MAP	MIB-2_RQ_PJM_886
AndroidAuto-TC-73769	When an AA session is started, the system shall disconnect all its Bluetooth connections, except for already existing HFP,PBAP and MAP connections to the AA device	P_1: AA device (phone 1) is conntected with the MIB as secondary HFP device, with PBAP, MAP. P_2: AA session is not yet active P_3: Phone 2 is connected as A2DP device P_4: Phone 3 is connected as a primary HFP device, with PBAP and MAP	A_1: Start an AA session with phone 1.	ER_1: Phones 2 and 3 are disconnected ER_2: AA session starts ER_3: Phone 1 is still connected as HFP device, with PBAP, MAP ER_4: There is no A2DP device connected	MIB-2_RQ_PJM_886
AndroidAuto-TC-74117	If an rSAP Bluetooth connection is active, it shall be disconnected by south side upon CP or AAP connection establishment. NAD mode for this rSAP connection stays as before (even if it was “Voice & Data”)	P_1: Phone 1 is connected as RSAP device P_2: Phone 2 is connected as A2DP device P_3: MIB is in Media context, media playback from phone 2 is active P_4: Phone 3 (capable of Android Auto) has not yet been paired with the MIB, nor is it connected with it by USB cable	A_1: Connect phone 3 with MIB with a USB cable, start an AA session with phone 3	ER_1: RSAP connection to phone 1 is terminated ER_2: A2DP connection to phone 2 is terminated ER_3: Phone 3 is paired and connected with MIB (as HFP, PBAP, MAP) without any further user interaction ER_4: AA session starts	
AndroidAuto-TC-74119	If an rSAP Bluetooth connection is active, it shall be disconnected by south side upon CP or AAP connection establishment. NAD mode for this rSAP connection stays as before (even if it was “Voice & Data”)	P_1: Phone 1 is connected as RSAP device P_2: Phone 2 is connected as A2DP device P_3: MIB is in Media context, media playback from phone 2 is active P_4: Phone 3 (capable of Android Auto) is already known as AA device by MIB, but is currently not connected with it by USB cable	A_1: Connect phone 3 with MIB with a USB cable, start an AA session with phone 3	ER_1: RSAP connection to phone 1 is terminated ER_2: A2DP connection to phone 2 is terminated ER_3: Phone 3 is paired and connected with MIB (as HFP, PBAP, MAP) without any further user interaction ER_4: AA session starts	
AndroidAuto-TC-74118	When an AAP device gets connected to the system, the system (south side) shall disconnect all its Bluetooth connections, except for already existing HFP,PBAP and MAP connections to the AAP device. -> the AAP device will set up an HFP connection, if it doesn’t exist already.	P_1: SIM is inserted for data and voice connections P_2: Phone 1 is connected as PBAP device P_3: Phone 2 (capable of Android Auto) has not yet been paired with the MIB, nor is it connected with it by USB cable	A_1: Connect phone 2 with MIB with a USB cable, start an AA session with phone 2	ER_1: User is informed that the SIM card mode is switched to data only mode ER_2: SIM card is in data only mode ER_3: PBAP connection to phone 1 is terminated ER_4: Phone 2 is paired and connected with MIB (as HFP, PBAP, MAP) without any further user interaction ER_4: AA session starts	
AndroidAuto-TC-74120	When an AAP device gets connected to the system, the system (south side) shall disconnect all its Bluetooth connections, except for already existing HFP,PBAP and MAP connections to the AAP device. -> the AAP device will set up an HFP connection, if it doesn’t exist already.	P_1: SIM is inserted for data and voice connections P_2: Phone 1 is connected as PBAP device P_3: Phone 2 (capable of Android Auto) is already known as AA device by MIB, but is currently not connected with it by USB cable	A_1: Connect phone 2 with MIB with a USB cable, start an AA session with phone 2	ER_1: User is informed that the SIM card mode is switched to data only mode ER_2: SIM card is in data only mode ER_3: PBAP connection to phone 1 is terminated ER_4: Phone 2 is paired and connected with MIB (as HFP, PBAP, MAP) without any further user interaction ER_4: AA session starts	
AndroidAuto-TC-73771	When an AA session is started and the AA device is not yet in the list of paired Bluetooth devices, the system shall perform the Bluetooth pairing procedure without user interaction as defined in [4].	P_1: Phones 1 and 2 are connected with the MIB as primary and secondary HFP device with PBAP and MAP. P_2: Phone 3 is connected as A2DP device. P_3: MIB is in Media context, media playback from phone 3 is active P_4: Phone 4 (capable of Android Auto) is not yet paired with the MIB, or is it connected with it by USB cable	A_1: Connect phone 4 with MIB with a USB cable, start an AA session with phone 4	ER_1: A2DP media playback stops, Bluetooth connection with phones 1, 2, and 3 ends. ER_2: Phone 4 is paired and connected with MIB (as HFP, PBAP, MAP) without any further user interaction ER_3: AA session starts	MIB-2_RQ_PJM_889
AndroidAuto-TC-74114	When an AA session is started and the AA device is not yet in the list of paired Bluetooth devices, the system shall perform the Bluetooth pairing procedure without user interaction as defined in [4].	P_1: Phones 1 and 2 are connected with the MIB as primary and secondary HFP device with PBAP and MAP. P_2: Phone 2 is also connected as A2DP device. P_3: MIB is in Media context, media playback from phone 2 is active P_4: Phone 3 (capable of Android Auto) is not yet paired with the MIB, or is it connected with it by USB cable	A_1: Connect phone 3 with MIB with a USB cable, start an AA session with phone 3	ER_1: A2DP media playback stops, Bluetooth connection with phones 1, 2 ends. ER_2: Phone 3 is paired and connected with MIB (as HFP, PBAP, MAP) without any further user interaction ER_3: AA session starts	
AndroidAuto-TC-73772	During an active Android Auto session, incoming Bluetooth connection requests to the system from devices other than the active AA device shall be blocked.	P_1: AA device (phone 1) is connected with MIB, AA session is active P_2: Phone 2 is not paired with MIB	A_1: Using phone 2, try to pair it with MIB	ER_1: MIB ignores the incoming pairing request	MIB-2_RQ_PJM_410
AndroidAuto-TC-73773	During an active Android Auto session, incoming Bluetooth connection requests to the system from devices other than the active AA device shall be blocked.	P_1: AA device (phone 1) is connected with MIB, AA session is active P_2: Phone 2 is paired with MIB, but is currently not connected	A_1: Using phone 2, try to connect it with MIB as HFP device	ER_1: MIB ignores the incoming HFP connection request	MIB-2_RQ_PJM_410
AndroidAuto-TC-73774	During an active Android Auto session, incoming Bluetooth connection requests to the system from devices other than the active AA device shall be blocked.	P_1: AA device (phone 1) is connected with MIB, AA session is active P_2: Phone 2 is paired with MIB, but is currently not connected	A_1: Using phone 2, try to connect it with MIB as A2DP device	ER_1: MIB ignores the incoming A2DP connection request	MIB-2_RQ_PJM_410
AndroidAuto-TC-73775	During an active Android Auto session, the system shall not try to reconnect to other Bluetooth devices.	P_1: Phone 1 is connected with MIB as RSAP phone (allow PBAP, MAP) P_2: Phone 1 gets out of BT range, MIB is trying to reconnect it P_3: Meanwhile, phone 2 is connected to the MIB over USB as an AA device P_4: AA session is active	A_1: Phone 1 is in BT range again	ER_1: MIB does not reconnect Phone 1 as RSAP, it ignores potential incoming RSAP reconnection requests	MIB-2_RQ_PJM_909
AndroidAuto-TC-73776	During an active Android Auto session, the system shall not try to reconnect to other Bluetooth devices.	P_1: Phone 1 is connected with MIB as HFP device (allow PBAP, MAP) P_2: Phone 1 gets out of BT range, MIB is trying to reconnect it P_3: Meanwhile, phone 2 is connected to the MIB over USB as an AA device P_4: AA session is active	A_1: Phone 1 is in BT range again	ER_1: MIB does not reconnect Phone 1 as HFP, it ignores potential incoming HFP reconnection requests	MIB-2_RQ_PJM_909
AndroidAuto-TC-73777	During an active Android Auto session, the system shall not try to reconnect to other Bluetooth devices.	P_1: Phone 1 is connected with MIB as A2DP device (allow PBAP, MAP) P_2: Phone 1 gets out of BT range, MIB is trying to reconnect it P_3: Meanwhile, phone 2 is connected to the MIB over USB as an AA device P_4: AA session is active	A_1: Phone 1 is in BT range again	ER_1: MIB does not reconnect Phone 1 as A2DP, it ignores potential incoming A2DP reconnection requests	MIB-2_RQ_PJM_909
AndroidAuto-TC-73778	During an active AA session, a user initiated Bluetooth connection to another device shall be blocked and the user shall be informed.	P_1: Phone 1 (with a SIM card inside) is paired with MIB, but is currently not connected P_2: Phone 2 is connected with MIB using a USB cable P_3: AA session with phone 2 is active	A_1: On the MIB, try to establish an RSAP connection to phone 1	ER_1: MIB does not establish an RSAP connection to phone 1 ER_2: MIB informs the user that it is not possible to connect another BT device during an AA session	MIB-2_RQ_PJM_411
AndroidAuto-TC-73779	During an active AA session, a user initiated Bluetooth connection to another device shall be blocked and the user shall be informed.	P_1: Phone 1 is paired with MIB, but is currently not connected P_2: Phone 2 is connected with MIB using a USB cable P_3: AA session with phone 2 is active	A_1: On the MIB, try to establish a HFP connection to phone 1	ER_1: MIB does not establish a HFP connection to phone 1 ER_2: MIB informs the user that it is not possible to connect another BT device during an AA session	MIB-2_RQ_PJM_411
AndroidAuto-TC-73780	During an active AA session, a user initiated Bluetooth connection to another device shall be blocked and the user shall be informed.	P_1: Phone 1 is paired with MIB, but is currently not connected P_2: Phone 2 is connected with MIB using a USB cable P_3: AA session with phone 2 is active	A_1: On the MIB, try to establish an A2DP connection to phone 1	ER_1: MIB does not establish an A2DP connection to phone 1 ER_2: MIB informs the user that it is not possible to connect another BT device during an AA session	MIB-2_RQ_PJM_411

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73781	During an active AA session with an HFP connection to the AA device, the system shall also ensure connection of PBAP and MAP profiles to the same device.	P_1: Phone 1 is connected with MIB as primary HFP device, with PBAP, MAP allowed P_2: Contacts from phone 1 are imported to MIB P_3: Phone 2 is connected with MIB using a USB cable P_4: AA session with phone 2 starts	A_1: In Phone context, browse through the contacts	ER_1: Contacts are provided by phone 2 (AA session), rather than phone 1	MIB-2_RQ_PJM_901
AndroidAuto-TC-73782	During an active AA session with an HFP connection to the AA device, the system shall also ensure connection of PBAP and MAP profiles to the same device.	P_1: Phone 1 is connected with MIB as primary HFP device, with PBAP, MAP allowed P_2: Contacts from phone 1 are imported to MIB P_3: Phone 2 is connected with MIB using a USB cable P_4: AA session with phone 2 starts	A_1: In Phone context, browse through the messages	ER_1: Messages are provided by phone 2 (AA session), rather than phone 1	MIB-2_RQ_PJM_901
AndroidAuto-TC-73783	The system shall allow the user to switch off Bluetooth even during an active AA session.	P_1: Phone 1 is connected with MIB using a USB cable P_2: AA session with phone 1 is active P_3: AA media playback is active	A_1: In MIB's phone setup, terminate the HFP connection to phone 1	ER_1: HFP connection to phone 1 is terminated ER_2: AA media playback continues seamlessly	MIB-2_RQ_PJM_902
AndroidAuto-TC-73784	The system shall allow the user to switch off Bluetooth even during an active AA session.	P_1: Phone 1 is connected with MIB using a USB cable P_2: AA session with phone 1 is active P_3: AA media playback is active	A_1: In MIB's phone setup, unpair phone 1 (delete it)	ER_1: Phone 1 is unpaired, HFP connection to phone 1 is terminated ER_2: AA media playback continues seamlessly	MIB-2_RQ_PJM_902
AndroidAuto-TC-73785	The system shall allow the user to switch off Bluetooth even during an active AA session.	P_1: Phone 1 is connected with MIB using a USB cable P_2: AA session with phone 1 is active P_3: AA media playback is active	A_1: In MIB's phone setup, deactivate (uncheck) Bluetooth	ER_1: Bluetooth is disabled ER_2: AA media playback continues seamlessly	MIB-2_RQ_PJM_902
AndroidAuto-TC-73786	The system shall allow the user to switch off Bluetooth even during an active AA session.	P_1: Phone 1 is connected with MIB using a USB cable P_2: AA session with phone 1 is active P_3: AA phonecall is ongoing	A_1: In MIB's phone setup, disable Handsfree for Phone 1	ER_1: Phonecall is only audible on the phone itself	MIB-2_RQ_PJM_902
AndroidAuto-TC-73787	The system shall allow the user to switch off Bluetooth even during an active AA session.	P_1: Phone 1 is connected with MIB using a USB cable P_2: AA session with phone 1 is active P_3: AA phonecall is ongoing	A_1: In MIB's phone setup, unpair phone 1 (delete it)	ER_1: Phone 1 is unpaired, HFP connection to phone 1 is terminated ER_2: Phonecall is only audible on the phone itself	MIB-2_RQ_PJM_902
AndroidAuto-TC-73788	The system shall allow the user to switch off Bluetooth even during an active AA session.	P_1: Phone 1 is connected with MIB using a USB cable P_2: AA session with phone 1 is active P_3: AA phonecall is ongoing	A_1: In MIB's phone setup, deactivate (uncheck) Bluetooth	ER_1: Bluetooth is disabled ER_2: Phonecall is only audible on the phone itself	MIB-2_RQ_PJM_902
AndroidAuto-TC-74124	AA session starts without establishing a HFP connection	P_1: Bluetooth is deactivated in MIB's phone setup P_2: Phone 1 is connected with the MIB using an USB cable	A_1: Check whether AA session starts without establishing a HFP connection to the AA device	ER_1: AA session starts without establishing a HFP connection to the AA device	Instructions from Islam Moursy
AndroidAuto-TC-74125	HFP connection to the AA device can be established manually	P_1: Bluetooth is deactivated in MIB's phone setup P_2: Phone 1 is connected with the MIB using an USB cable P_3: AA session starts without HFP connection to the AA device	A_1: Turn on Bluetooth in MIB's Phone Setup A_2: Establish a HFP connection to the AA device manually in MIB's Phone setup menu while the AA session is active	ER_1: HFP connection to the AA device can be established manually during an AA session	Instructions from Islam Moursy
AndroidAuto-TC-73789	In case Bluetooth is deactivated in the system, it shall not be activated automatically upon initiation of an AA session. (Note: This is an intentional contradiction to [4])	P_1: Bluetooth is deactivated in phone setup P_2: Phone 1 is connected with the MIB using an USB cable	A_1: Check whether a popup appears asking the user whether to turn on BT and establish the AA session or leave BT off and not establish the AA session	ER_1: Such popup appears	MIB-2_RQ_PJM_903
AndroidAuto-TC-74116	In case Bluetooth is deactivated in the system, it shall not be activated automatically upon initiation of an AA session. (Note: This is an intentional contradiction to [4])	P_1: Bluetooth is deactivated in phone setup P_2: Phone 1 is connected with the MIB using an USB cable P_3: Popup appears	A_1: Choose to leave Bluetooth off and not start AA session	ER_1: Bluetooth is still disabled in MIB's phone setup ER_2: AA session is not established	MIB-2_RQ_PJM_903
AndroidAuto-TC-74115	If Bluetooth is deactivated for any reason, upon initialization of an AAP session the HMI shall ask the user in a Pop-Up if Bluetooth shall be activated (HMI) or cancel the AAP- session	P_1: Bluetooth is deactivated in phone setup P_2: Phone 1 is connected with the MIB using an USB cable P_3: Popup appears	A_1: Choose to turn Bluetooth on and establish an AA session	ER_1: Bluetooth is turned on automatically ER_2: AA session is established automatically without any further user interaction	
AndroidAuto-TC-73790	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected as A2DP device P_4: Phone 4 (AA device) is connected with MIB using a USB cable P_5: AA session with phone 4 starts, BT connections are interrupted by MIB	A_1: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: AA session ends ER_2: Phone 4 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 2 is re-established ER_4: A2DP connection to phone 3 is re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-73791	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected as A2DP device P_4: Phone 4 (AA device) is connected with MIB using a USB cable P_5: AA session with phone 4 starts, BT connections are interrupted by MIB	A_1: End the AA session by disconnecting the USB cable	ER_1: AA session ends ER_2: Phone 4 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 2 is re-established ER_4: A2DP connection to phone 2 (sic!) may be established (depends on the phone)	MIB-2_RQ_PJM_456
AndroidAuto-TC-74127	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is re-established ER_4: A2DP connection to phone 1 may be re-established (depends on the phone)	MIB-2_RQ_PJM_456
