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Test specifications for GSM-R MI related requirements
Part 1: Cab Radio

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Document Data Sheet

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1.0.0	2017-05	UIC	Approval by UIC

Contents

1 Object

1.1 Purpose of the document

This document contains the test cases that are necessary for the functional validation of a Cab Radio according to the EIRENE specifications FRS (see [2]) and SRS (see [3]). The test cases cover all the requirements that have been identified as mandatory for interoperability (MI) according to the EIRENE specification and which can be validated using functional tests. QoS and performance requirements for voice and non-safety related data communications are not in the scope of this document.

1.2 Abbreviations

AC	Access Code
AT	Attention command set
BC	Breakout Code
BTS	Base Transceiver Station
CC	Country Code
CN	Coach Number
CR	Cab Radio
CHPC	Confirmation of High Priority Calls
CLIP	Calling Line Identification Presentation
CoLP	Connected Line Identification Presentation
CS	Circuit Switched
CTS	Centralized Train Signaling
DL	Downlink
DSD	Driver Safety Device
EDOR	ETCS data only radio
EIRENE	European Integrated Railway Radio Enhanced Network
eMLPP	enhanced Multi-Level Precedence and Pre-emption
ETCS	European Train Control System
EN	Engine Number
eREC	enhanced Railway Emergency Call
FFFIS	Form Fit Functional Interface Specification

FI	Functional Identity
FC	Function Code
FN	Functional Number
FRS	Functional Requirements Specification
GBR	Guaranteed Bitrate
GCA	Group Call Area
GID	Group call Identity
GPH	General Purpose Handheld
GSM	Global System for Mobile Communications
GSM-MT	GSM Mobile Termination
GSM-R	GSM-Railway, GSM train radio system
ISDN	Integrated Services Digital Network
LAS	Link Assurance Signal
LN	Location Number
MCC	Mobile Country Code
MLPP	Multi-Level Precedence and Pre-emption
MMI	Man – Machine Interface
MNC	Mobile Network Code
MPTY	Multiparty Supplementary Services
MS	Mobile Station, GSM-R mobile phone with a valid SIM Card for the test
MT	Mobile Termination/Terminated
NDC	National Destination Code
OPH	Operational Purpose Handheld
OPS	Operational Purpose Handheld for Shunting
OTA	Over The Air
OTDI	Originator To Dispatcher Information
PA	Public Address
PC	Primary Controller
PDP	Packet Data Protocol

PFN	Presentation of Functional Number
PPP	Point to Point Protocol
PS	Packet Switched
PSC	Power Supply Controller
PSK	Phase Shift Keying
PTP	Point-to-Point call
PTT	Push to Talk
QoS	Quality of Services
REC	Railway Emergency Call
SC	Secondary Controller
SDU	Service Data Unit
SEC	Shunting Emergency Call
SGC	Shunting Group Call
SIM	Subscriber Identification Module
SMS	Short Message Service
SN	Stock Number
SN	Subscriber Number
SRS	System Requirements Specification
TE	Terminal Equipment
TN	Train Number
UIC	Union Internationale des Chemins de Fer
UL	Uplink
USSD	Unstructured Supplementary Service Data
UUIE	User-to-User Information Element
UUS	User-User Signalling
VBC	Voice Broadcast Call
VBS	Voice Broadcast Service
VGC	Voice Group Call
VGCS	Voice Group Call Service

1.3 Reference Documents

[1]*	Cab Radio User's Manual
[2]	UIC, EIRENE Functional Requirements Specification Doc.-N°: UIC CODE 950 v 0.0.2 | version: 8.0.0
[3]	UIC, EIRENE System Requirement Specification Doc.-N°: UIC CODE 951 v 0.0.2 | version: 16.0.0
[4]	COMMISSION REGULATION (EU) 2016/919 of 27 May 2016 on the technical specification for interoperability relating to the 'control-command and signalling' subsystems of the rail system in the European Union
[5]	UIC, FFFIS for GSM-R SIM Cards Doc.-N°: P38 T 9001 | version: 5.0 (2015-12)
[6]	UIC, Loudspeaker and telephone systems in RIC coaches - Standard technical characteristics Doc.-N°: UIC CODE 568 | version: 3.0 (1996-01)
[7]	Void
[8]	UIC, Test specifications for GSM-R MI related requirements, Part 2: EDOR Doc.-N°: UIC O-3001-2 | version: 1.0.0
[9]	UIC, Test specifications for GSM-R MI related requirements, Part 3: SIM Cards Doc.-N°: UIC O-3001-3 | version: 1.0.0
[10]	UIC, Test specifications for GSM-R MI related requirements, Part 4: Network Doc.-N°: UIC O-3001-4 | version: 1.0.0

* Document [1] refers to the User's Manual of the tested type of Cab Radio. It is imperative to use the Cab Radio User / Interface Manual corresponding to the tested version of the Cab Radio.

2 Test Configuration

2.1 Overview

Following components of the EIRENE GSM-R system are needed to execute the tests:

- GSM-R Network(s)
- Cab Radio (device under test)
- General purpose radio (GPH) or operational purpose radio (OPH)
- Shunting radio (OPS)
- Dispatchers
- SIM Cards

2.2 Equipment required

- GSM-R network(s) operating in the R-GSM 900 band
- GSM Abis-tracer or GSM A-tracer, in order to check the contents on the messages exchanged between mobiles and network when required.
- Cab Radio (device under test) which includes a GSM-R module with type approval
- Fixed network controller (dispatcher)
- Enough mobile stations (Cab Radio or handheld) to cover multiparty calls e.g. drivers multi-party call (MPTY).
- GSM-R SIM cards with all the services and features provisioned and configured for the appropriate mobile user and function.
- SIM card editor, in order to be able to modify the services and features provisioned and the configuration on the SIM cards for the different test requirements
- User's Manual of the tested device
- User's Manual of the other mobiles involved testing

2.3 Network configuration

It is recommended that GSM-R network is fully compliant to the requirements listed in the set of specifications applicable to GSM-R network, see [4]. However it is noted that some of the features are not specifically required for Cab Radio testing.