AndroidAuto-TC-74145	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is *not* re-established ER_4: A2DP connection to phone 1 is *not* re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-74128	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session by disconnecting the USB cable	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is re-established ER_4: A2DP connection to phone 1 may be re-established (depends on the phone)	MIB-2_RQ_PJM_456
AndroidAuto-TC-74147	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session by disconnecting the USB cable	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is *not* re-established ER_4: A2DP connection to phone 1 is *not* re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-74129	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and secondary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as primary HFP device (PBAP, MAP allowed) P_3: Phone 3 (AA device) is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is re-established ER_4: A2DP connection to phone 1 is re-established	MIB-2_RQ_PJM_456

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74144	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and secondary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as primary HFP device (PBAP, MAP allowed) P_3: Phone 3 (AA device) is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is *not* re-established ER_4: A2DP connection to phone 1 is *not* re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-74130	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and secondary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as primary HFP device (PBAP, MAP allowed) P_3: Phone 3 (AA device) is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session by disconnecting the USB cable	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 2 is re-established ER_4: A2DP connection to phone 2 is re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-74143	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and secondary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as primary HFP device (PBAP, MAP allowed) P_3: Phone 3 (AA device) is connected with MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted by MIB	A_1: End the AA session by disconnecting the USB cable	ER_1: AA session ends ER_2: Phone 3 (AA device) is still connected as primary HFP device ER_3: Secondary HFP connection to phone 1 is *not* re-established ER_4: A2DP connection to phone 1 is *not* re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-73793	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected as A2DP device P_4: Phone 4 is connected with MIB using a USB cable and the regular (non-CarPlay) USB port P_5: USB port for CarPlay devices is still free P_6: CarPlay device (phone 5) is paired with the MIB, but not yet otherwise connected P_7: AA session with phone 4 starts, BT connections are interrupted by MIB	A_1: End the AA session by connecting a CarPlay device to the CarPlay-capable USB port and starting the CarPlay session.	ER_1: AA session with phone 4 ends ER_2: All bluetooth connections with the AA device are dropped ER_3: CarPlay session with phone 5 starts ER_4: BT connections to phones 1, 2, and 3 are not re-established.	MIB-2_RQ_PJM_456
AndroidAuto-TC-74131	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as A2DP and as a secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected with MIB using a USB cable and the regular (non-CarPlay) USB port P_5: USB port for CarPlay devices is still free P_6: CarPlay device (phone 4) is paired with the MIB, but not yet otherwise connected P_7: AA session with phone 3 starts, BT connections are interrupted by MIB, HFP connection with phone 4 is established by AA	A_1: End the AA session by connecting a CarPlay device to the CarPlay-capable USB port and starting the CarPlay session.	ER_1: AA session with phone 4 ends ER_2: All bluetooth connections are dropped ER_3: CarPlay session with phone 5 starts	MIB-2_RQ_PJM_456
AndroidAuto-TC-73794	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 is connected as A2DP device P_4: Phone 4 (AA device) is connected with MIB using a USB cable P_5: AA session with phone 4 starts, BT connections are interrupted P_6: Phone 5 (another AA device) is not yet paired with the MIB	A_1: End the AA session by connecting another AA device (phone 5) to the other USB port and starting the AA session with phone 5	ER_1: AA session with phone 4 ends ER_2: All bluetooth connections with phone 4 are dropped ER_3: AA session with phone 5 starts (establishing HFP, PBAP, MAP connections) ER_4: BT connections to phones 1, 2, and 3 are not re-established ER_5: AA session with phone 5 starts	MIB-2_RQ_PJM_456
AndroidAuto-TC-74132	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session, the system shall reconnect other Bluetooth devices and/or profiles like on system startup.	P_1: Phone 1 is connected as A2DP and primary HFP device (PBAP, MAP allowed) P_2: Phone 2 is connected as secondary HFP device (PBAP, MAP allowed) P_3: Phone 3 (AA device) is connected with the MIB using a USB cable P_4: AA session with phone 3 starts, BT connections are interrupted P_6: Phone 4 (another AA device) is not yet paired with the MIB	A_1: End the AA session by connecting another AA device (phone 4) to the other USB port and starting the AA session with phone 4	ER_1: AA session with phone 3 ends ER_2: All bluetooth connections with phone 3 are dropped ER_3: AA session with phone 4 starts (establishing HFP, PBAP, optionally MAP connections) ER_4: BT connections to phones 1 and 2 are not re-established	MIB-2_RQ_PJM_456
AndroidAuto-TC-73795	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device", the system shall re-establish an rSAP connection to this device.	P_1: Phone 1 is connected as RSAP device (PBAP, MAP allowed) P_2: Phone 2 is connected as A2DP device P_3: Phone 1 is connected with MIB using a USB cable P_4: AA session with Phone 1 starts P_5: BT connections to other devices are interrupted by MIB	A_1: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: RSAP (and PBAP, MAP) connection to phone 1 is re-established ER_2: A2DP connection to phone 2 is re-established	MIB-2_RQ_PJM_911
AndroidAuto-TC-73796	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device", the system shall re-establish an rSAP connection to this device.	P_1: Phone 1 is connected as RSAP device (PBAP, MAP allowed) P_2: Phone 2 is connected as A2DP device P_3: Phone 1 is connected with MIB using a USB cable P_4: AA session with Phone 1 starts P_5: BT connections to other devices are interrupted by MIB	A_1: End the AA session by disconnecting the USB cable	ER_1: RSAP (and PBAP, MAP) connection to phone 1 is re-established ER_2: A2DP connection to phone 2 is re-established	MIB-2_RQ_PJM_911
AndroidAuto-TC-73797	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device", the system shall re-establish an rSAP connection to this device.	P_1: Phone 1 is connected as RSAP device (PBAP, MAP allowed) P_2: Phone 2 is connected as A2DP device P_3: Phone 1 is connected with MIB using a USB cable and the non-CarPlay USB port P_4: CarPlay-capable USB port is still free P_5: Phone 3 (CarPlay device) is paired with the MIB but not yet otherwise connected P_6: AA session with Phone 1 starts P_7: BT connections to other devices are interrupted by MIB	A_1: End the AA session by starting a CarPlay session with phone 4	ER_1: RSAP (and PBAP, MAP) connection to phone 1 is not re-established ER_2: A2DP connection to phone 2 is not re-established ER_3: CarPlay session with phone 3 starts	MIB-2_RQ_PJM_911
AndroidAuto-TC-73798	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device", the system shall re-establish an rSAP connection to this device.	P_1: Phone 1 is connected as RSAP device (PBAP, MAP allowed) P_2: Phone 2 is connected as A2DP device P_3: Phone 1 is connected with MIB using a USB cable P_4: Phone 3 (another AA device) is not yet paired with the MIB P_5: AA session with Phone 1 starts P_6: BT connections to other devices are interrupted by MIB	A_1: End the AA session by starting a an AA session with phone 3	ER_1: RSAP (and PBAP, MAP) connection to phone 1 is not re-established ER_2: A2DP connection to phone 2 is not re-established ER_3: AA session with phone 3 starts ER_4: HFP connection to phoen 3 is established	MIB-2_RQ_PJM_911
AndroidAuto-TC-73799	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device" and there is a non-idle call on the Android Auto device, the upgrade to rSAP shall be delayed until the call state is idle again.	P_1: Phone 1 is connected with the MIB as RSAP device P_2: Connect phone 1 with MIB with a USB cable P_3: Start an AA session with phone 1 P_4: Initiate a phonecall with phone 1 in using AA	A_1: End the AA session during the phonecall	ER_1: AA session ends ER_2: Phonecall proceeds seamlessly because the HFP connection with phone 1 (established by AA) is kept intact	MIB-2_RQ_PJM_912

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73801	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device" and there is a non-idle call on the Android Auto device, the upgrade to rSAP shall be delayed until the call state is idle again.	P_1: Phone 1 is connected with the MIB as RSAP device P_2: Connect phone 1 with MIB with a USB cable P_3: Start an AA session with phone 1 P_4: Initiate a phonecall with phone 1 in using AA P_5: End the AA session during the phonecall P_6: AA session ends, phonecall continues only on phone 1 itself P_7: MIB does not reconnect phone 1 as RSAP device as long as the phonecall is ongoing (non-idle)	A_1: End the phonecall	ER_1: MIB reconnects phone 1 as RSAP device.	MIB-2_RQ_PJM_912
AndroidAuto-TC-73802	If the Android Auto session is ended and the reason for ending the session is not the start of a Carplay session or another Android Auto session and the Android Auto device is stored as an "rSAP-preferred device" and there is a non-idle call on the Android Auto device, the upgrade to rSAP shall be delayed until the call state is idle again.	P_1: Phone 1 is connected with the MIB as RSAP device P_2: Connect phone 1 with MIB with a USB cable P_3: Start an AA session with phone 1 P_4: Initiate a phonecall with phone 1 in using AA P_5: End the AA session during the phonecall P_6: AA session ends, phonecall continues only on phone 1 itself P_7: MIB does not reconnect phone 1 as RSAP device as long as the phonecall is ongoing (non-idle)	A_1: Pause the phonecall (keep it idling)	ER_1: MIB reconnects phone 1 as RSAP device.	MIB-2_RQ_PJM_912
AndroidAuto-TC-73803	If the Android Auto session is ended, the system shall not actively disconnect the Bluetooth connection of the Android Auto device.	P_1: Phone 1 is paired with MIB but not otherwise connected P_2: Connect phone 1 with MIB using a USB cable P_3: Start an AA session with phone 1	A_1: End the AA session with phone 1 using MIB's HMI (i.e. do not disconnect the USB cable)	ER_1: AA session ends ER_2: HFP, PBAP, and MAP connection with phone 1 (established by AA) is kept intact	MIB-2_RQ_PJM_910
AndroidAuto-TC-73804	If the Android Auto session is ended, the system shall not actively disconnect the Bluetooth connection of the Android Auto device.	P_1: Phone 1 is paired with MIB but not otherwise connected P_2: Connect phone 1 with MIB using a USB cable P_3: Start an AA session with phone 1	A_1: End the AA session with phone 1 by disconnecting the USB cable	ER_1: AA session ends ER_2: HFP, PBAP, and MAP connection with phone 1 (established by AA) is kept intact	MIB-2_RQ_PJM_910
AndroidAuto-TC-73805	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: AA media playback is active P_3: MIB is in Navigation context P_4: Mini media player in the button bar is opened	A_1: Check whether Android Auto is written in the mini media player	ER_1: Android Auto is written in the mini media player	MIB-2_RQ_PJM_416
AndroidAuto-TC-73806	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: AA media playback is active P_3: MIB is in Car context P_4: Mini media player in the button bar is opened	A_1: Check whether Android Auto is written in the mini media player	ER_1: Android Auto is written in the mini media player	MIB-2_RQ_PJM_416
AndroidAuto-TC-73807	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: Source for media playback is other than AA (e.g. CD, SD, Radio) P_3: MIB is in Navigation context P_4: Mini media player in the button bar is opened	A_1: Check whether Android Auto is written in the mini media player	ER_1: Android Auto is not written in the mini media player	MIB-2_RQ_PJM_416
AndroidAuto-TC-73808	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: Source for media playback is other than AA (e.g. CD, SD, Radio) P_3: MIB is in Car context P_4: Mini media player in the button bar is opened	A_1: Check whether Android Auto is written in the mini media player	ER_1: Android Auto is not written in the mini media player	MIB-2_RQ_PJM_416
AndroidAuto-TC-73809	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: AA media playback is active P_3: MIB is in Navigation context P_4: Mini media player in the button bar is opened	A_1: Check whether there is any metadata about the currently played track visible in the mini media player	ER_1: There is no metadata about the currently played track visible in the mini media player	MIB-2_RQ_PJM_417
AndroidAuto-TC-73810	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: AA media playback is active P_3: MIB is in Car context P_4: Mini media player in the button bar is opened	A_1: Check whether there is any metadata about the currently played track visible in the mini media player	ER_1: There is no metadata about the currently played track visible in the mini media player	MIB-2_RQ_PJM_417
AndroidAuto-TC-73811	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: AA media playback is active P_3: MIB is in Navigation context P_4: Mini media player in the button bar is opened	A_1: Check whether there are any buttons for next or previous track	ER_1: There are no buttons for the next or previous track in the mini media player	MIB-2_RQ_PJM_418
AndroidAuto-TC-73812	In the mini MediaPlayer in native HMI the string "Android Auto" shall be visible when Android Auto is the active audio source.	P_1: AA session is active P_2: AA media playback is active P_3: MIB is in Car context P_4: Mini media player in the button bar is opened	A_1: Check whether there are any buttons for next or previous track	ER_1: There are no buttons for the next or previous track in the mini media player	MIB-2_RQ_PJM_418
AndroidAuto-TC-73813	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.	P_1: AA session is active P_2: AA context is shown P_3: Change the current driving mode (Sport, Eco, Comfort, etc.) using the driving mode hardkey (popup appears)	A_1a: If popup is not over fullscreen, try to perform some meaningful touches on the AA screen in the background while the MIB popup is displayed A_1b: If popup is over fullscreen, wait till popup disappeared	ER_1a: The touch events in the AA context are ignored as long as the MIB popup is displayed ER_1b: AA context is shown back in the same context	MIB-2_RQ_PJM_422
AndroidAuto-TC-73817	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.	P_1: AA session is active P_2: AA context is shown P_3: Change the current driving mode (Sport, Eco, Comfort, etc.) using the driving mode hardkey (popup appears)	A_1: Try to perform some meaningful touches on the AA screen in the background while the MIB popup is displayed	ER_1: The touch events in the AA context are ignored as long as the MIB popup is displayed	MIB-2_RQ_PJM_907
AndroidAuto-TC-73814	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.	P_1: AA session is active P_2: AA context is shown P_3: Change the current driving mode (Sport, Eco, Comfort, etc.) using the driving mode hardkey (popup appears)	A_1: Wait until the driving mode popup has disappeared, check the AA context	ER_1: Current AA screen is shown at the normal brightness level	MIB-2_RQ_PJM_422
AndroidAuto-TC-73815	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.	P_1: AA session is active P_2: Go to MIB's Media context, start importing media files from a SD card, USB or CD P_3: Go to AA context while the media import continues in the background P_4: Eject the media from which the media files are being imported (popup appears)	A_1: Check whether the popup's background is the current AA screen, just dimmed	ER_1: The popup's background is the current AA screen, just dimmed	MIB-2_RQ_PJM_422
AndroidAuto-TC-73818	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.	P_1: AA session is active P_2: Go to MIB's Media context, start importing media files from a SD card, USB or CD P_3: Go to AA context while the media import continues in the background P_4: Eject the media from which the media files are being imported (popup appears)	A_1: Try to perform some meaningful touches on the AA screen in the background while the MIB popup is displayed	ER_1: The touch events in the AA context are ignored as long as the MIB popup is displayed	MIB-2_RQ_PJM_907
AndroidAuto-TC-73816	Popups of the native HMI shall be visible even if Android Auto is the currently active HMI context. The background shall be the same Android Auto context but dimmed.	P_1: AA session is active P_2: Go to MIB's Media context, start importing media files from a SD card, USB or CD P_3: Go to AA context while the media import continues in the background P_4: Eject the media from which the media files are being imported (popup appears) P_5: Confirm the popup about the interrupted media import	A_1: Check the AA context	ER_1: Current AA screen is shown at the normal brightness level	MIB-2_RQ_PJM_422
AndroidAuto-TC-73819	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: AA session is active P_2: MIB's media source is playing (e.g. Radio, SD card, CD) P_3: AA context is shown	A_1: Adjust the volume of MIB's media source up or down using the rotary button	ER_1: Media volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73824	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: AA session is active P_2: MIB's media source is playing (e.g. Radio, SD card, CD) P_3: AA context is shown P_4: Adjust the volume of MIB's media source up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73823	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: AA session is active P_2: AA media source is playing P_3: AA context is shown	A_1: Adjust the volume of AA media source up or down using the rotary button	ER_1: Media volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73825	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: AA session is active P_2: AA media source is playing P_3: AA context is shown P_4: Adjust the volume of AA media source up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908
AndroidAuto-TC-73820	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: AA session is active P_2: AA context is shown P_3: MIB's navigation announcement is played back	A_1: Adjust the volume of MIB's navigation announcement up or down using the rotary button	ER_1: Navigation volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73826	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: AA session is active P_2: AA context is shown P_3: MIB's navigation announcement is played back P_4: Adjust the volume of MIB's navigation announcement up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908
AndroidAuto-TC-73821	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: AA session is active P_2: AA context is shown P_3: AA's navigation announcement is played back	A_1: Adjust the volume of AA's the navigation announcement up or down using the rotary button	ER_1: Navigation volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73827	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: AA session is active P_2: AA context is shown P_3: AA's navigation announcement is played back P_4: Adjust the volume of AA's the navigation announcement up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908
AndroidAuto-TC-73822	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: AA session is active P_2: AA context is shown P_3: Start a phonecall in AA	A_1: Adjust the volume of the phonecall up or down using the rotary button	ER_1: Phone volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73828	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: AA session is active P_2: AA context is shown P_3: Start a phonecall in AA P_4: Adjust the volume of the phonecall up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908
AndroidAuto-TC-73829	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: AA session is active P_2: AA context is shown P_3: Start SDS	A_1: Adjust the volume of the SDS up or down using the rotary button	ER_1: SDS volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73831	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: AA session is active P_2: AA context is shown P_3: Start SDS P_4: Adjust the volume of the SDS up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908
AndroidAuto-TC-73830	On volume change: native HMI volume bar shall be visible as an overlay, without dimming background, even if Android Auto is the current native HMI context.	P_1: FM Tuner is tuned to a station broadcasting traffic announcements P_2: Traffic Programme is turned on in Radio setup P_3: AA session is active P_4: AA context is shown P_5: Traffic announcement is audible	A_1: Adjust the volume of the traffic announcement up or down using the rotary button	ER_1: Traffic announcement volume change overlay appears briefly, current AA screen is shown in the background at the normal brightness level	MIB-2_RQ_PJM_426
AndroidAuto-TC-73832	If the volume change pop-up is displayed while Android Auto is the active ABT HMI context, touch events shall not be forwarded to the Android Auto device.	P_1: FM Tuner is tuned to a station broadcasting traffic announcements P_2: Traffic Programme is turned on in Radio setup P_3: AA session is active P_4: AA context is shown P_5: Traffic announcement is audible P_6: Adjust the volume of the traffic announcement up or down using the rotary button	A_1: Try to perform some meaningful touches on the AA screen in the background while the volume adjustment popup is displayed	ER_1: The touch events in the AA context are ignored as long as the volume adjustment popup is displayed	MIB-2_RQ_PJM_908
AndroidAuto-TC-73833	Long press > 600ms on any of the car's PTT buttons shall start the Google Voice unless there is a non-idle phonecall in the system.	P_1: AA session is active	A_1: Start Google Voice by long-pressing the hardkey Voice on the ABT	ER_1: Google Voice starts	MIB-2_RQ_PJM_432
AndroidAuto-TC-73836	Long press > 600ms on any of the car's PTT buttons shall start the Google Voice unless there is a non-idle phonecall in the system.	P_1: AA session is active	A_1: Start Google Voice by long-pressing the PTT key on the MFL	ER_1: Google Voice starts	MIB-2_RQ_PJM_432
AndroidAuto-TC-73838	Google Voice softkey	P_1: AA session is active P_2: AA context is active	A_1: Start Google Voice by pressing the Google Voice softkey	ER_1: Google Voice starts	
AndroidAuto-TC-73839	While the Google Voice session is active, all PTT button events (press and release) shall be sent to the Android Auto device (raw events without interpretation of the button events). Note: They shall not be interpreted by the internal SDS.	P_1: AA session is active P_2: Google Voice session is active	A_1: Press the hardkey Voice on the ABT	ER_1: MIB's SDS does not start	MIB-2_RQ_PJM_436
AndroidAuto-TC-73840	While the Google Voice session is active, all PTT button events (press and release) shall be sent to the Android Auto device (raw events without interpretation of the button events). Note: They shall not be interpreted by the internal SDS.	P_1: AA session is active P_2: Google Voice session is active	A_1: Press the PTT key on the MFL	ER_1: MIB's SDS does not start	MIB-2_RQ_PJM_436
AndroidAuto-TC-73841	A "Voice & Data" connection using a SIM-card and the internal phone module shall fall back to "Data only" upon establishment of an Android Auto session and the user shall be informed about the mode change.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Phone 1 is an AA device without a SIM card P_3: Connect phone 1 with MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: SIM card falls back to data-only mode. ER_2: Phone context shows network search (no SIM in phone 1) ER_3: Data transfer (e.g. Google Earth or Car-Net traffic) is still possible (transferred data counter is still advancing)	MIB-2_RQ_PJM_452
AndroidAuto-TC-73842	A "Voice & Data" connection using a SIM-card and the internal phone module shall fall back to "Data only" upon establishment of an Android Auto session and the user shall be informed about the mode change.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Phone 1 is an AA device without a SIM card P_3: Connect phone 1 with MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: SIM card falls back to data-only mode. ER_2: User is informed about the data-only mode of the SIM card	MIB-2_RQ_PJM_452
AndroidAuto-TC-73843	As long as an active Android Auto session, it shall not be possible to change the SIM mode to "Voice & Data".	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Start an AA session (this changes SIM mode to data-only)	A_1: Try to change the SIM mode to voice and data manually	ER_1: It is not possible to change the SIM mode to voice and data during an AA session	MIB-2_RQ_PJM_455
AndroidAuto-TC-73844	If the Android Auto session is ended the SIM mode remains in "Data only". It can be changed manually by the user.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Start an AA session (this changes SIM mode to data-only) P_4: End the AA session using MIB's HMI (i.e. do not disconnect the USB cable)	A_1: Check the mode of the SIM card	ER_1: SIM card is in data-only mode	MIB-2_RQ_PJM_457
AndroidAuto-TC-73845	If the Android Auto session is ended the SIM mode remains in "Data only". It can be changed manually by the user.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Start an AA session (this changes SIM mode to data-only) P_4: End the AA session by disconnecting the USB cable	A_1: Check the mode of the SIM card	ER_1: SIM card is in data-only mode	MIB-2_RQ_PJM_457
AndroidAuto-TC-73846	If the Android Auto session is ended the SIM mode remains in "Data only". It can be changed manually by the user.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Start an AA session (this changes SIM mode to data-only) P_4: End the AA session by starting another AA session with another AA device	A_1: Check the mode of the SIM card	ER_1: SIM card is in data-only mode	MIB-2_RQ_PJM_457

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73847	If the Android Auto session is ended the SIM mode remains in "Data only". It can be changed manually by the user.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Start an AA session (this changes SIM mode to data-only) P_4: End the AA session by starting another AA session with another AA device	A_1: Try to change the SIM mode to voice and data manually	ER_1: It is not possible to change the SIM mode to voice and data during an AA session	MIB-2_RQ_PJM_457
AndroidAuto-TC-74121	If the Android Auto session is ended the SIM mode remains in "Data only". It can be changed manually by the user.	P_1: SIM card is inserted in MIB P_2: SIM card is in voice and data mode P_3: Start an AA session (this changes SIM mode to data-only) P_4: End the AA session	A_1: Try to change the SIM mode to voice and data manually	ER_1: It is possible to change the SIM mode	MIB-2_RQ_PJM_457
AndroidAuto-TC-74122	If a SIM-card is (being) inserted to the system while a CP or AA connection is (being) established the SIM-mode shall be switched to "Data Only" (HMI), the user shall be informed about this in a Pop-Up.	P_1: SIM card is inserted in MIB P_2: SIM mode is voice and data P_3: Eject SIM P_4: Start an AA session with phone 1	A_1: Insert SIM to MIB during an active AA session with phone 1	ER_1: MIB informs user that the SIM mode is switched to data only ER_2: SIM card is used in data only mode	
AndroidAuto-TC-74123	If a SIM-card is (being) inserted to the system while a CP or AA connection is (being) established the SIM-mode shall be switched to "Data Only" (HMI), the user shall be informed about this in a Pop-Up.	P_1: SIM card is inserted in MIB P_2: SIM mode is data only P_3: Eject SIM P_4: Start an AA session with phone 1	A_1: Insert SIM to MIB during an active AA session with phone 1	ER_1: SIM card is used in data only mode ER_2: No popup about changing the SIM mode appears because SIM mode has not beed changed	
AndroidAuto-TC-73852	Starting route guidance via native HMI while having active route guidance in Android Auto shall cause the Android Auto route guidance to stop and vice versa.	P_1: AA session is active P_2: MIB route guidance is active	A_1: Start a route guidance using AA	ER_1: MIB route guidance stops ER_2: AA route guidance starts	MIB-2_RQ_PJM_473
AndroidAuto-TC-73853	Starting route guidance via native HMI while having active route guidance in Android Auto shall cause the Android Auto route guidance to stop and vice versa.	P_1: AA session is active P_2: AA route guidance is active	A_1: Start a route guidance using MIB's Nav context	ER_1: AA route guidance stops ER_2: MIB route guidance starts	MIB-2_RQ_PJM_473
AndroidAuto-TC-73854	Starting route guidance via native HMI while having active route guidance in Android Auto shall cause the Android Auto route guidance to stop and vice versa.	P_1: Phone 1 has not yet been connected to MIB (no AA session yet) (reset MIB to factory settings, if necessary) P_2: Start a route guidance on phone 1 without connecting it to the MIB P_3: Start a route guidance on the MIB P_4: Connect phone 1 to the MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB route guidance stops ER_3: AA route guidance continues	MIB-2_RQ_PJM_474
AndroidAuto-TC-73855	Starting route guidance via native HMI while having active route guidance in Android Auto shall cause the Android Auto route guidance to stop and vice versa.	P_1: Phone 1 has already had an AA session with MIB before P_2: Start a route guidance on phone 1 without connecting it to the MIB P_3: Start a route guidance on the MIB P_4: Connect phone 1 to the MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB route guidance stops ER_3: AA route guidance continues	MIB-2_RQ_PJM_474
AndroidAuto-TC-73856	An Android Auto device with an ongoing Android Auto session shall not be selectable as Media Device in native HMI Media context	P_1: Phone 1 is connected with the MIB using a USB cable P_2: AA session with phone 1 is active P_3: MIB is in Media context	A_1: Try to select phone 1 as media source in the media source pushup menu	ER_1: Phone 1 cannot be selected as a media source	MIB-2_RQ_PJM_483
AndroidAuto-TC-73857	An Android Auto device with an ongoing Android Auto session shall not be selectable as Media Device in native HMI Media context	P_1: Phone 1 is connected with the MIB using a USB cable P_2: AA session with phone 1 is active P_3: MIB is in Media context P_4: Media source list is displayed	A_1: Try to select phone 1 as media source in the media source list	ER_1: Phone 1 cannot be selected as a media source in the media source list	MIB-2_RQ_PJM_483
AndroidAuto-TC-73858	An Android Auto device with an ongoing Android Auto session shall not be selectable as Media Device in native HMI Media context	P_1: Phone 1 is connected with the MIB using a USB cable P_2: AA session with phone 1 is active P_3: Instrument cluster is in Media (Audio) context	A_1: Try to select phone 1 as media source using the MFL keys	ER_1: Phone 1 cannot be selected as a media source using the MFL keys	MIB-2_RQ_PJM_483
AndroidAuto-TC-73859	While in Android Auto context, the Rearview Camera pop-up shall always be visible when activated	P_1: Phone 1 is connected with the MIB using a USB cable P_2: AA session with phone 1 is active P_3: MIB is in AA context	A_1: An obstacle in the car's vicinity is detected	ER_1: OPS popup window appears showing the obstacle warning. ER_2: Dimmed AA context is visible around the OPS popup window	MIB-2_RQ_PJM_487
AndroidAuto-TC-73860	Connection via a Standard USB 2.0 connection shall be possible	P_1: Phone 1 is connected with the MIB using a standard USB 2.0 cable	A_1: Start an AA session with phone 1	ER_1: AA session starts	MIB-2_RQ_PJM_506
AndroidAuto-TC-73861	The HMI main screen shall not switch to Android Auto context automatically upon re-connection of a Android Auto device, unless the device explicitly requests the screen resource.	P_1: AA session with phone 1 is active P_2: MIB is in AA context P_3: End the AA session by disconnecting the USB cable from phone 1 P_4: Switch MIB to another context	A_1: Reconnect the USB cable to phone 1	ER_1: AA session starts ER_2: MIB stays in the selected context. It should automatically switch to the AA context	MIB-2_RQ_PJM_507
AndroidAuto-TC-73862	The HMI main screen shall not switch to Android Auto context automatically upon re-connection of a Android Auto device, unless the device explicitly requests the screen resource.	P_1: AA session with phone 1 is active P_2: MIB is in AA context P_3: End the AA session by connecting phone 2 to the other USB port and starting an AA session with phone 2 P_4: While the AA session with phone 2 is running, disconnect the USB cable to phone 1 P_5: End the AA session with phone 2	A_1: Reconnect the USB cable to phone 1	ER_1: AA session starts ER_2: MIB stays in the selected context. It should automatically switch to the AA context	MIB-2_RQ_PJM_507
AndroidAuto-TC-73863	The HMI main screen shall not switch to Android Auto context automatically upon re-connection of a Android Auto device, unless the device explicitly requests the screen resource.	P_1: AA session with phone 1 is active P_2: MIB is in AA context P_3: End the AA session by connecting a CarPlay device to the CarPlay-compatible USB port and start a CarPlay session P_4: While the CarPlay session is running, disconnect the USB cable to phone 1 P_5: End the CarPlay session	A_1: Reconnect the USB cable to phone 1	ER_1: AA session starts ER_2: MIB stays in the selected context. It should automatically switch to the AA context	MIB-2_RQ_PJM_507
AndroidAuto-TC-73864	The system shall support Android Auto connection on all its USB ports.	P_1: MIB is powered up P_2: AA session is not active P_3: Connect phone 1 to a USB with which it has not been connected yet P_4: Start an AA session with phone 1 P_5: End AA session, reset MIB to factory settings	A_1: Repeat this with another USB port until you have checked that an AA session is supported on all MIB's USB ports	ER_1: A USB session can be started with an AA device connected to any of MIB's USB ports	MIB-2_RQ_PJM_509