It must be possible to adjust various functions within the network in order to carry out the Cab Radio tests. The GSM-R network configuration shall at least support two location / group call areas.

The stationary work stations, especially for the primary controller, secondary controller, power supply controller, traffic controller and high priority call acknowledgement centre belong to the test environment and are provided by the test lab operator or the customer. The configuration of the used GSM-R network, supplier and the software release of the network components such as e.g. network switching subsystem, base station subsystem etc. must be documented in the test protocol. Optionally the network compliance can be verified by [10].

2.4 Cab Radio configuration

2.4.1 Software

The software release of the Cab Radio must be declared in the test protocol.

2.4.2 Hardware

The hardware release of the Cab Radio must be declared in the test protocol.

2.4.3 SIM cards

The SIM cards need to be compliant to [5] and will be provided by the network operator or test lab operator. Optionally the SIM card compliance can be verified by [9].

3 Completion of the Functional tests

3.1 General

The following chapters contain a detailed description of all functional tests provided for the Cab Radio.

3.2 Structure of the tests

The tests are structured as follows:

- test title
- purpose of the test
- precondition for the test
- reference to specific requirement(s)
- completion of the test in individual steps

Where the term "User's Manual" is used, the required action and/or any audible and/or visual indication has to be referred to the User's Manual of the tested Cab Radio.

3.3 Completion of the tests

The tests are carried out with at least one Cab Radio. If other subscribers are used they are identified by MS-A, MS-B, MS-C (for mobile subscribers) or TE1, TE2 (for terminal equipment).

The entire series of tests has to be completed successfully once. The order of the tests during the test run might vary.
If the result of a test case is PASSED then it does not need to be redone.
If the result of a test case is FAILED, the cause of the failure should be determined.

- If the failure is not due to the CR-A (equipment under test) the test case needs to be retested after correction of the fault. If the 1st test result is FAILED and the 2nd result is PASSED then the test case needs to be retested again. The test case is passed only if the result was PASSED already at 1st test execution or PASSED within 2nd and 3rd execution. Where the procedure section of a test case contains "- none -" that means no action to be performed on the tested device, only on other devices (e.g. CR-B or MS-A).
- If the failure is due to the CR-A (equipment under test) this shall be recorded in the test report.

The priority and severity management of an issue that caused the test to fail is not subject of this document.

3.4 Cab Radio test configuration

The following requirements or settings apply to the Cab Radio test grouping:
Test system requirements:

- EIRENE compliant GSM-R network (or in some test cases two networks) compliant to [4]
- Subscriber for controller calls 1200, 1300, 1400 & 1500
- Two primary controller (PC1, PC2) in different cell specific routing areas
- Shunting radio with LAS function
- Cab Radio
- Handhelds

- Public address and intercom system in accordance with [6]
  (connected to the test unit if it supports it)
- SIM card editor, in order to be able to modify the services and features provisioned and the configuration on the SIM cards for the different test requirements.
- External device for setting the test unit's vehicle number (e.g. personal computer with appropriate software installed)
- The interface between the application and GSM-R modem can be recorded (is required, e.g. for testing the correct format of the UUIE)

Test unit requirements

- Equipped with a plug-in SIM card according to [5]
- Group number 299 for railway emergency call, 599 for shunting emergency call (SEC) configured on the SIM
- Additional group numbers (e.g. 203) are enabled on the SIM
- Voice broadcast groups (e.g. 200 or 998) are enabled on the SIM
- Own phone number (MSISDN) entered on the SIM
- Registered engine number entered on the SIM and on the network
- Short numbers for the controllers have to be defined in the SIM (EFSDN) file, as defined in [5]
- Unless otherwise specified CR is switched on and in Train Radio Mode (unless Shunting Radio Mode is specified in precondition), MMI1 is activated, idle mode, registered as the lead vehicle

Further requirements

- SIM cards of CR & MS are activated
- SMS service centre number is stored on CR & MS SIM cards
- SIM of CR & MS does not contain any received SMS messages
- The following GIDs should be defined on SIM cards, and in network database:
  - default train group*: CT(50)+GCA+GID (200)
  - default maintenance group: CT(50)+GCA+GID (560)
  - default shunting group*: CT(50)+GCA+GID (500)
  - dedicated maintenance group: CT(50)+GCA+GID (561-568)
  - dedicated shunting group*: CT(50)+GCA+GID (501-529)
  - national broadcast group: CT(51)+GCA+GID (400-499)
  - train broadcast group: CT(51)+GCA+GID (200)

* For interoperability

If required, the necessary deviations are listed in the individual test cases. The used test environment shall be documented in the test report.

4 EIRENE Requirements for Cab Radio: Mandatory for Interoperability

4.1 Power on / Power off functions

4.1.1 System boot - error-free device

Purpose: This test is to show the system start-up procedure and the default settings of an error-free Cab Radio.

Precondition: Cab Radio test configuration. Cab radio is powered off and all units are error-free.

References:
EIRENE FRS : § 5.2.3.1, 5.2.3.13
EIRENE SRS : § 4.4.1, 5.4.1, 5.4.2

Step	Procedure	Result / Effect
1	Power-on CR-A	- Indication of the start-up procedure visible on the MMI - Automatic self-test - Network registration to the previously registered network - MMI default settings initialised (e.g. brightness, audio profile, loudspeaker volume, handset volume) - Default user language selected - Acoustic signal: ready for operation - Last used network selected - Name of the network and indication of the adequate signal strength is displayed on the MMI

4.1.2 System boot – faulty device

Purpose: This test is to show that the automatic self-test during system start-up identifies a faulty device and the according error message is displayed on the MMI.