AndroidAuto-TC-73865	The system shall support a diagnosis switch which activates/deactivates the Android Auto functionality.	P_1: MIB is powered up P_2: AA feature has been enabled by diagnosis P_3: ODIS diagnostic sotware is connected with the MIB P_4: Deactivate the Android Auto feature using diagnosis P_5: End diagnosis session P_6: Connect phone 1 (AA device) with MIB using a USB cable	A_1: Try to start an AA session with phone 1	ER_1: AA session does not start ER_2: Phone 1 is connected as a usual USB device	MIB-2_RQ_PJM_542 MIB-2_RQ_PJM_545
AndroidAuto-TC-73868	In case the Android Auto diagnosis switch is set to "deactivated", there shall be no Android Auto Logo, label and / or AA related settings in the HMI.	P_1: MIB is powered up P_2: AA feature has been enabled by diagnosis P_3: ODIS diagnostic sotware is connected with the MIB P_4: Deactivate the Android Auto feature using diagnosis P_5: End diagnosis session	A_1: Check for any AA logos or features ins the MIB HMI	ER_1: There are no AA-related logos, settings or features in the MIB HMI	MIB-2_RQ_PJM_544
AndroidAuto-TC-73867	The system shall support a diagnosis switch which activates/deactivates the Android Auto functionality.	P_1: MIB is powered up P_2: AA feature has been disabled by diagnosis P_3: ODIS diagnostic sotware is connected with the MIB P_4: Activate the Android Auto feature using diagnosis P_5: End diagnosis session P_6: Connect phone 1 (AA device) with MIB using a USB cable	A_1: Try to start an AA session with phone 1	ER_1: AA session starts	MIB-2_RQ_PJM_542 MIB-2_RQ_PJM_549

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73869	The system shall support a diagnosis switch which activates/deactivates the Android Auto functionality.	P_1: MIB is powered up P_2: AA feature has been disabled by diagnosis P_3: ODIS diagnostic sotware is connected with the MIB P_4: Activate the Android Auto feature using diagnosis P_5: End diagnosis session	A_1: Check for any AA logos or features ins the MIB HMI	ER_1: There are AA-related logos, settings or features in the MIB HMI	MIB-2_RQ_PJM_548
AndroidAuto-TC-74107	If the SWAP ID for Android Auto is not activated, the user shall be informed.	P_1: SWAP ID for Android Auto is deactivated P_2: MIB is powered up and running	A_1: Try to use AA	ER_1: MIB informs the user that AA is deactivated	MIB-2_RQ_PJM_554
AndroidAuto-TC-74109	In case the SWAP ID for Android Auto is not activated it shall not be possible to start a Android Auto session on any device	P_1: SWAP ID for Android Auto is deactivated P_2: MIB is powered up and running	A_1: Try to use AA, establish a connection with an AA device	ER_1: It is not possible to start an AA session on the MIB	MIB-2_RQ_PJM_555
AndroidAuto-TC-74110	In case the SWAP ID for Android Auto is not activated it shall not be possible to start a Android Auto session on any device	P_1: SWAP ID for Android Auto is deactivated P_2: MIB is powered up and running	A_1: Try to use AA, establish a connection with an AA device	ER_1: It is not possible to start an AA session on the smartphone	MIB-2_RQ_PJM_555
AndroidAuto-TC-73871	There shall be a Android Auto section in GEM/ET.	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu/Engineering Testmode	A_1: Check whether a section for AA is present	ER_1: A section for AA is present in GEM/ET	MIB-2_RQ_PJM_560
AndroidAuto-TC-73872	Version of Google Android Auto Receiver Library shall be visible in GEM	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu, section Android Auto	A_1: Check whether Google Android Auto Receiver Library is visible in GEM	ER_2: Google Android Auto Receiver Library is visible in GEM	MIB-2_RQ_PJM_561
AndroidAuto-TC-73874	It shall be possible to enable/disable accepting video focus requests via GEM.	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu, section Android Auto P_4: Accepting focus requests is enabled P_3: Disable accepting focus requests P_4: Leave GEM P_5: MIB is not in AA context	A_1: Check whether MIB accepts focus requests from the AA device (e.g. when you activate Google Voice)	ER_2: MIB does not accept focus requests from the AA device (it automatically change screen to the AA context)	MIB-2_RQ_PJM_921
AndroidAuto-TC-73875	It shall be possible to enable/disable accepting video focus requests via GEM.	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu, section Android Auto P_4: Accepting focus requests is disabled P_3: Enable accepting focus requests P_4: Leave GEM P_5: MIB is not in AA context	A_1: Check whether MIB accepts focus requests from the AA device (e.g. when you activate Google Voice)	ER_2: MIB does accept focus requests from the AA device (it automatically changes screen to the AA context)	MIB-2_RQ_PJM_921
AndroidAuto-TC-73876	The individual bits of the drive level bit mask as defined in RQ_PJM_592 shall be configurable via GEM. Drive level indicates the level of feature/functionality lockout as determined by vehicle. It is defined as a bitmask: 00001 = no video playback allowed (video playback is defined as media such as movies,YouTube, games, etc. -- not UI). 00010 = no text input allowed (on-screen keyboard, rotary controller speller, touchpad text entry) 00100 = no voice input allowed 01000 = no setup/configuration allowed 10000 = limit displayed message length	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu/Engineering Testmode, section Android Auto	A_1: Check whether the individual bits of the drive level mask can be edited	ER_1: Individual bits of the drive level mask can be edited	MIB-2_RQ_PJM_930
AndroidAuto-TC-73877	A function to activate and deactivate DDS control functionality shall be available in GEM/ET	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu/Engineering Testmode, section Android Auto P_3: Deactivate the DDS control P_4: Leave GEM/ET P_5: Start an AA session P_6: MIB is in AA context	A_1: Check whether it is possible to navigate in AA using the DDS	ER_1: It is not possible to navigate in AA using the DDS	MIB-2_RQ_PJM_563
AndroidAuto-TC-73881	A function to activate and deactivate DDS control functionality shall be available in GEM/ET	P_1: AA features have been activated in diagnosis P_2: MIB is in the Green Engineering Menu/Engineering Testmode, section Android Auto P_3: Activate the DDS control P_4: Leave GEM/ET P_5: Start an AA session P_6: MIB is in AA context	A_1: Check whether it is possible to navigate in AA using the DDS	ER_1: It is possible to navigate in AA using the DDS	MIB-2_RQ_PJM_563
AndroidAuto-TC-73882	If Android Auto has been the last active HMI context, it shall be active again after a restart of the system, given that the Android Auto device is still connected and available as Android Auto device.	P_1: AA session is active P_2: MIB is in a context other than AA (remember which context it is) P_3: Turn off cl. 15 & S, wait for bussleep P_4: Turn on cl. S & 15, let the system start	A_1: Check whether MIB shows the same context as before shutdown	ER_1: MIB shows the same context as before shutdown	MIB-2_RQ_PJM_567
AndroidAuto-TC-73883	If Android Auto has been the last active HMI context, it shall be active again after a restart of the system, given that the Android Auto device is still connected and available as Android Auto device.	P_1: AA session is active P_2: MIB is in a context other than AA (remember which context it is) P_3: Turn off cl. 15 & S, wait for bussleep P_4: Turn on cl. S & 15, let the system start	A_1: Check whether AA session is active (it should be re-established during startup)	ER_1: AA session is active	MIB-2_RQ_PJM_567
AndroidAuto-TC-73886	If Android Auto has been the last active HMI context, but the Android Auto device is no longer available after a restart of the system, native HMI shall start with AppConnect context.	P_1: AA session is active P_2: MIB is in AA context P_3: Turn off cl. 15 & S, wait for bussleep P_4: Disconnect the cable to the AA device P_5: Turn on cl. S & 15, let the system start	A_1: Check whether MIB shows the AppConnect context after startup	ER_1: MIB shows the AppConnect context after startup	MIB-2_RQ_PJM_568
AndroidAuto-TC-73887	The car shall provide the Android Auto device with the information about Day/Night-Mode.	P_1: AA session is active P_2: AA route guidance is active P_3: AA navigation map is in day mode P_4: Change MIB to night mode in Nav Setup/map mode P_5: Go back to AA context	A_1: Check whether AA navigation now uses night mode	ER_1: AA navigation is in night mode	MIB-2_RQ_PJM_587
AndroidAuto-TC-74141	The car shall provide the Android Auto device with the information about Day/Night-Mode.	P_1: AA session is active P_2: AA route guidance is active P_3: AA navigation map is in day mode(Lights is off) P_4: Switch on lights P_5: Go back to AA context	A_1: Check whether AA navigation now uses night mode	ER_1: AA navigation is in night mode	MIB-2_RQ_PJM_587
AndroidAuto-TC-73888	The car shall provide the Android Auto device with the information about Day/Night-Mode.	P_1: AA session is active P_2: AA route guidance is active P_3: AA navigation map is in day mode P_4: Change MIB to night mode in Menu/Setup/Screen P_5: Go back to AA context	A_1: Check whether AA navigation now uses night mode	ER_1: AA navigation is in night mode	MIB-2_RQ_PJM_587
AndroidAuto-TC-73889	The car shall provide the Android Auto device with the information about Day/Night-Mode.	P_1: AA session is active P_2: AA route guidance is active P_3: AA navigation map is in night mode P_4: Change MIB to day mode in Nav Setup/map mode P_5: Go back to AA context	A_1: Check whether AA navigation now uses day mode	ER_1: AA navigation is in day mode	MIB-2_RQ_PJM_587
AndroidAuto-TC-74142	The car shall provide the Android Auto device with the information about Day/Night-Mode.	P_1: AA session is active P_2: AA route guidance is active P_3: AA navigation map is in night mode(Lights is on) P_4: Switch off lights P_5: Go back to AA context	A_1: Check whether AA navigation now uses day mode	ER_1: AA navigation is in day mode	MIB-2_RQ_PJM_587

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73890	The car shall provide the Android Auto device with the information about Day/Night-Mode.	P_1: AA session is active P_2: AA route guidance is active P_3: AA navigation map is in night mode P_4: Change MIB to day mode in Menu/Setup/Screen P_5: Go back to AA context	A_1: Check whether AA navigation now uses day mode	ER_1: AA navigation is in day mode	MIB-2_RQ_PJM_587
AndroidAuto-TC-73892	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: Car driving speed increases and exceeds the BT pairing speed limit (6 km/h) P_2: MIB is in Green Engineering Menu/Engineering Testmode, section Android Auto	A_1: Check the drive level bit mask	ER_1: Drive level bit mask is 11011 (no video, no text input, no setup, limited message length) (voice commands are allowed)	MIB-2_RQ_PJM_926
AndroidAuto-TC-73895	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: Car speed is below the limit for video playback (6 km/h) P_3: AA video playback is active	A_1: Exceed the speed limit for video playback (6 km/h)	ER_1: Video playback stops, safety message is displayed	MIB-2_RQ_PJM_926
AndroidAuto-TC-73896	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: Car speed is above the limit for video playback (6 km/h)	A_1: Try to start AA video playback	ER_1: Video playback cannot be started, safety message is displayed	MIB-2_RQ_PJM_926
AndroidAuto-TC-73897	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: MIB is in AA context P_3: Car speed is below the limit fortext input (6 km/h) P_3: AA text input is active	A_1: Exceed the speed limit for text input (6 km/h)	ER_1: Text input stops, safety message is displayed	MIB-2_RQ_PJM_926
AndroidAuto-TC-73898	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: MIB is in AA context P_3: Car speed is above the limit for text input (6 km/h)	A_1: Try to input text using the touch screen	ER_1: Text input by touch screen is not possible (safety message may appear)	MIB-2_RQ_PJM_926
AndroidAuto-TC-73899	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: MIB is in AA context P_3: Car speed is above the limit for text input (6 km/h)	A_1: Try to input text using the DDS	ER_1: Text input by DDS is not possible (safety message may appear)	MIB-2_RQ_PJM_926
AndroidAuto-TC-73900	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: Car speed is below 6 km/h P_2: Google Voice session is active	A_1: Exceed the speed of 6 km/h	ER_1: Google Voice input continues seamlessly. It is not affected by the increased speed in any way	MIB-2_RQ_PJM_926
AndroidAuto-TC-73901	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: Car speed is above 6 km/h	A_1: Start a Google Voice session	ER_1: Google Voice session starts	MIB-2_RQ_PJM_926
AndroidAuto-TC-73902	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: Car speed is below the limit for setup (6 km/h) P_3: Browse the AA device setup options	A_1: Exceed the speed limit for setup (6 km/h)	ER_1: AA device setup is blocked, safety message appears	MIB-2_RQ_PJM_926
AndroidAuto-TC-73903	The system shall set the drive level bit mask depending on the vehicle speed. If the speed exceeds BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 11011 This value may change during project development time.	P_1: AA session is active P_2: Car speed is above the limit for setup (6 km/h)	A_1: Try to access the AA device setup options	ER_1: AA device setup is blocked, safety message appears	MIB-2_RQ_PJM_926
AndroidAuto-TC-73893	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.	P_1: Car driving speed decreases and falls below the BT pairing speed limit (6 km/h) P_2: MIB is in Green Engineering Menu, section Android Auto	A_1: Check the drive level bit mask	ER_1: Drive level bit mask is 00000 (video, text input, voice commands, setup, unlimited message length)	MIB-2_RQ_PJM_928
AndroidAuto-TC-73905	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.	P_1: AA session is active P_2: AA video playback is active P_3: AA video playback was stopped because car speed exceeded the safety limit (6 km/h)	A_1: Reduce the car speed below the speed limit	ER_1: AA video playback is automatically resumed	MIB-2_RQ_PJM_928
AndroidAuto-TC-73906	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.	P_1: AA session is active P_2: AA text input is active P_3: AA text input was stopped because car speed exceeded the safety limit (6 km/h) P_4: Reduce the car speed below the speed limit	A_1: Check whether text input by touchscreen is possible	ER_1: Text input by touchscreen is possible again	MIB-2_RQ_PJM_928
AndroidAuto-TC-73907	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.	P_1: AA session is active P_2: AA text input is active P_3: AA text input was stopped because car speed exceeded the safety limit (6 km/h) P_4: Reduce the car speed below the speed limit	A_1: Check whether text input by DDS is possible	ER_1: Text input by DDS is possible again	MIB-2_RQ_PJM_928
AndroidAuto-TC-73908	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.	P_1: AA session is active P_2: Car speed exceeded the safety limit (6 km/h) P_3: Google Voice session is active	A_1: Reduce the car speed below the speed limit	ER_1: Google Voice session continues seamlessly. Car speed dropping under the limit has no effect on Google Voice whatsoever	MIB-2_RQ_PJM_928
AndroidAuto-TC-73909	The system shall set the drive level bit mask depending on the vehicle speed. If the speed drops below BT-BONDING (Bluetooth pairing threshold) the bit mask shall be set to 00000 This value may change during project development time.	P_1: AA session is active P_2: Browse the AA setup menu P_3: AA setup menu is blocked because the car speed exceeded the safety limit (6 km/h)	A_1: Reduce the car speed below the speed limit	ER_1: AA setup menu is no longer blocked	MIB-2_RQ_PJM_928

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73911	The system shall provide information about the steering wheel position to the AA device as defined in [4].	P_1: MIB is coded for steering wheel right via diagnosis connection P_2: Start an AA session P_3: MIB is in AA context	A_1: Check whether AA context has the specified layout for steering wheel right	ER_1: AA context has the specified layout for steering wheel right	MIB-2_RQ_PJM_932
AndroidAuto-TC-73912	The system shall provide information about the steering wheel position to the AA device as defined in [4].	P_1: MIB is coded for steering wheel left via diagnosis connection P_2: Start an AA session P_3: MIB is in AA context	A_1: Check whether AA context has the specified layout for steering wheel left	ER_1: AA context has the specified layout for steering wheel left	MIB-2_RQ_PJM_932
AndroidAuto-TC-73913	The customer shall be able to update the Android Auto software component of the MIB via the Customer Update Process.	P_1: MIB is powered up P_2: MIB is in Service Menu P_3: SD card with a newer MIB software is inserted P_4: Android Auto module needs to be updated (at least partly)	A_1: Perform the software update	ER_1: Software update succeeds ER_2: AA module was successfully updated	MIB-2_RQ_PJM_601
AndroidAuto-TC-74113	As long as an AndroidAuto device is connected (plugged via USB) and an Android Auto session is ongoing, only this AndroidAuto device shall be connected via Bluetooth-HFP, PBAP and MAP. There shall not be any other Bluetooth service connections.	P_1: Phone 1 is connected as primary HFP device P_2: Phone			
AndroidAuto-TC-73914	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: MIB is in media context P_2: SD card is being played back P_3: Media playback on phone 1 (AA device) is ative P_4: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_4: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73915	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: MIB is in media context P_2: SD card is being played back P_3: Phone 1 had previously been connected to the MIB as an AA device P_4: Media playback on phone 1 (AA device) is ative P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73916	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: MIB is in media context P_2: USB is being played back P_3: Media playback on phone 1 (AA device) is ative P_4: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_4: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73918	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: MIB is in media context P_2: USB is being played back P_3: Phone 1 had previously been connected to the MIB as an AA device P_4: Media playback on phone 1 (AA device) is ative P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73919	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Connect phone 1 to MIB as an A2DP device P_3: MIB is in media context P_4: BT audio from phone 1 is being played back P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: BT playback stops ER_2: AA session starts ER_3: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73920	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Connect phone 1 to MIB as an A2DP device P_3: MIB is in media context P_4: BT audio from phone 1 is being played back P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: BT audio playback stops ER_2: AA session starts in the background	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73923	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Connect phone 2 to MIB as an A2DP device P_3: MIB is in media context P_4: BT audio from phone 2 is being played back P_5: Media playback on phone 1 is active P_6: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73921	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Connect phone 1 to MIB as an WiFi device P_3: MIB is in media context P_4: WiFi audio from phone 1 is being played back P_5: Media playback on phone 1 is active (independent of the WiFi playback) P_6: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to the AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73922	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Connect phone 1 to MIB as an WiFi device P_3: MIB is in media context P_4: WiFi audio from phone 1 is being played back P_5: Media playback on phone 1 is active (independent of the WiFi playback) P_6: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73924	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Connect phone 2 to MIB as an WiFi device P_3: MIB is in media context P_4: WiFi audio from phone 2 is being played back P_5: Media playback on phone 1 is active P_6: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73925	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: FM Radio is playing P_3: MIB is in radio context P_4: Media playback on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: Radio playback continues ER_2: AA media playback is audible through the car audio ER_3: MIB switches to the AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-74137	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: FM Radio is playing P_3: MIB is in radio context P_4: Media playback on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: Radio playback continues ER_2: AA session starts ER_3: MIB switches to AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73926	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: TV is playing P_3: MIB is in TV Tuner context P_4: Media playback on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: TV playback stops ER_2: AA media playback is audible through the car audio ER_3: MIB switches to the AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74138	Android Auto audio shall be audible after Android Auto session is started and playback was ongoing on Android Auto device	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: TV is playing P_3: MIB is in TV Tuner context P_4: Media playback on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: TV playback stops ER_2: AA media playback is audible through the car audio ER_3: MIB switches to the AA context	MIB-2_RQ_PJM_611 MIB-2_RQ_PJM_612
AndroidAuto-TC-73927	MIB reaction shall be: MIB screen: no additional requirement Cluster screen: Context switches over to Phone. The phonecall info is visible as in the case of normal calls over BT telephony	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Phonecall is active on the phone 1 which is currently not connected to the MIB in any way P_3: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 during the ongoing phonecall	ER_1: AA phonecall is audible through the car audio ER_2: Car cabin microphone is used for the phonecall ER_3: Instrument cluster switches to phone context, call info is visible	MIB-2_RQ_PJM_619
AndroidAuto-TC-73928	MIB reaction shall be: MIB screen: no additional requirement Cluster screen: Context switches over to Phone. The phonecall info is visible as in the case of normal calls over BT telephony	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Phonecall is active on the phone 1 which is currently not connected to the MIB in any way P_3: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 during the ongoing phonecall	ER_1: AA phonecall is audible through the car audio ER_2: Car cabin microphone is used for the phonecall ER_3: Instrument cluster switches to phone context, call info should be visible	MIB-2_RQ_PJM_619
AndroidAuto-TC-73931	Android Auto session starts. The AA device remains connected to MIB via Bluetooth HFP	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Phone 1 (AA device) is connected to the MIB as HFP device P_3: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: Phone 1 is still connected as a HFP device	MIB-2_RQ_PJM_624
AndroidAuto-TC-73932	Android Auto session starts. The AA device remains connected to MIB via Bluetooth HFP	P_1: Phone 1 has previously been connected to MIB as an AA device P_2: Phone 1 (AA device) is connected to the MIB as HFP device P_3: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1	ER_1: AA session starts ER_2: Phone 1 is still connected as a HFP device	MIB-2_RQ_PJM_624
AndroidAuto-TC-73933	Android Auto session starts. The AA device remains connected to MIB via Bluetooth HFP	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Phone 1 (AA device) is connected to the MIB as HFP device P_3: Phonecall on phone 1 is active P_4: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the phonecall is active	ER_1: AA session starts ER_2: Phone 1 is still connected as a HFP device ER_3: Phonecall continues seamlessly	MIB-2_RQ_PJM_628
AndroidAuto-TC-74148	Android Auto session starts. The AA device remains connected to MIB via Bluetooth HFP	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Phone 1 (AA device) is connected to the MIB as HFP device P_3: Phonecall on phone 1 is active P_4: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the phonecall is active	ER_1: AA session doesn't start ER_2: Popup about not possible connect AA while active call is shown ER_3: Phonecall continues seamlessly	MIB-2_RQ_PJM_628
AndroidAuto-TC-73934	Android Auto session starts. The AA device remains connected to MIB via Bluetooth HFP	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Phone 1 (AA device) is connected to the MIB as HFP device P_3: Phonecall on phone 1 is active P_4: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the phonecall is active	ER_1: AA session starts ER_2: Phone 1 is still connected as a HFP device ER_3: Phonecall continues seamlessly	MIB-2_RQ_PJM_628
AndroidAuto-TC-74149	Android Auto session starts. The AA device remains connected to MIB via Bluetooth HFP	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Phone 1 (AA device) is connected to the MIB as HFP device P_3: Phonecall on phone 1 is active P_4: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the phonecall is active	ER_1: AA session doesn't start ER_2: Popup about not possible connect AA while active call is shown ER_3: Phonecall continues seamlessly	MIB-2_RQ_PJM_628
AndroidAuto-TC-73935	Android Auto session starts The Google Voice stops (depending on the behavior of the AA device)	P_1: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_2: Google Voice session on phone 1 is active P_3: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the Google Voice session is active	ER_1: AA session starts ER_2: Google Voice session may stop (depending on the behavior of the AA device)	MIB-2_RQ_PJM_630
AndroidAuto-TC-73936	Android Auto session starts The Google Voice stops (depending on the behavior of the AA device)	P_1: Phone 1 had previously been connected to the MIB as an AA device P_2: Google Voice session on phone 1 is active P_3: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the Google Voice session is active	ER_1: AA session starts ER_2: Google Voice session may stop (depending on the behavior of the AA device)	MIB-2_RQ_PJM_630
AndroidAuto-TC-73937	MIB screen: depends on the Android device Cluster screen: No additional requirements (If in Nav context -> Compass is visible.) Audio: AA Nav announcements are played back through car audio	P_1: No route guidance on MIB P_2: Instrument cluster is in Nav context P_3: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_4: Route guidance on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the route guidance is active	ER_1: AA session starts ER_2: MIB may switch to AA context (depends on the AA device) ER_3: AA route guidance continues ER_4: AA navigation announcements are played back through the car audio ER_5: Instrument cluster shows compass in Nav context	MIB-2_RQ_PJM_632
AndroidAuto-TC-73938	MIB screen: depends on the Android device Cluster screen: No additional requirements (If in Nav context -> Compass is visible.) Audio: AA Nav announcements are played back through car audio	P_1: No route guidance on MIB P_2: Instrument cluster is in Nav context P_3: Phone 1 had previously been connected to the MIB as an AA device P_4: Route guidance on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the route guidance is active	ER_1: AA session starts ER_2: MIB may switch to AA context (depends on the AA device) ER_3: AA route guidance continues ER_4: AA navigation announcements are played back through the car audio ER_5: Instrument cluster shows compass in Nav context	MIB-2_RQ_PJM_632
AndroidAuto-TC-73939	Android Auto session starts. Route guidance of native HMI stops. Route guidance of Android Auto is still active	P_1: Route guidance on MIB is active P_2: Instrument cluster is in Nav context P_3: Phone 1 has not been connected to the MIB as an AA device yet (reset MIB to factory settings, if necessary) P_4: Route guidance on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the route guidance is active	ER_1: AA session starts ER_2: MIB's native route guidance ends ER_3: MIB may switch to AA context (depends on the AA device) ER_4: AA route guidance continues ER_5: AA navigation announcements are played back through the car audio ER_6: Instrument cluster shows compass in Nav context	MIB-2_RQ_PJM_635
AndroidAuto-TC-73940	Android Auto session starts. Route guidance of native HMI stops. Route guidance of Android Auto is still active	P_1: Route guidance on MIB is active P_2: Instrument cluster is in Nav context P_3: Phone 1 had previously been connected to the MIB as an AA device P_4: Route guidance on phone 1 is active P_5: Connect phone 1 to MIB using a USB cable	A_1: Start an AA session with phone 1 while the route guidance is active	ER_1: AA session starts ER_2: MIB's native route guidance ends ER_3: MIB may switch to AA context (depends on the AA device) ER_4: AA route guidance continues ER_5: AA navigation announcements are played back through the car audio ER_6: Instrument cluster shows compass in Nav context	MIB-2_RQ_PJM_635
AndroidAuto-TC-73941	The system shall switch to AppConnect context if Android Auto device is disconnected while Android Auto is active system context.	P_1: AA session is active P_2: MIB is in AA context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB falls back to AppConnect context	MIB-2_RQ_PJM_637
AndroidAuto-TC-73943	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source-FM Radio is playing P_3: MIB is in Radio context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Radio context ER_3: MIB audio source-FM Radio playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73944	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. SD Card, USB, BT audio P_2: MIB is in Media context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Media context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73945	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's TV is playing P_2: MIB is in TV context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in TV context ER_3: MIB TV playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73946	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Images context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Images context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73947	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Sound context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Sound context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73948	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Setup context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Setup context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73949	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Service context (longpress Menu)	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Service context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73950	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Phone context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Phone context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73951	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Navigation context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Navigation context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73952	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Traffic context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Traffic context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73953	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Car context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Car context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73954	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in MirrorLink context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in MirrorLink context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73955	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in Car-Net context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in Car-Net context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73956	Screen shall stay in native HMI mode when Android Auto device is unplugged while MIB shows native HMI mode.	P_1: AA session is active P_2: MIB's audio source is playing, e.g. FM Radio P_2: MIB is in AppConnect context	A_1: Disconnect the USB cable to the AA device	ER_1: AA session ends ER_2: MIB stays in AppConnect context ER_3: MIB audio source playback continues seamlessly	MIB-2_RQ_PJM_640
AndroidAuto-TC-73957	MIB screen: Switches over to last Main context (native HMI). Cluster screen: If Android Auto context was active -> switches over to corresponding native HMI context. If not: No additional requirements Audio: is further dedicated to the phonecall on the Android phone connected via Bluetooth HFP Phonecall is ongoing over Bluetooth HFP	P_1: AA session is active P_2: AA phonecall is active P_3: MIB is in a context other than AA (remember which context) P_4: Change to AA context P_5: Instrument cluster is in Phone context	A_1: Disconnect the USB cable to the AA device during the ongoing phonecall	ER_1: AA session ends. ER_2: Phonecall continues seamlessly over HFP ER_3: MIB switches to the last context it was in ER_4: Instrument cluster stays in Phone context	MIB-2_RQ_PJM_643
AndroidAuto-TC-73959	Both devices are available in the device list in Appconnect and also visible in the Media context	P_1: Phone 1 and phone 2 (both are AA devices) have not yet been connected to MIB (reset MIB to factory settings if necessary) P_2: Connect phone 1 and 2 to the MIB at the using a USB cable for each of them P_3: Select not to start AA when the AA first connection popups appear P_4: Go to Media context P_5: See the list of sources (root of the folder hierarchy of Media browser)	A_1: Check whether phone 1 and phone 2 are listed as usual USB media sources in the source list	ER_1: Phone 1 and 2 are listed as usual media sources in the source list	MIB-2_RQ_PJM_648
AndroidAuto-TC-73961	1. Android Auto doesn't start 2. Android Auto device is identified as Media device 3. There are no changes in Devices_Preference_Status_List 4. MirrorLink/CarPlay stay active	P_1: Phone 1 (AA device) had previously been connected to MIB, MIB's preferred technology is AA P_2: Phone 2 (CP device) is connected to MIB P_3: CP session is active	A_1: Connect phone 1 to MIB using a USB cable	ER_1: AA session does not start ER_2: Phone 1 is connected as a usual USB media device ER_3: Phone 1's current technology is still Android Auto ER_4: CarPlay session is still active	MIB-2_RQ_PJM_650