Precondition: Cab Radio test configuration. An artificial defect shall be implanted into the CR-A according to documentation (e.g. remove the Public Address and Intercom Unit). Attention: To prepare this test, the CR-A system must be electrically powered off.

References:
EIRENE FRS : § 5.2.3.1
EIRENE SRS : § 5.4.1

Step	Procedure	Result / Effect
1	Power-on CR-A	- Indication of the start-up procedure is displayed on the MMI - Automatic self-test

Step	Procedure	Result / Effect
2	- none - (Initialisation finished)	- MMI default settings initialised - Default user language selected - Acoustic signal: ready for operation - Name of the network displayed on the MMI. - Error message - according to user's manual – is displayed on the MMI

4.1.3 Loudspeaker volume at power-on

Purpose: This test is to show that after a system start-up, the Cab Radio automatically selects the default loudspeaker volume.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.3.17
EIRENE SRS : § 5.4.1i

Step	Procedure	Result / Effect
1a	Set the loudspeaker volume using MMI menu **or** external device to *„Quiet cab"* or equivalent	Loudspeaker volume set to the selected level
1b	Set the loudspeaker volume using MMI menu or external device to *„Normal cab"* or equivalent	
1c	Set the loudspeaker volume using MMI menu or external device to *„Noisy cab"* or equivalent	
2	Power-off CR-A	CR-A powered off
3	Power-on CR-A	Loudspeaker volume at the same level as before

4.1.4 System boot – no GSM-(R) network coverage

Purpose: This test is to show that after a system start-up an audible and visual indication is given if connection to a GSM-(R) network is not possible.

Precondition: Cab Radio test configuration. The antenna cable should be removed from the GSM-MT antenna connector or the network coverage of the BTS should be switched off (Radio Signal < -110dBm).
Attention: To prepare this test, the Cab Radio must be electrically powered off.

References:
EIRENE FRS : § 5.2.3.1
EIRENE SRS : § 5.4.3

Step	Procedure	Result / Effect
1	Power-on CR-A	- Indication of the start-up procedure is displayed on the MMI - Automatic self-test
2	- none - (initialisation finished)	- MMI default settings initialised - Default user language selected - Audio-visual indication of no GSM-(R) coverage - Error message is displayed on the MMI

4.1.5 Power-off and back on with different network coverage

Purpose: This test is to show that after the Cab Radio is powered off it is no longer connected to the GSM-(R) network and after it is powered on again the corresponding network availability is displayed on the MMI.

Precondition: Cab Radio test configuration; Manual network selection is configured. CR-A has a registered engine and train number.

References:
EIRENE FRS : § 5.2.3.1, 5.2.3.3

Step	Procedure	Result / Effect
1	Power-off CR-A	CR-A powered off
2a	- none – (MS-A calls CR-A by MSISDN)	No connection to CR-A
2b	- none – (MS-A calls CR-A by engine number)	
3a	Power-on CR-A (**previous** network available)	- Audible indication is given - Network name is displayed on the MMI
3b	Power-on CR-A (only **other** network available)	- Audio-visual indication is given for the unavailability of the last used network - Manual network selection needed for connecting to other network

4.1.6 Saving numbers at power-off

Purpose: This test is to show that if the Cab Radio is powered off the last used numbers are saved.

Precondition: Cab Radio test configuration; Manual network selection is configured; Cab Radio registered to CT4/CT3/CT2 functional numbers according to the test steps.

References:
EIRENE FRS : § 5.2.3.4

Step	Procedure	Result / Effect
1a	Power-off CR-A (CR-A registered only by CT4)	CR-A powered off
1b	Power-off CR-A (CR-A registered only by CT3)	
1c	Power-off CR-A (CR-A registered by CT3/CT4 and CT2)	
2	Power-on CR-A	CR-A powered on and in default idle status
3a	- none - (Controller initiates a call to CR-A by CT4)	- Call established, communication possible - CR-A sends correct PFN Tag5 to Controller
3b	- none - (Controller initiates a call to CR-A by CT3)	
3c	- none - (Controller initiates a call to CR-A by CT2)	
4	Power-off CR-A	CR-A powered off
5	- none - (CR-A's CT2 registration is removed from subscription handling entity)	- none - (CR-A powered off)
6	Power-on CR-A	- CR-A powered on and in default idle status - No Train Number is displayed on the MMI
7	CR-A initiates a call to Controller	- Call established, communication possible - CR-A sends PFN Tag5 with CT3/CT4 to Controller

4.2 MMI functions

4.2.1 MMI activation

Purpose: This test is to show that the MMI can be activated using a soft switch-on function.

Precondition: Cab Radio test configuration. CR-A is powered on and its MMI is switched off (inactive). MMI reset timer is set to ***t*** minutes.

References:
EIRENE FRS : § 5.2.3.6, 5.2.3.7

Step	Procedure	Result / Effect
1	(MMI was switched off with non-default settings) Switch-on the MMI	- Indication of the switch-on procedure - Self-test of the MMI
2a	- none - (MMI was switched off less than ***t*** minutes ago)	MMI powers on with the same configuration as before (e.g. previously set brightness / contrast / volume levels)
2b	- none - (MMI was switched off more than ***t*** minutes ago)	MMI powers on with the default configuration (e.g. default brightness / contrast / volume levels)

4.2.2 MMI deactivation

Purpose: This test is to show that the MMI can be deactivated by a soft switch-off function during an active call which is terminated or left by the Cab Radio. Deregistration of the train number in shunting mode only possible if train number is already registered during shunting.