AndroidAuto-TC-73962	1. Android Auto doesn't start 2. Android Auto device is identified as Media device 3. There are no changes in Devices_Preference_Status_List 4. MirrorLink/CarPlay stay active	P_1: Phone 1 (AA device) had previously been connected to MIB, its preferred technology is AA P_2: Phone 2 (Mirror Link device) is connected to MIB P_3: Mirror Link session is active	A_1: Connect phone 1 to MIB using a USB cable	ER_1: AA session does not start ER_2: Phone 1 is connected as a usual USB media device ER_3: Phone 1's current technology is still Android Auto ER_4: Mirror Link session is still active	MIB-2_RQ_PJM_650
AndroidAuto-TC-73963	MIB screen: The Bluetooth option in MIB is greyed out and can't be accessed Cluster screen: No additional requirements Audio: The resources Mic and Audio are dedicated to the Android Auto phonecall 1. It is not possible to connect the HFP phone to MIB.	P_1: AA session with phone 1 is active P_2: AA phonecall is active P_3: Go to Phone Setup/Bluetooth	A_1: Check whether you can connect any other HFP device to MIB	ER_1: Bluetooth options are not greyed out and can be accessed ER_2: It is not possible to connect any additional HFP devices to MIB	MIB-2_RQ_PJM_653
AndroidAuto-TC-73964	MIB screen: The Bluetooth option in MIB is greyed out and can't be accessed Cluster screen: No additional requirements Audio: The resources Mic and Audio are dedicated to the Android Auto phonecall 1. It is not possible to connect the HFP phone to MIB.	P_1: AA session with phone 1 is active P_2: AA phonecall is active P_3: Go to Media Setup/Bluetooth	A_1: Check whether you can connect any other HFP device to MIB	ER_1: Bluetooth options are not greyed out and can be accessed ER_2: It is not possible to connect any additional HFP devices to MIB	MIB-2_RQ_PJM_653
AndroidAuto-TC-73965	MIB screen: The Bluetooth option in MIB is greyed out and can't be accessed Cluster screen: No additional requirements Audio: The resources Mic and Audio are dedicated to the Android Auto phonecall 1. It is not possible to connect the HFP phone to MIB.	P_1: AA session with phone 1 is active P_2: AA phonecall is active P_3: Go to Setup context/Bluetooth	A_1: Check whether you can connect any other HFP device to MIB	ER_1: Bluetooth options are not greyed out and can be accessed ER_2: It is not possible to connect any additional HFP devices to MIB	MIB-2_RQ_PJM_653
AndroidAuto-TC-73967	MIB screen: The appconnect context shall remain active Cluster screen: any AA specific content is not displayed any longer Audio: If audio was active on AA, it will be assigned to the last active mode before AA. 1. The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is connected not connected with the MIB in any way P_2: Media playback is active on phone 1 P_3: Start an AA session with phone 1, media playback is audible through the car audio P_4: Go to AppConnect context	A_1: End the AA session using the AppConnect HMI	ER_1: MIB stays in AppConnect context ER_2: No AA-specific context is displayed on the instrument cluster ER_3: Phone 1 is still visible in the AppConnect device list, current technology is "unknown" ER_4: Media playback is only audible through the speaker of phone 1	MIB-2_RQ_PJM_936
AndroidAuto-TC-73968	MIB screen: The appconnect context shall remain active Cluster screen: any AA specific content is not displayed any longer Audio: If audio was active on AA, it will be assigned to the last active mode before AA. 1. The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is connected as Aux media device P_2: Media playback is active on phone 1 P_3: MIB media source is Aux, playback is audible through car audio P_4: Start an AA session with phone 1, media playback continues as AA through the car audio P_5: Go to AppConnect context	A_1: End the AA session using the AppConnect HMI	ER_1: MIB stays in AppConnect context ER_2: No AA-specific context is displayed on the instrument cluster ER_3: Phone 1 is still visible in the AppConnect device list, current technology is "unknown" ER_4: Media playback is only audible when Aux is selected as media source	MIB-2_RQ_PJM_936

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73969	MIB screen: The appconnect context shall remain active Cluster screen: any AA specific content is not displayed any longer Audio: If audio was active on AA, it will be assigned to the last active mode before AA. 1. The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is connected as USB media device P_2: Media playback is active on phone 1 P_3: MIB media source is USB, playback is audible through car audio P_4: Start an AA session with phone 1, media playback continues as AA through the car audio P_5: Go to AppConnect context	A_1: End the AA session using the AppConnect HMI	ER_1: MIB stays in AppConnect context ER_2: No AA-specific context is displayed on the instrument cluster ER_3: Phone 1 is still visible in the AppConnect device list, current technology is "unknown" ER_4: Media playback is only audible when USB is selected as media source	MIB-2_RQ_PJM_936
AndroidAuto-TC-73970	MIB screen: The appconnect context shall remain active Cluster screen: any AA specific content is not displayed any longer Audio: If audio was active on AA, it will be assigned to the last active mode before AA. 1. The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is connected as A2DP media device P_2: Media playback is active on phone 1 P_3: MIB media source is A2DP, playback is audible through car audio P_4: Start an AA session with phone 1, media playback continues as AA through the car audio P_5: Go to AppConnect context	A_1: End the AA session using the AppConnect HMI	ER_1: MIB stays in AppConnect context ER_2: No AA-specific context is displayed on the instrument cluster ER_3: Phone 1 is still visible in the AppConnect device list, current technology is "unknown" ER_4: Media playback is only audible when A2DP is selected as media source	MIB-2_RQ_PJM_936
AndroidAuto-TC-73971	MIB screen: The appconnect context shall remain active Cluster screen: any AA specific content is not displayed any longer Audio: If audio was active on AA, it will be assigned to the last active mode before AA. 1. The device is still visible in the device list, but the preference technology is changed to 'unknown'.	P_1: Phone 1 is connected as WiFi media device P_2: MIB media source is WiFi, playback is audible through car audio P_3: Start an AA session with phone 1, media playback continues as AA through the car audio P_4: Go to AppConnect context	A_1: End the AA session using the AppConnect HMI	ER_1: MIB stays in AppConnect context ER_2: No AA-specific context is displayed on the instrument cluster ER_3: Phone 1 is still visible in the AppConnect device list, current technology is "unknown" ER_4: Media playback is only audible when WiFi is selected as media source	MIB-2_RQ_PJM_936
AndroidAuto-TC-73972	A Popup shall inform the user that a device is not compatible with AA. This shall happen after initialization via AppConnect starts and then fails	P_1: Phone 1 (no AA device) is connected to the MIB using a USB cable P_2: Go to AppConnect context	A_1: Try to start an AA session with phone 1	ER_1: A popup appears saying that phone 1 is not compatible with AA ER_2: Current technology for phone 1 is "unknown"	MIB-2_RQ_PJM_938
AndroidAuto-TC-73973	A Popup shall inform the user that a device is not compatible with AA. This shall happen after initialization via AppConnect starts and then fails	P_1: Phone 1 (no AA device) is connected to the MIB using a USB cable P_2: Go to AppConnect context P_3: Try to start an AA session with phone 1, a popup appears	A_1: Confirm the popup	ER_1: The popup disappears	MIB-2_RQ_PJM_938
AndroidAuto-TC-73975	1. The 2nd connected device is visible in the media context as well as in the device list in the Appconnect context. 2. The 2nd connected device has no effect on the active AA session	P_1: AA session with phone 1 is active	A_1: Connect phone 2 (AA device) to MIB using a USB cable	ER_1: AA session with phone 2 does not start ER_2: Phone 2 is listed in the AppConnect device list ER_3: Phone 2 is visible in Media source pushup as a usual USB device ER_4: Phone 2 is visible in Media source list as a usual USB device ER_5: Phone 2 has no effect on the AA session with phone 1	MIB-2_RQ_PJM_941
AndroidAuto-TC-73974	The AA session initialization shall be delayed until any non-idle call on the system is ended.	P_1: Phone 1 is connected with MIB as HFP device P_2: Ongoing phonecall on phone 1 P_3: Phone 2 (AA device) has not been connected to MIB as an AA device yet (reset MIB to factory settings, if necessary)	A_1: Connect phone 2 (AA device) to MIB using a USB cable during the phonecall	ER_1: AA session with phone 2 does not start ER_2: No first connection popup appears ER_3: HPF phonecall with phone 1 proceeds seamlessly	MIB-2_RQ_PJM_943
AndroidAuto-TC-73977	The AA session initialization shall be delayed until any non-idle call on the system is ended.	P_1: Phone 1 is connected with MIB as HFP device P_2: Ongoing phonecall on phone 1 P_3: Phone 2 (AA device) had previously been connected to MIB as an AA device	A_1: Connect phone 2 (AA device) to MIB using a USB cable during the phonecall	ER_1: AA session with phone 2 does not start ER_2: HPF phonecall with phone 1 proceeds seamlessly	MIB-2_RQ_PJM_943
AndroidAuto-TC-73978	The AA session initialization shall be delayed until any non-idle call on the system is ended.	P_1: Phone 1 is connected with MIB as HFP device P_2: Ongoing phonecall on phone 1 P_3: Phone 2 (AA device) had previously been connected to MIB as an AA device P_4: Connect phone 2 (AA device) to MIB using a USB cable during the phonecall	A_1: End the HFP phonecall	ER_1: HFP phonecall ends ER_2: AA session with phone 2 starts	MIB-2_RQ_PJM_943
AndroidAuto-TC-73979	The AA session initialization shall be delayed until any non-idle call on the system is ended.	P_1: Phone 1 is connected with MIB as RSAP device P_2: Ongoing phonecall on phone 1 P_3: Phone 2 (AA device) has not been connected to MIB as an AA device yet (reset MIB to factory settings, if necessary)	A_1: Connect phone 2 (AA device) to MIB using a USB cable during the phonecall	ER_1: AA session with phone 2 does not start ER_2: No first connection popup appears ER_3: RSAP phonecall with phone 1 proceeds seamlessly	MIB-2_RQ_PJM_943
AndroidAuto-TC-73982	The AA session initialization shall be delayed until any non-idle call on the system is ended.	P_1: Phone 1 is connected with MIB as RSAP device P_2: Ongoing phonecall on phone 1 P_3: Phone 2 (AA device) had previously been connected to MIB as an AA device	A_1: Connect phone 2 (AA device) to MIB using a USB cable during the phonecall	ER_1: AA session with phone 2 does not start ER_2: RSAP phonecall with phone 1 proceeds seamlessly	MIB-2_RQ_PJM_943
AndroidAuto-TC-73983	The AA session initialization shall be delayed until any non-idle call on the system is ended.	P_1: Phone 1 is connected with MIB as RSAP device P_2: Ongoing phonecall on phone 1 P_3: Phone 2 (AA device) had previously been connected to MIB as an AA device P_4: Connect phone 2 (AA device) to MIB using a USB cable during the phonecall	A_1: End the RSAP phonecall	ER_1: RSAP phonecall ends ER_2: AA session with phone 2 starts	MIB-2_RQ_PJM_943
AndroidAuto-TC-73984	If the user receives an call on Android Auto while using Android Auto(i.e. active context Android Auto), then the Android Auto UI will handle the incoming call. The system shall suppress (i.e. not display) the incoming call pop-up that is displayed in case of Bluetooth Telephony [8].	P_1: AA session with phone 1 is active P_2: AA context is active P_3: Incoming phonecall for phone 1 while MIB is in AA context	A_1: Check whether the incoming phonecall is handled by AA. MIB's incoming call popup must not appear	ER_1: Incoming phonecall is handled by AA. ER_2: MIB's incoming call popup must not appear while in AA context	MIB-2_RQ_PJM_663
AndroidAuto-TC-73985	If the user receives an call on Android Auto while using Android Auto(i.e. active context Android Auto), then the Android Auto UI will handle the incoming call. The system shall suppress (i.e. not display) the incoming call pop-up that is displayed in case of Bluetooth Telephony [8].	P_1: AA session with phone 1 is active P_2: AA context is active P_3: Incoming phonecall for phone 1 while MIB is in AA context, (AA call popup is shown)	A_1: Switch to any other context except Phone context (e.g. Radio)	ER_1: Ringing of incoming phonecall is muted ER_2: Context changes (e.g. to Radio) ER_3: Ringing continues silently ER_4: No popup for incoming phonecall is shown	MIB-2_RQ_PJM_663
AndroidAuto-TC-73987	If the user receives an call on Android Auto while using Android Auto(i.e. active context Android Auto), then the Android Auto UI will handle the incoming call. The system shall suppress (i.e. not display) the incoming call pop-up that is displayed in case of Bluetooth Telephony [8].	P_1: AA session with phone 1 is active P_2: AA context is active P_3: Incoming phonecall for phone 1 while MIB is in AA context, (AA call popup is shown)	A_1: Switch to Phone context	ER_1: Ringing of incoming phonecall is muted ER_2: Phone context is displayed ER_3: Ringing continues silently ER_4: Phone context shows incoming call box	MIB-2_RQ_PJM_663
AndroidAuto-TC-73988	If the user receives an call on Android Auto while using Android Auto(i.e. active context Android Auto), then the Android Auto UI will handle the incoming call. The system shall suppress (i.e. not display) the incoming call pop-up that is displayed in case of Bluetooth Telephony [8].	P_1: AA session with phone 1 is active P_2: AA context is active P_3: Incoming phonecall for phone 1 while MIB is in AA context, (AA call popup is shown) P_4: Switch to any other context P_5: Ringing of incoming phonecall is muted P_6: No popup for incoming phonecall is shown	A_1: Switch context back to AA	ER_1: Context changes to AA ER_2: Ringing of incoming phonecall continues silently ER_3: AA context shows incoming call	MIB-2_RQ_PJM_663
AndroidAuto-TC-73989	Android Auto turn by turn announcements shall be audible during native HMI media source is active	P_1: AA session with phone 1 is active P_2: MIB media playback is active P_3: AA route guidance is active P_4: AA navigation announcement is played back	A_1: Check whether AA navigation announcement is audible (MIB media playback ducks)	ER_1: AA navigation announcement is audible (MIB media playback ducks)	MIB-2_RQ_PJM_740
AndroidAuto-TC-73991	Android Auto turn by turn announcements shall be audible during native HMI media source is active	P_1: AA session with phone 1 is active P_2: WiFi playback from phone 1 is active P_3: AA route guidance is active P_4: AA navigation announcement is played back	A_1: Check whether AA navigation announcement is audible (WiFi playback ducks)	ER_1: AA navigation announcement is audible (WiFi playback ducks)	MIB-2_RQ_PJM_740

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-73992	Android Auto turn by turn announcements shall be audible during native HMI media source is active	P_1: AA session with phone 1 is active P_2: WiFi playback from phone 2 is active P_3: AA route guidance is active P_4: AA navigation announcement is played back	A_1: Check whether AA navigation announcement is audible (WiFi playback ducks)	ER_1: AA navigation announcement is audible (WiFi playback ducks)	MIB-2_RQ_PJM_740
AndroidAuto-TC-73993	MIB screen: native HMI navigation context is visible Cluster screen: In Nav context the native Nav context is displayed with turn by turn information Audio: Route guidance announcements of native HMI are audible 1. Route guidance of Android Auto stops	P_1: AA session with phone 1 is active P_2: AA route guidance is active P_3: MIB is in Navigation context P_4: Instrument cluster is in Navigation context (shows compass)	A_1: Start a route guidance in native MIB HMI	ER_1: AA route guidance stops ER_2: MIB route guidance starts ER_3: Instrument cluster shows navigation manoeuvre of the MIB navigation	MIB-2_RQ_PJM_743
AndroidAuto-TC-73994	MIB screen: Android Auto navigation context is visible Cluster screen (Non-FPK): In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. Route guidance of native HMI stops	P_1: AA session with phone 1 is active P_2: MIB route guidance is active P_3: MIB is in AA context P_4: Instrument cluster is in Navigation context (shows navigation manoeuvre)	A_1: Start AA route guidance	ER_1: MIB route guidance stops ER_2: Instrument cluster shows compass ER_3: AA route guidance starts ER_4: AA route guidance announcements are audible through car audio	MIB-2_RQ_PJM_745 MIB-2_RQ_PJM_770
AndroidAuto-TC-73995	Route guidance of native HMI shall stop if Android Auto route guidance starts even if in rubberband manipulation mode	P_1: AA session with phone 1 is active P_2: MIB route guidance is active P_3: Instrument cluster is in Navigation context P_4: Start manipulating the current route in rubberband mode P_5: Change to AA context	A_1: Start AA route guidance	ER_1: MIB route guidance stops ER_2: Instrument cluster shows compass ER_3: AA route guidance starts ER_4: AA route guidance announcements are audible through car audio	MIB-2_RQ_PJM_747
AndroidAuto-TC-73997	PNav shall stay active in the backround while Android Auto route guidance is active	P_1: AA session with phone 1 is active P_2: MIB's predictive silent Navigation (PNav) is active P_3: MIB shows PNav map P_4: Change to AA context	A_1: Start AA route guidance	ER_1: MIB predictive silent route guidance continues in the background ER_2: AA route guidance starts ER_3: AA route guidance announcements are audible through car audio	MIB-2_RQ_PJM_750
AndroidAuto-TC-73998	Waypoint Mode shall stay active in the backround while Android Auto route guidance is active	P_1: AA session with phone 1 is active P_2: MIB's offroad route guidance is active P_3: MIB's waypoint mode (WPM) "default" is active	A_1: Start AA route guidance	ER_1: AA route guidance starts ER_2: MIB's waypoint mode (WPM) is still active in the background ER_3: AA route guidance announcements are audible through car audio	MIB-2_RQ_PJM_753
AndroidAuto-TC-73999	Offroad route guidance shall stop and waypoint Mode shall stay active in the backround while Android Auto route guidance is active	P_1: AA session with phone 1 is active P_2: MIB's offroad route guidance is active P_3: MIB's waypoint mode (WPM) "drive" is active	A_1: Start AA route guidance	ER_1: MIB's offroad route guidance stops ER_2: AA route guidance starts ER_3: MIB's waypoint mode (WPM) is still active in the background ER_4: AA route guidance announcements are audible through car audio	MIB-2_RQ_PJM_756
AndroidAuto-TC-74000	Record shall stop and shall be saved and waypoint Mode shall stay active in the backround while Android Auto route guidance is active	P_1: AA session with phone 1 is active P_2: MIB's offroad route guidance is active P_3: MIB's waypoint mode (WPM) "record" is active	A_1: Start AA route guidance	ER_1: MIB's offroad route guidance stops and is saved ER_2: AA route guidance starts ER_3: MIB's waypoint mode (WPM) is still active in the background	MIB-2_RQ_PJM_759
AndroidAuto-TC-74001	Native HMI route guidance calculation shall stop if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: MIB is currently calculating a route	A_1: Start AA route guidance while the MIB is calculating a route	ER_1: MIB's route calculation stops ER_2: AA route guidance starts	MIB-2_RQ_PJM_762
AndroidAuto-TC-74002	Native HMI multiple routes context shall close when Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Suggest multiple routes is on P_3: Calculate a route P_4: Multiple routes suggestion screen is shown	A_1: Start AA navigation	ER_1: Multiple routes suggestion screen closes ER_2: MIB's route guidance does not start ER_3: AA navigation starts	MIB-2_RQ_PJM_765
AndroidAuto-TC-74003	MIB screen: native HMI navigation context is visible Cluster screen: In Nav context the pre-defined MIB Nav context is displayed with turn by turn information Audio: Route guidance announcements of native HMI are audible 1. Route guidance of Android Auto stops	P_1: AA session with phone 1 is active P_2: AA route guidance is active P_3: Fuel warning popup appears	A_1: Start route guidance to the nearest petrol station via popup	ER_1: AA route guidance stops ER_2: MIB's route guidance to the nearest petrol station starts ER_3: MIB navigation announcements are audible through the car audio	MIB-2_RQ_PJM_768
AndroidAuto-TC-74004	MIB screen: Android Auto navigation context is visible Cluster screen: In Nav context the compass is visible (no turn by turn information are visible) Audio: Route guidance announcements of Android Auto are audible 1. native HMI tour stops 2. Tour info are lost	P_1: AA session with phone 1 is active P_2: MIB route guidance is active	A_1: Start an AA route guidance	ER_1: MIB route guidance stops ER_2: AA route guidance starts ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_770
AndroidAuto-TC-74005	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for offline POIs P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74006	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for online POIs P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74007	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for Restaurants online P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74139	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for Restaurants offline P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74008	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for car parks online P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74009	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for car parks offline P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74010	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for petrol stations online P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74011	List in native HMI navigation context shall be hold in backround if Android Auto route guidance starts	P_1: AA session with phone 1 is active P_2: Navigation context is shown P_3: Search for petrol stations offline P_4: Search result list is displayed P_5: Start AA navigation P_6: MIB shows AA context	A_1: Go back to MIB's Navigation context (while AA navigation is active)	ER_1: MIB Navigation context is shown ER_2: Search result list is displayed	MIB-2_RQ_PJM_772
AndroidAuto-TC-74013	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: AA route guidance is active	A_1: Eject SD1	ER_1: SD1 media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74014	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: AA route guidance is active	A_1: Safely remove SD1 (in Setup menu)	ER_1: SD1 media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74015	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from SD2 is active P_3: AA route guidance is active	A_1: Eject SD2	ER_1: SD2 media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74016	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active2 P_3: AA route guidance is active	A_1: Safely remove SD2 (in Setup menu)	ER_1: SD2 media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74017	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 (connected to USB2) is active P_2: Media playback from USB1 is active P_3: AA route guidance is active	A_1: Disconnect USB1	ER_1: USB1 media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74018	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 (connected to USB1) is active P_2: Media playback from USB2 is active P_3: AA route guidance is active	A_1: Disconnect USB2	ER_1: USB2 media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74019	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from CD is active P_3: AA route guidance is active	A_1: Eject CD	ER_1: CD media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74020	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from DVD is active P_3: AA route guidance is active	A_1: Eject DVD	ER_1: DVD media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74021	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: AA session with phone 1 is active P_2: Media playback from AUX is active P_3: AA route guidance is active	A_1: Disconnect Aux	ER_1: AUX media playback stops ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74022	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Same behaviour as well as any other native HMI context (No influence on Android Auto functionality)	P_1: SIM card is inserted (data only mode) P_2: AA session with phone 1 is active P_3: AA route guidance is active	A_1: Eject SIM card	ER_1: AA route guidance continues ER_2: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_775
AndroidAuto-TC-74023	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: AA session with phone 1 is active P_2: AA route guidance is active	A_1: Insert an SD card with playable media to SD1 slot	ER_1: SD card playback does not start ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74025	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: AA session with phone 1 is active P_2: AA route guidance is active	A_1: Insert an SD card with playable media to SD2 slot	ER_1: SD card playback does not start ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74024	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: AA session with phone 1 (connected to USB2) is active P_2: AA route guidance is active	A_1: Connect a USB with playable media to USB1	ER_1: USB playback does not start ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74026	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: AA session with phone 1 (connected to USB1) is active P_2: AA route guidance is active	A_1: Connect a USB with playable media to USB2	ER_1: USB playback does not start ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74027	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: AA session with phone 1 is active P_2: AA route guidance is active	A_1: Insert a CD with playable media	ER_1: CD playback does not start ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74028	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: AA session with phone 1 is active P_2: AA route guidance is active	A_1: Insert a DVD with playable media	ER_1: DVD playback does not start ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74029	MIB screen: No additional requirement Cluster screen: No additional requirements Audio: No additional requirement	P_1: Select Aux as media source P_2: AA session with phone 1 is active P_2: AA route guidance is active P_3: MIB is in AA context	A_1: Connect a media player to Aux	ER_1: Aux playback is not audible through the car audio ER_2: AA route guidance continues ER_3: AA navigation announcements are audible through the car audio	MIB-2_RQ_PJM_777
AndroidAuto-TC-74031	MIB screen: No additional requirement Cluster screen: There is a string like "Smartphone Navigation active" in Navigaton context Audio: No additional requirement	P_1: AA session with phone 1 is active P_2: FPK is in Navigation context P_3: No active audio	A_1: Check the display on the FPK	ER_1: There is a string like "Smartphone navigation active"	MIB-2_RQ_PJM_782
AndroidAuto-TC-74032	MIB screen: No additional requirement Cluster screen: There is the compass visible in Navigaton context Audio: No additional requirement	P_1: AA session with phone 1 is active P_2: FPK is in Navigation context P_3: No active audio	A_1: Check the display on the FPK	ER_1: There is a string like "Smartphone navigation active"	MIB-2_RQ_PJM_784
AndroidAuto-TC-74033	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Phone context by pressing the hardkey Phone	ER_1: Phone context is shown ER_2: AA playback continues seamlessly	MIB-2_RQ_PJM_788
AndroidAuto-TC-74034	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Navigation context by pressing the hardkey Nav	ER_1: Navigation context is shown ER_2: AA playback continues seamlessly	MIB-2_RQ_PJM_788
AndroidAuto-TC-74035	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Traffic context by pressing the hardkey Traffic	ER_1: Traffic context is shown ER_2: AA playback continues seamlessly	MIB-2_RQ_PJM_788
AndroidAuto-TC-74036	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Car context by pressing the hardkey Car	ER_1: Car context is shown ER_2: AA playback continues seamlessly	MIB-2_RQ_PJM_788

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74037	MIB screen: Switches over to native HMI context Cluster screen: No additional requirements Audio: No additional requirements	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux) P_3: AA media playback is active P_4: AA context is active	A_1: Switch to Menu context by pressing the hardkey Menu	ER_1: Menu context is shown ER_2: AA playback continues seamlessly	MIB-2_RQ_PJM_788
AndroidAuto-TC-74038	MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Media (Playback of the last played song of an active and in this moment still present media source starts.) 4. The Android Auto device is not visible and not selectable as media source	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux), remember the last MIB media source P_3: AA media playback is active P_4: AA context is active P_5: Instrument cluster is in Audio context	A_1: Switch to Media context by pressing the hardkey Media	ER_1: Media context is shown ER_2: AA media playback stops ER_3: MIB last selected source media playback resumes ER_4: Instrument cluster shows current MIB media source	MIB-2_RQ_PJM_790
AndroidAuto-TC-74039	MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Media (Playback of the last played song of an active and in this moment still present media source starts.) 4. The Android Auto device is not visible and not selectable as media source	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux), remember the last MIB media source P_3: AA media playback is active P_4: AA context is active P_5: Switch to Media context by pressing the hardkey Media	A_1: Try to select AA as media source in the media source pushup menu	ER_1: AA media playback cannot be selected as media source in the pushup menu	MIB-2_RQ_PJM_790
AndroidAuto-TC-74040	MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Media (Playback of the last played song of an active and in this moment still present media source starts.) 4. The Android Auto device is not visible and not selectable as media source	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux), remember the last MIB media source P_3: AA media playback is active P_4: AA context is active P_5: Instrument cluster is in Media context P_6: Switch to Media context by pressing the hardkey Media	A_1: Try to select AA as media source in the media source list screen (top level of media browser)	ER_1: AA media playback cannot be selected in the media source list screen	MIB-2_RQ_PJM_790
AndroidAuto-TC-74041	MIB screen: Switches over to native HMI Media context Cluster screen: No additional requirements (If in Media context -> native HMI adjusted context is visible) Audio: The resource Main Audio is dedicated to native HMI (Media) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Media (Playback of the last played song of an active and in this moment still present media source starts.) 4. The Android Auto device is not visible and not selectable as media source	P_1: AA session with phone 1 is active P_2: At least two other media sources are available (e.g. CD, SD, USB, DVD, Aux), remember the last MIB media source P_3: AA media playback is active P_4: AA context is active P_5: Instrument cluster is in Media context P_6: Switch to Media context by pressing the hardkey Media	A_1: Try to select AA as media source by repeatedly pressing hardkey Media	ER_1: AA media playback cannot be selected in the media source by repeatedly pressing hardkey media	MIB-2_RQ_PJM_790
AndroidAuto-TC-74042	MIB screen: Switches over to native HMI Radio (TV Tuner) context Cluster screen: No additional requirement Audio: The resource Main Audio is dedicated to native HMI (Radio/TV Tuner) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Radio/TV Tuner (Last active channel becomes active)	P_1: AA session with phone 1 is active P_2: Radio is the last MIB media source, remember the radio station currently playing P_3: AA media playback is active P_4: AA context is active P_5: Instrument cluster is in Audio context	A_1: Switch to Radio context by pressing the hardkey Radio	ER_1: Radio context is shown ER_2: AA media playback stops ER_3: Last selected radio station playback is audible ER_4: Instrument cluster shows current radio station	MIB-2_RQ_PJM_792
AndroidAuto-TC-74043	MIB screen: Switches over to native HMI Radio (TV Tuner) context Cluster screen: No additional requirement Audio: The resource Main Audio is dedicated to native HMI (Radio/TV Tuner) 1. Android Auto device stops playing 2. Lastmode is the same as any other switch over within native HMI to Radio/TV Tuner (Last active channel becomes active)	P_1: AA session with phone 1 is active P_2: TV is the last MIB media source, remember the TV station currently playing P_3: AA media playback is active P_4: AA context is active P_5: Instrument cluster is in Audio context	A_1: Switch to TV tuner	ER_1: TV tuner context is shown ER_2: AA media playback stops ER_3: Last selected TV station playback is audible ER_4: Instrument cluster shows current TV station information	MIB-2_RQ_PJM_792