Precondition: Cab Radio test configuration; CR-A in train mode for steps 1-14 and later in shunting mode for steps 5-14;

References:
EIRENE FRS : § 5.2.3.5, 5.2.3.9

Step	Procedure	Result / Effect
	PTP / Voice Broadcast Call	
1	CR-A registers a CT2 number	CR-A has a CT2 registration
2a	- none - (Incoming broadcast call GID 20X)	Call established, communication possible
2b	CR-A initiates a PTP call to MS-A	
3a	During the active call, switch-off the MMI (e.g. by using CR-A's reversing switch or MMI's power switch, and if required by the user's manual, confirm deregistration of CT2 number)	- Active MMI becomes passive - Broadcast call **left** - Deregistration of the CT2 number - Save data
3b		- Active MMI becomes passive - PTP call **terminated** - Deregistration of the CT2 number - Save data
4	Switch-on the MMI (e.g. by using CR-A's reversing switch or MMI's power switch)	- MMI becomes active again - CR-A in default idle status without CT2 registration
	Voice Group Call	
5	CR-A registers a CT2 / CT6 number	CR-A has a CT2 / CT6 registration
6a	- none - (Incoming group call GID 200 / 50X)	Call established, communication possible

Step	Procedure	Result / Effect
6b	CR-A initiates a group call GID 200 / 50X	
7a	- none - (uplink is taken by MS-A)	MS-A can be heard on CR-A
7b	(uplink is free) CR-A press and hold PTT button	CR-A can be heard on MS-A
8a	During the active call, switch-off the MMI (e.g. by using CR-A's reversing switch or MMI's power switch, and if required by the user's manual, confirm deregistration of CT2 number)	- Active MMI becomes passive - Group call **left** - Deregistration of the CT2 number - Save data
8b		- Active MMI becomes passive - Group call **terminated** - Deregistration of the CT2 number Save data
9	Switch-on the MMI (e.g. by using CR-A's reversing switch or MMI's power switch)	- MMI becomes active again - CR-A in default idle status without CT2 registration
	Railway Emergency Call	
10	CR-A registers a CT2 / CT6 number	CR-A has a CT2 / CT6 registration
11a	- none - (Incoming emergency call GID 299 / 599)	Call established, communication possible
11b	CR-A initiates an emergency call GID 299 / 599	
12a	- none - (uplink is taken by MS-A)	MS-A can be heard on CR-A
12b	(uplink is free) CR-A press and hold PTT button	CR-A can be heard on MS-A
13a	During the active call, switch-off the MMI (e.g. b y using CR-A's reversing switch or MMI's power switch, and if required by the user's manual, confirm deregistration of CT2 number)	***Preferred Implementation*** *– call is left immediately:* - Active MMI becomes passive - Emergency call **left** - Deregistration of the CT2 number - Save data - CHPC is sent with Tag5 containing CT2 / CT6 number and with ***CAUSE 0x10*** (call was left on user command) ***Optional Implementation*** *– call is not left:* - **No change** until the call is terminated by another party - After call termination active MMI becomes passive - Deregistration of the CT2 number - Save data - CHPC is sent with Tag5 containing CT2 / CT6 number and with ***CAUSE 0x00*** (no error)

Step	Procedure	Result / Effect
13b	During the active call, switch-off the MMI (e.g. b y using CR-A's reversing switch or MMI's power switch, and if required by the user's manual, confirm deregistration of CT2 number)	***Preferred Implementation*** *– call is terminated immediately:* - Active MMI becomes passive - Emergency call **terminated** - Deregistration of the CT2 number - Save data - CHPC is sent with Tag5 containing CT2 / CT6 number and with ***CAUSE 0x00*** (no error) ***Optional Implementation*** *– call is not terminated:* - **No change** until the call is terminated by the driver (after releasing PTT), Controller or network (timer) - After call termination active MMI becomes passive - Deregistration of the CT2 number - Save data - CHPC is sent with Tag5 containing CT2 / CT6 number and with ***CAUSE 0x00*** (no error)
14	Switch-on the MMI (e.g. by using CR-A's reversing switch or MMI's power switch)	- MMI becomes active again - CR-A in default idle status without CT2 registration

4.2.3 MMI language selection

Purpose: This test is to show that the Cab Radio supports at least ten different languages on the MMI for related prompts and information to be displayed. The user can select the preferred language from a list of available languages.

Precondition: Cab Radio test configuration. CR-A is loaded with at least 10 different languages options.

References:
EIRENE FRS : § 5.2.3.12, 5.2.13, 5.2.3.14, 5.2.3.16

Step	Procedure	Result / Effect
1	CR-A activates MMI language selection	- List of available languages are displayed on the MMI - There are at least 10 different language options
2	CR-A selects and activates a different language than the currently used language	Information, prompts and menu items are changed to the selected language on the MMI

4.3 Self-test functions

4.3.1 Manual self-test

Purpose: This test is to show that the driver can manually initiate a Cab Radio self-test and the results are displayed on the MMI.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.3.44

Step	Procedure	Result / Effect
1a	CR-A selects MMI menu for manual self-test and starts the test (All Cab Radio units are error-free)	- Self-test is started - Visual indication of the running self-test is displayed on the MMI
1b	CR-A selects MMI menu for manual self-test and starts the test (Cab Radio has an artificially implanted defect based on the self-test framework declared by the manufacturer)	
2	- none -	- Visual indication for the completed self-test is displayed on the MMI - Result of the self-test is displayed on the MMI.

4.3.2 Manual self-test – incoming call

Purpose: This test is to show that an ongoing manually initiated self-test doesn't prevent calls (e.g. train emergency calls). The self-test is terminated by the incoming train emergency call.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.3.44, 5.2.3.45

Step	Procedure	Result / Effect
1	CR-A selects MMI menu for manual self-test and starts the test	- Self-test is started - Visual indication of the running self-test is displayed on the MMI
2	- none – (MS-A initiates „train emergency call")	- CR-A receives and joins the call automatically - The ongoing self-test procedure is terminated - Communication is possible
3	- none – (MS-A terminates emergency call)	- Emergency call is terminated - CR-A in default idle status

4.4 Network related features

4.4.1 Manual network selection – idle mode

Purpose: This test is to show that the driver can select an authorised mobile radio network manually from a prioritised list using MMI action and the Cab Radio can roam between EIRENE networks.

Precondition: Cab Radio test configuration. Prioritised list of all authorised mobile radio networks should be stored on the SIM of CR-A. At least two GSM-R networks should be available and connected together so the de-registration command can be routed from one network to the other.

References:
EIRENE FRS : § 5.2.3.23, 5.2.3.23i, 5.2.3.25, 10.5.1, 11.3.4.1, 11.3.4.2, 11.3.4.3, 11.4.4
EIRENE SRS : § 5.6.1i, 10.5.1, 11.3.14, 11.3.15

Step	Procedure	Result / Effect
1	CR-A starts manual network selection using a simple MMI action	***Preferred Implementation:*** A prioritised list of **all authorised** mobile radio networks that **are stored on the SIM** is displayed in the following order: - Home EIRENE network - Foreign EIRENE networks - Non-EIRENE networks ***Optional Implementation:*** A prioritised list of **authorised** mobile radio networks that are **stored on the SIM** and are **available at the current location** is displayed in the following order: - Home EIRENE network - Foreign EIRENE networks - Non-EIRENE networks
2	CR-A selects an authorised network and starts changing the network	Network selection procedure started
3	- none -	- Network selection is executed - Registration of on-train functional numbers based on the train number are executed - After successful registration, de-registration on the previous network are executed - Progress of actions may be displayed on the MMI - New network name is displayed on the MMI - New registration information is displayed on the MMI - CR-A returns to default idle status
4	CR-A initiate a call to the Primary Controller using short code 1200	The call is initiated.

4.4.2 Manual network selection – during ongoing call

Purpose: This test is to show that the manual network selection function is not available when there are ongoing calls involving the Cab Radio.

Preconditions: Cab Radio test configuration. CR-A is in an ongoing call with MS-A.

References:
EIRENE FRS : § 5.2.3.24
EIRENE SRS : § 5.6.1i

Step	Procedure	Result / Effect
1	CR-A starts manual network change using MMI menu	Network selection menu is not available
		Network selection menu is available but network change is not started
2	- none -	- Network not changed - CR-A continues the call

4.4.3 Visualisation – network loss

Purpose: This test is to show that loss of the GSM-R network is indicated audio-visually.

Purpose: Cab Radio test configuration

References:
EIRENE FRS : § 5.4.16
EIRENE SRS : § 4.4.1, 5.6.6

Step	Procedure	Result / Effect
1a	Network coverage breaks off (CR-A in train radio mode)	- Visual indication for no signal strength is displayed on the MMI - Audio-visual indication for the network loss is displayed on the MMI
1b	Network coverage breaks off (CR-A in shunting radio mode)	
2a	Restore network coverage	CR-A in idle train mode
2b		CR-A in idle shunting mode

4.4.4 Visualisation – "no EIRENE network"

Purpose: This test is to show that the usage of networks with limited EIRENE functionality is clearly indicated to the driver.

Purpose: Cab Radio test configuration
Network with limited EIRENE functions is selectable from the SIM

References:
EIRENE FRS : § 10.5.2

Step	Procedure	Result / Effect
1	CR-A changes the used network to a network with limited EIRENE functions	- Network change indicated audio-visually - Visual indication of the limited EIRENE functionality - according to user's manual – is displayed on the MMI

4.4.5 Numbering plan

Purpose: This test is to show the correct handling of Numbering plan:

- The correct handling of Group IDs
- The correct handling of National EIRENE Numbers
- The correct handling of international EIRENE Numbers
- The correct handling of different Functional numbers and function Codes

Precondition: Cab Radio test configuration. MS-A registered to TN / EN / CN or a maintenance team member or a national usage team member, according to the specific test steps.

References:
EIRENE FRS : § 9.2.1.1, 9.2.1.2, 9.2.2.2, 9.2.3.2, 9.2.4.1, 9.3.1, 9.3.2, 10.4.4, 11.2.1.1
EIRENE SRS : § 4.3.3., 4.3.4, 9.2.2, 9.2.4, 9.2.7, 9.2.9, 9.4.1, 9.5.3, 9.6.3, 9.6.4, 9.7.1, 9.9.2, 9A.2, 9A.3, 11.2.3
ITU-T : E.164
UIC : 438-1, 438-3

Step	Procedure	Result / Effect
1	CR-A initiate a PTP call to MS-A using MSISDN: CT(8) + **SN**	- Call established successfully - Communication possible - CR-A terminates the initiated call
2	CR-A initiate a PTP call to MS-A using Train Number: CT(2) + **TN** + FC	
3	CR-A initiate a PTP call to MS-A using Engine Number: CT(3) + **EN** + FC	
4	CR-A initiate a PTP call to MS-A using Coach Number: CT(4) + **CN** + FC	

Step	Procedure	Result / Effect
5	CR-A initiate a PTP call to MS-A using Shunting team number: CT(6) + **LN** +FC(**5**xxx)	
6	(activate "high priority group call between drivers in the same area" for CR-A) CR-A initiate a group call **GID 200**	
7	(activate "operational group call to drivers in the same area" for CR-A) CR-A initiate a group call **GID 555**	
8	(change CR-A to shunting and activate "default shunting group") CR-A initiate a group call **GID 500**	
9	(activate "dedicated shunting group" for CR-A) CR-A initiate a group call **GID 50X**	

4.4.6 Location Dependent Addressing

Purpose: This test is to show that if the Cab Radio initiates a call to the primary controller then this call is being routed to the controller corresponding to the current cell specific routing area (except at border crossing).