AndroidAuto-TC-74044	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: SD1 playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74045	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: Instrument cluster is in Audio context P_4: Go to AA context and start AA media playback P_5: Remember where SD1 playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: SD1 playback resumes from where it was paused ER_3: Instrument cluster shows SD1 media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74046	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from SD2 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: SD2 playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74047	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback P_6: Remember where SD2 playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: SD2 playback resumes from where it was paused ER_3: Instrument cluster shows SD2 media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74048	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from Jukebox is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: Jukebox playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74049	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback P_6: Remember where Jukebox playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: Jukebox playback resumes from where it was paused ER_3: Instrument cluster shows Jukebox media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74050	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 (connected to USB2) is active P_2: Media playback from USB1 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: USB1 playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74052	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 (connected to USB2) is active P_2: Media playback from USB1 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback P_6: Remember where USB1 playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: USB1 playback resumes from where it was paused ER_3: Instrument cluster shows USB1 media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74054	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 (connected to USB1) is active P_2: Media playback from USB2 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: USB2 playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74055	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 (connected to USB1) is active P_2: Media playback from USB2 is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback P_6: Remember where USB2 playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: USB2 playback resumes from where it was paused ER_3: Instrument cluster shows USB2 media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74056	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from CD is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: CD playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74058	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from CD is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback P_6: Remember where CD playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: CD playback resumes from where it was paused ER_3: Instrument cluster shows CD media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74059	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from DVD is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: DVD playback pauses ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74060	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from DVD is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback P_6: Remember where DVD playback is paused	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: DVD playback resumes from where it was paused ER_3: Instrument cluster shows DVD media metadata	MIB-2_RQ_PJM_794
AndroidAuto-TC-74061	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from Aux is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context	A_1: Go to AA context and start AA media playback	ER_1: Aux playback is no longer audible through the car audio ER_2: AA media playback is audible through the car audio	MIB-2_RQ_PJM_794
AndroidAuto-TC-74062	Media playback of native HMI shall be paused, if Android Auto requests media audio	P_1: AA session with phone 1 is active P_2: Media playback from Aux is active P_3: MIB is not in AA context P_4: Instrument cluster is in Audio context P_5: Go to AA context and start AA media playback	A_1: Switch to Media context by pressing the hardkey Media	ER_1: AA media playback stops ER_2: Aux playback is audible through the car audio ER_3: Instrument cluster shows Aux source	MIB-2_RQ_PJM_794
AndroidAuto-TC-74063	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from SD1	ER_1: Playback from SD1 cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74064	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 is active P_2: Media playback from SD2 is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from SD2	ER_1: Playback from SD2 cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74065	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 (connected to USB2) is active P_2: Media playback from USB1 is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from USB1	ER_1: Playback from USB1 cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74066	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 (connected to USB1) is active P_2: Media playback from USB2 is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from USB2	ER_1: Playback from USB2 cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74067	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 is active P_2: Media playback from a CD is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from the CD	ER_1: Playback from the CD cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74068	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 is active P_2: Media playback from a DVD is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from the DVD	ER_1: Playback from the DVD cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74069	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 is active P_2: Media playback from the Jukebox is active P_3: Media playback is paused by active AA phonecall P_4: MIB is in Media context	A_1: Try to manually resume playback from the Jukebox	ER_1: Playback from the Jukebox cannot be resumed during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74070	native HMI media playback shall not start during an ongoing Android Auto phonecall	P_1: AA session with phone 1 is active P_2: Media playback from SD1 is active P_3: Aux source is connected to MIB using a line cable P_3: Media playback from SD1 is paused by active AA phonecall P_4: MIB is in Media context	A_1: Go to the top level of the media browser, select Aux source, press the play button	ER_1: Playback from the Aux source must not be audible through the car audio during an active phonecall	MIB-2_RQ_PJM_797
AndroidAuto-TC-74071	Playback doesn't start	P_1: AA session with phone 1 is active P_2: MIB phonecall is active P_3: Go to AA context	A_1: Try to start AA media playback during the ongoing MIB phonecall	ER_1: AA media playback does not start. ER_2: MIB phonecall is still audible through the car audio	MIB-2_RQ_PJM_800
AndroidAuto-TC-74073	Playback skips to next or previous song	P_1: AA session with phone 1 is active P_2: AA context is active P_3: AA media playback is active	A_1: Press MFL Next button	ER_1: AA media playback skips to the next track	MIB-2_RQ_PJM_802
AndroidAuto-TC-74074	Playback skips to next or previous song	P_1: AA session with phone 1 is active P_2: AA context is active P_3: AA media playback is active	A_1: Press MFL Previous button	ER_1: AA media playback skips to the start of the current track or to the previous track	MIB-2_RQ_PJM_802
AndroidAuto-TC-74075	Playback skips to next or previous song	P_1: AA session with phone 1 is active P_2: AA context is active P_3: Instrument cluster is in Audio context P_4: AA media playback is active	A_1: Press MFL button Up	ER_1: AA media playback skips to the next track	MIB-2_RQ_PJM_804
AndroidAuto-TC-74076	Playback skips to next or previous song	P_1: AA session with phone 1 is active P_2: AA context is active P_3: Instrument cluster is in Audio context P_4: AA media playback is active	A_1: Press MFL button Down	ER_1: AA media playback skips to the start of the current track or to the previous track	MIB-2_RQ_PJM_804

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74084	MIB screen: Switches over to Android Auto (if screen resource is requested by AA device) Cluster screen: No additional requirements (If in Media context -> Android Auto adjusted context is visible) Audio: The resource media Audio is dedicated to Android Auto 1. Playback starts	P_1: AA session with phone 1 is active P_2: AA context is active P_3: AA media playback is not active	A_1: Start Google Voice, speak the voice command to start AA media playback	ER_1: AA media playback starts and is audible through the car audio	MIB-2_RQ_PJM_822
AndroidAuto-TC-74087	MIB screen: Switches over to Android Auto (even if screen resource is not requested by AA device but only media audio resource). Cluster screen: No additional requirements (If in Media context -> Android Auto adjusted context is visible) Audio: The resource media Audio is dedicated to Android Auto 1. Playback starts	P_1: AA session with phone 1 is active P_2: MIB is in native HMI context (AA context is not active) P_3: AA media playback is not active	A_1: Start Google Voice, speak the voice command to start AA media playback	ER_1: AA media playback starts and is audible through the car audio	MIB-2_RQ_PJM_824
AndroidAuto-TC-74083	MIB screen: Switches over to Android Auto (if screen resource is requested by AA device) Cluster screen: No additional requirements Audio: No additional requirements 1. Route guidance starts	P_1: AA session with phone 1 is active P_2: MIB is in native HMI context (AA context is not active)	A_1: Using Google Voice, start an AA route guidance	ER_1: AA route guidance starts ER_2: MIB may switch to AA context if screen resource is requested by AA device)	MIB-2_RQ_PJM_826
AndroidAuto-TC-74088	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Route guidance starts	P_1: AA session with phone 1 is active P_2: AA context is active	A_1: Using Google Voice, start an AA route guidance	ER_1: AA route guidance starts	MIB-2_RQ_PJM_828
AndroidAuto-TC-74089	MIB screen: Switches over to Android Auto Phone (if screen resource is requested by AA device) Cluster screen: No additional requirements (If in Phone context -> Android Auto phone information is visible) Audio: The resources Mic and Audio are dedicated to Android Auto Phone 1. Call via Android Auto device starts	P_1: AA session with phone 1 is active P_2: MIB is in native HMI context (AA context is not active)	A_1: Using Google Voice, start a phonecall	ER_1: AA phonecall starts	MIB-2_RQ_PJM_830
AndroidAuto-TC-74090	MIB screen: No additional requirements Cluster screen: No additional requirements (If in Phone context -> Android Auto phone information is visible) Audio: The resources Mic and Audio are dedicated to Android Auto Phone 1. Call via Android Auto device starts	P_1: AA session with phone 1 is active P_2: AA context is active	A_1: Using Google Voice, start a phonecall	ER_1: AA phonecall starts	MIB-2_RQ_PJM_832
AndroidAuto-TC-74091	MIB screen: SDS dialog popup is visible with the background being the same Android Auto context but dimmed Cluster screen: No additional requirements Audio: The resources (Mic and Audio) are dedicated to Main Audio (SDS) native HMI 1. Release of the button starts SDS	P_1: AA session with phone 1 is active P_2: AA context is active P_3: AA media playback is active	A_1: Short-press the hardkey Voice to start MIB's SDS	ER_1: AA media playback is temporarily not audible through the car audio ER_2: SDS command list is displayed on dimmed AA context background	MIB-2_RQ_PJM_834
AndroidAuto-TC-74092	MIB screen: SDS dialog popup is visible with the background being the same Android Auto context but dimmed Cluster screen: No additional requirements Audio: The resources (Mic and Audio) are dedicated to Main Audio (SDS) native HMI 1. Release of the button starts SDS	P_1: AA session with phone 1 is active P_2: AA context is active P_3: AA media playback is active P_4: Short-press the hardkey Voice to start MIB's SDS	A_1: Speak any voice command, e.g. "help"	ER_1: AA media playback is temporarily not audible through the car audio ER_2: SDS is audible through the car audio	MIB-2_RQ_PJM_834
AndroidAuto-TC-74093	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Audio resource requests for Google Voice are rejected by the system Google Voice doesn't start	P_1: AA session with phone 1 is active P_2: MIB is in native HMI context (AA context is not active) P_3: SDS session is active	A_1: Try to start Google Voice by long-pressing the hardkey Voice	ER_1: Google Voice does not start ER_2: SDS session end	MIB-2_RQ_PJM_840
AndroidAuto-TC-74094	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Audio resource requests for Google Voice are rejected by the system Google Voice doesn't start	P_1: AA session with phone 1 is active P_2: MIB is in native HMI context (AA context is not active) P_3: SDS session is active	A_1: Try to start Google Voice by long-pressing the MFL PTT key	ER_1: Google Voice does not start ER_2: SDS session end	MIB-2_RQ_PJM_840
AndroidAuto-TC-74095	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: Audio resource requests for Google Voice are rejected by the system Google Voice doesn't start	P_1: AA session with phone 1 is active P_2: AA context is active P_3: SDS session is active	A_1: Try to start Google Voice by pressing the Google voice softkey	ER_1: Google Voice does not start ER_2: SDS session end	MIB-2_RQ_PJM_840
AndroidAuto-TC-74096	MIB screen: Change into native HMI Cluster screen: No additional requirements Audio: Audio resource is requested for native TTS, Google Voice is cancelled Google Voice is stopped	P_1: AA session with phone 1 is active P_2: MIB is Phone context, a text message is displayed P_3: Google Voice session is active	A_1: Initiate a TTS readout of the text message while Google Voice session is ongoing	ER_1: Google Voice session ends ER_2: TTS readout of the text message starts and is audible through the car audio	MIB-2_RQ_PJM_948
AndroidAuto-TC-74097	Global Popup shall stay visible in Android Auto frame buffer even if context is switched while the popup is already being displayed.	P_1: AA session with phone 1 is active P_2: MIB is in AA context P_3: Change the drive mode. Drive mode popup appears	A_1a: If popup is not over fullscreen, try to perform some meaningful touches on the AA screen in the background while the MIB popup is displayed A_1b: If popup is over fullscreen, wait till popup disappeared	ER_1a: The touch events in the AA context are ignored as long as the MIB popup is displayed ER_1b: AA context is shown back in the same context	MIB-2_RQ_PJM_857
AndroidAuto-TC-74098	Global Popup shall stay visible in Android Auto frame buffer even if context is switched while the popup is already being displayed.	P_1: AA session with phone 1 is active P_2: Go to MIB's Media context, start importing media files from a SD card, USB or CD to the Jukebox P_3: MIB is in AA context while the media import continues in the background	A_1: Eject the media from which the media files are being imported (popup appears)	ER_1: AA context is in the background dimmed behind the popup	MIB-2_RQ_PJM_857
AndroidAuto-TC-74099	The pop-up is no longer visible	P_1: AA session with phone 1 is active P_2: MIB is in Setup context P_3: Press the button to reset the unit to factory settings (do not confirm the popup)	A_1: While the popup is visible, press a hardkey or softkey on the AA device to make MIB change to AA context	ER_1: Unit is not reset to factory settings ER_2: Factory settings popup is no longer visible ER_3: AA context is active	MIB-2_RQ_PJM_860
AndroidAuto-TC-74100	The pop-up is no longer visible	P_1: AA session with phone 1 is active P_2: MIB is in Radio context P_3: Some radio stations are stored in the presets P_3: In Radio Setup, press the button to delete the presets (do not confirm thepopup)	A_1: While the popup is visible, press a hardkey or softkey on the AA device to make MIB change to AA context	ER_1: Radio presets are not deleted ER_2: Delete presets popup is no longer visible ER_3: AA context is active	MIB-2_RQ_PJM_860
AndroidAuto-TC-74101	The pop-up is no longer visible	P_1: AA session with phone 1 is active P_2: MIB is in native HMI context (AA context is not active) P_3: Insert an SD card	A_1: While the hint about reading SD card is visible, press a hardkey or softkey on the AA device to make MIB change to AA context	ER_1: Reading SD card hint is no longer visible ER_2: AA context is active	MIB-2_RQ_PJM_862
AndroidAuto-TC-74102	MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible	P_1: AA session with phone 1 is active P_2: AA context is active	A_1: Shift into reverse gear to activate Rearview camera/PDC	ER_1: Rearview camera/PDC pop-up should be visible while rearview camera is active, AA context is visible in the background	MIB-2_RQ_PJM_487 MIB-2_RQ_PJM_866
AndroidAuto-TC-74140	MIB screen: Switches over to RVC Cluster screen: No additional requirements Audio: No additional requirement 1. RVC is visible	P_1: AA session with phone 1 is active P_2: AA context is active	A_1: Activate Rearview Camera/PDC manually	ER_1: Rearview camera/PDC pop-up should be visible while rearview camera is active, AA context is visible in the background	MIB-2_RQ_PJM_487 MIB-2_RQ_PJM_866

DOORS ID	Test Case Description	Precondition	Action	Expected Result	Requirements
AndroidAuto-TC-74103	MIB screen: No additional requirements Cluster screen: No additional requirements Audio: No additional requirements 1. Emergency popup is visible with the background being the same Android Auto context but dimmed	P_1: AA session with phone 1 is active P_2: Radio receives Traffic programme P_3: AA context is active	A_1: Emergency popup appears	ER_1: Emergency popup is visible ER_2: AA context appears dimmed in the backgroud	MIB-2_RQ_PJM_870
AndroidAuto-TC-74104	Android Auto context is in Day-/Night-Mode corresponding to Day/Night global settings.	P_1: AA session with phone 1 is active P_2: AA context is active	A_1: Toggle between Day/Night mode in Menu/Setup/Screen. Check the AA context	ER_1: AA context is in Day/Night mode according to MIB	MIB-2_RQ_PJM_872
AndroidAuto-TC-74105	Android Auto context is in Day-/Night-Mode corresponding to Day/Night global settings.	P_1: AA session with phone 1 is active P_2: AA context is active	A_1: Toggle between Day/Night mode in Nav View pushup menu. Check the AA context	ER_1: AA context is in Day/Night mode according to MIB	MIB-2_RQ_PJM_872