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.4, 11.4.1, 11.4.4
EIRENE SRS : § 11.7.2

Step	Procedure	Result / Effect
1	(CR-A is in the location of PC1) CR-A initiate a call to the Primary Controller using short code 1200	The call is initiated to the selected controller (PC1)
2	- none – (PC1 terminates the call)	The call is terminated with an audio-visual indication
3	(CR-A moves into the location of PC2) CR-A initiate a call to the Primary Controller using short code 1200	The call is initiated to the selected controller (PC2)

4.4.7 Bearer service

Purpose: This test is to show that the Cab Radio can receive data transmissions with different data rates.

Precondition: Cab Radio test configuration; Data transfer call configured on MS-A (e.g. with "AT+CBST=<speed>,<name>,<ce>") and data call initiated from MS-A (e.g. with "ATD+MSISDN"). Network supports GSM bearer services:

- 24: Asynchronous 2.4 kbps Transparent (e.g. "AT+CBST=4,0,0")
- 25: Asynchronous 4.8 kbps Transparent (e.g. "AT+CBST=6,0,0")
- 26: Asynchronous 9.6 kbps Transparent (e.g. "AT+CBST=7,0,0")

References:
EIRENE SRS : § 4.3.2

Step	Procedure	Result / Effect
1a	- none - (incoming **Asynchronous Transparent** data call to CR-A with **2.4 kbps**)	Call established, data transfer possible
1b	- none - (incoming **Asynchronous Transparent** data call to CR-A with **4.8 kbps**)	
1c	- none - (incoming **Asynchronous Transparent** data call to CR-A with **9.6 kbps**)	

4.5 Operation in idle mode

4.5.1 Main components of the Cab Radio

Purpose: This test is to show that the main components of the Cab Radio are all in place and working.

Precondition: Cab Radio test configuration

References:
EIRENE FRS : § 5.4.1
EIRENE SRS : § 4.1.3.1, 5.2.2.1

Step	Procedure	Result / Effect
1	Check the following components of CR-A: - display - control panel - loudspeaker - handset with PTT button	Components of CR-A are all in place and working.
2	CR-A initiate a call to MS-A	- Call established, communication possible - GSM-MT air interface is working correctly

4.5.2 Loudspeaker volume

Purpose: This test is to show that the volume of the Cab Radio loudspeaker can be adjusted manually.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.3.18

Step	Procedure	Result / Effect
1	- none – (Incoming PTP call to CR-A)	Call established, communication possible
2	Select volume settings for CR-A loudspeaker	Loudspeaker volume setting is activated
3a	Increase loudspeaker volume	Loudspeaker volume increased
3b	Decrease loudspeaker volume	Loudspeaker volume is decreased

4.5.3 Phone number entries

Purpose: This test is to show that the Cab Radio can access saved numbers and call lists.

Purpose: Cab Radio test configuration

References:
EIRENE FRS : § 5.2.3.39, 5.2.3.40
EIRENE SRS : § 5.5.16

Step	Procedure	Result / Effect
1	CR-A opens the MMI menu for managing phone numbers	The following functions at least are available in this menu. The order can differ and individual functions can also be swapped out in separate menus (e.g. VGCS), which are reached using additional soft keys (see user's manual): - Phone book - Phone number entry (manual dialling) - Call list - VGCS calls - Driver conferences

4.6 Entry of train data

4.6.1 Registration of train data

Purpose: This test is to show that the leading driver can register a train number for the Cab Radio.

Precondition: Cab Radio test configuration ; CR-A not registered to any train number previously

References:
EIRENE FRS : § 5.2.3.26, 5.2.3.27, 5.2.3.34, 11.2.2.2, 11.3.2.1, 11.3.2.2
EIRENE SRS : § 4.3.3, 4.3.4, 9.2.4, 11.3.5

Step	Procedure	Result / Effect
1	CR-A selects train data entry menu	Train data entry menu activated on the MMI
2	Enter train number and confirm	- Only numbers can be entered - Train number displayed on the MMI
3	Enter the function code for leading driver and confirm	Train function displayed on the MMI
4	Start registration	- Train number registration started using USSD messages and protocols - Registration progress is displayed on the MMI - Indication of the successful registration is sent back to CR-A - Registration status is displayed on the MMI (e.g. train number appears on the display)
5	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code)	Call established, communication is possible

4.6.2 Correction of train data

Purpose: This test is to show that after a failed registration the train data can be corrected by the user. The overriding of an automatic change (FRS 5.2.3.32) is not considered here as automatic change is an optional feature.

Precondition: Cab Radio test configuration. CR-A is registered to a valid train number. MS-A has a valid train number (different from CR-A) registration on the network.

References:
EIRENE FRS : § 5.2.3.29, 5.2.3.30, 5.2.3.32
EIRENE SRS : § 11.3.12

Step	Procedure	Result / Effect
1	CR-A selects train data entry menu	Train data entry menu activated on the MMI
2	Enter train number and confirm. (same train number as MS-A)	Train number displayed on the MMI

Step	Procedure	Result / Effect
3	Enter the function code for leading driver and confirm (same function code as MS-A)	Train function displayed on the MMI
4	Start registration	- Registration progress is displayed on the MMI - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI. - Registration status is displayed on the MMI (e.g. "FN already in use") - Menu option provided for overriding the currently registered train number
5	Return to idle mode and select train data entry menu again	- Train data entry menu activated on the MMI
6	Enter train number and confirm. (same train number as MS-A)	Train number displayed on the MMI
7	Enter the function code for other driver (2nd driver) and confirm	Train function displayed on the MMI
8	Start registration	- Registration progress is displayed on the MMI - Registration status is displayed on the MMI (e.g. train number updated on the display)
9	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code - other driver)	Call established, communication possible

4.6.3 Re-registration after changing networks

Purpose: This test is to show that after changing to another network the same train number can be used on the new network.

Precondition: Cab Radio test configuration. "Network 1" and "Network 2" are EIRENE GSM-R networks or public networks with EIRENE facilities.

References:
EIRENE FRS : § 11.2.1.7, 11.2.1.8, 11.3.4.1, 11.3.4.2, 11.3.4.3
EIRENE SRS : § 11.3.14, 11.3.15

Step	Procedure	Result / Effect
1	CR-A registers Train Number on "Network 1"	Train Number registration is carried out
2	CR-A changes network to "Network 2" (Train Number is not yet used on the new network)	- Train Number is re-registered on the new network automatically - Train Number is deregistered on the old network automatically - New registration details are displayed on the MMI

4.6.4 Registration of functional address to other driver (non-leading driver)

Purpose: This test is to show the correct registration of the train number to the Cab Radio of the other driver (non-leading).

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.3.33, 5.2.3.34
EIRENE SRS : § 4.3.3, 4.3.4, 9.2.4

Step	Procedure	Result / Effect
1	CR-A selects train data entry menu	Train data entry menu activated on the display of the MMI
2	Enter train number and confirm.	Train number displayed on the MMI
3a	Enter the function code for the 2nd driver and confirm	Train function displayed on the MMII
3b	Enter the function code for the 3rd driver and confirm	
3c	Enter the function code for the 4th driver and confirm	
3d	Enter the function code for the 5th driver and confirm	
4	Start registration	- Registration progress is displayed on the MMI - Registration status is displayed on the MMI (e.g. train number updated on the display)
5a	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code - 2nd driver)	Call established, communication is possible
5b	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code - 3rd driver)	
5c	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code - 4th driver)	
5d	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code - 5th driver)	

4.6.5 Registration / deregistration of stock number

Purpose: This test is to show that a Stock Number can be registered and deregistered.

Precondition: Cab Radio test configuration. If applicable, the interface to the external device is activated **or** maintenance mode / menu is accessible. No Train Number or Stock Number is registered to CR-A.

References:
EIRENE SRS : § 5.4.10, 11.3.5

Step	Procedure	Result / Effect
1	CR-A initiates registration of a Stock Number using maintenance functions **or** by an external device	- Stock number registration started using USSD messages and protocols - Stock Number registered on the network
2	- none – (MS-A initiates a call to CR-A Stock Number)	Call established, communication possible
3	CR-A initiates deregistration of a Stock Number using maintenance functions **or** by an external device	- Stock number deregistration started using USSD messages and protocols - Stock Number deregistered on the network
4	- none – (MS-A initiates a call to CR-A's new Stock Number)	Call cannot be established

4.6.6 Deregistration of train number

Purpose: This test is to show the correct deregistration of the train number currently registered with the Cab Radio.

Precondition: Cab Radio test configuration. Cab Radio has a train number registered on the network.

References:
EIRENE FRS : § 5.2.3.34, 11.3.3.1, 11.3.3.2, 11.3.3.4, 11.3.3.5
EIRENE SRS : § 4.3.3, 4.3.4, 11.3.10, 11.3.12

Step	Procedure	Result / Effect
1	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code)	Call established, communication possible
2	- none – (MS-A terminates the call)	CR-A in default idle status
3	CR-A selects deregistration menu	Deregistration menu activated on the display of the MMI
4	CR-A starts deregistration	- De-registration progress is displayed on the MMI - De-registration successful, all FN associated with CR-A deregistered (e.g. data and fax ports) - Registration status is displayed on the MMI (e.g. train number is removed from the display)
5	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code)	PTP call cannot be established

4.6.7 Deregistration of train number – not successful

Purpose: This test is to show that the Cab Radio receives the result and cause after a failed deregistration.

Precondition: Cab Radio test configuration; Cab Radio has a train number registered on the network. Deregistration must be barred on the network or the GSM service must be deactivated.

References:
EIRENE SRS : § 11.3.12

Step	Procedure	Result / Effect
1	CR-A selects deregistration menu	Deregistration menu activated on the display of the MMI
2	CR-A start deregistration. (deregistration fails)	- Deregistration progress is displayed on the MMI - Registration status is displayed on the MMI (e.g. train number still present on the display)

4.6.8 Forced deregistration

Purpose: This test is to show that the Cab Radio can be forced to register to an already registered (assigned) functional number. (e.g. train number)

Precondition: Cab Radio test configuration. MS-A has a train number registered on the network.

References:
EIRENE FRS : § 5.2.3.29, 5.2.3.30, 5.2.3.31, 11.3.3.4, 11.3.3.5
EIRENE SRS : § 11.3.9i

Step	Procedure	Result / Effect
1	CR-A selects train data entry menu	Train data entry menu activated on the display of the MMI
2	Enter train number and confirm (same train number as MS-A)	Train number displayed on the MMI
3	Enter the function code for leading driver and confirm (same function code as MS-A)	Train function displayed on the MMI
4	Start registration	- Registration progress is displayed on the MMI - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Registration status is displayed on the MMI (e.g. “FN already in use”) - Menu option provided for overriding the currently registered train number
5	Start forced deregistration *(optional user action on MS-A to confirm the forced de-registration)*	- Forced deregistration progress started in the background: • Sends interrogation message • Receive MSISDN from the network • Send a forced de-registration message • Receive the answer • Send a registration message • Receive the answer - Registration progress is displayed on the MMI - Registration status is displayed on the MMI (e.g. train number updated on the display)
6	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code)	Call established, communication is possible
7	- none – (MS-A terminates the call)	CR-A in default idle status
8	- none – (MS-A registers to the train number associated with CR-A and performs a forced deregistration)	- Audio-visual indication of the forced deregistration is displayed on the MMI - CR-A in default idle status

4.6.9 Follow-me service control sequences

Purpose: This test is to show that the Cab Radio manages the Functional Number changes using the Follow-me service control sequences. These functions can be used by MMI menu or by external device.

Precondition: Cab Radio test configuration with at least one attached system. Cab Radio and ABIS trace or protocol analyser.

References:
EIRENE FRS : § 11.3.3.4
EIRENE SRS : § 4.3.3, 5.4.7, 5.4.8, 5.4.9, 5.4.11, 11.3.2, 11.3.7, 11.3.14

Step	Procedure	Result / Effect
1	CR-A starts **registration** of FN (lead driver and at least one other system, e.g. Public Address)	- FN registration procedure successful - Cab Radio trace contains "AT+CUSD" messages (one for lead driver and one for each other system): *** * 214 * SI * * * #** (where SI = International EIRENE Number) **or** ABIS trace contains "DATIN" message with *"2A95.."*
2	CR-A starts **deregistration** of FN (lead driver and at least one other system, e.g. Public Address)	- FN de-registration procedure successful - Cab Radio trace contains "AT+CUSD" messages (one for lead driver and one for each other system): **# # 214 * SI * * * #** (where SI = International EIRENE Number) **or** ABIS trace contains "DATIN" message with *"A391.."*
3	CR-A starts **interrogation** of FN	- Interrogation procedure successful - Cab Radio trace contains "AT+CUSD" message: *** # 214 * SI * * * #** (where SI = International EIRENE Number) **or** ABIS trace contains "DATIN" message with *"AA91.."*
4	CR-A changes network to another GSM(-R) network with EIRENE functionalities and starts **re-registration** of FN	- FN re-registration procedure successful - Cab Radio trace contains two "AT+CUSD" messages: • first message: *** * 214 * SI * * * #** • second message: **# # 214 * SI * * * #** (where SI = International EIRENE Number) **or** ABIS trace contains two "DATIN" messages with *"2A95.." followed by "A391.."*
5	CR-A starts **forced de-registration** of FN	- FN forced de-registration procedure successful - Cab Radio trace contains "AT+CUSD" message: **# # 214 * SI * 88 * MSISDN * #** (where SI = International EIRENE Number) **or** ABIS trace contains "DATIN" message with *"A391.."*

4.7 Text messaging

4.7.1 Sending a text message using SMS teleservice

Purpose: This test is to show that the Cab Radio can send text messages using teleservice SMS.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.2, 12.2.2
EIRENE SRS : § 4.3.1, 12.2.1, 12.2.2

Step	Procedure	Result / Effect
1	CR-A sends text message containing 160 characters to MS-A using MMI menu or by external device	- Text message sent from CR-A - MS-A receives text message containing all 160 characters

4.7.2 Receiving a text message using SMS teleservice

Purpose: This test is to show that the Cab Radio can receive incoming text messages using teleservice SMS.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.2, 5.2.2.62, 12.2.2
EIRENE SRS : § 4.3.1, 5.3.12, 12.2.1

Step	Procedure	Result / Effect
1	- none - (MS-A sends a text message to CR-A by MSISDN)	CR-A receives and stores text message (message is stored automatically or by user input)
2	CR-A selects the SMS menu to read the received text message	Received text message displayed on the MMI
3	CR-A returns to default screen per MMI action	CR-A in default idle status
4	CR-A selects the SMS menu to read the last received text message	Stored text message displayed on the MMI

4.7.3 Receiving a text message – maximum length

Purpose: This test is to show that the Cab Radio can receive text messages with a length of 160 characters using teleservice SMS.

Precondition: Cab Radio test configuration. Text message with 7bit encoding and with no extended characters.

References:
EIRENE FRS : § 4.2.2, 5.2.2.62, 12.2.2
EIRENE SRS : § 4.3.1, 5.3.12, 12.2.2

Step	Procedure	Result / Effect
1	- none - (MS-A sends a text message to CR-A containing 160 characters by MSISDN)	CR-A receives text message
2	CR-A selects the SMS menu to read the received text message	Received text message contains all 160 characters
3	- none - (MS-A sends a concatenated text message to CR-A containing 306 characters by MSISDN)	CR-A receives two text message
4	CR-A selects the SMS menu to read the received text message	Received text messages contain all 306 characters

4.7.4 Receiving a text message – interaction with other calls

Purpose: This test is to show that an incoming text message using teleservice SMS is correctly received and indicated during a PTP call.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.2, 5.2.2.62, 12.2.2, 12.3.3
EIRENE SRS : § 4.3.1, 5.3.12, 12.2.1

Step	Procedure	Result / Effect
1	- none - (Primary Controller initiates a PTP call to CR-A)	PTP call established, communication is possible
2	- none - (MS-A sends text message to CR-A by MSISDN)	- CR-A receives text message - Ongoing call with controller is maintained
3	Primary Controller terminates PTP call	CR-A in default idle status
4	CR-A selects the SMS menu to read the received text message	Received text message displayed on the MMI

Step	Procedure	Result / Effect
5	CR-A initiates „railway emergency call" using "Emergency button"	Railway emergency call is established
6	CR-A terminates the railway emergency call	Railway emergency call is terminated
7	CR-A selects the SMS menu to read the received text message	Received text message displayed on the MMI
8	- none - (MS-A initiates "railway emergency call")	CR-A receives and joins call automatically
9	- none - (MS-A terminates the railway emergency call)	Railway emergency call is terminated
10	CR-A selects the SMS menu to read the received text message	Received text message displayed on the MMI

4.7.5 Cell Broadcast message

Purpose: This test is to show that certain cell broadcast message identifiers exist on the Cab Radio and that "Cell Broadcast Messages" can be received.

Precondition: Cab Radio test configuration. Cab radio must be configured for reception of cell broadcast messages of certain channels.

References:
EIRENE SRS : § 4.3.1

Step	Procedure	Result / Effect
1	- none - (incoming Cell Broadcast message to CR-A)	- CR-A receives Cell Broadcast message - Cell Broadcast message can be read using MMI menu or by external device

4.8 Point-to-Point calls

4.8.1 Incoming PTP call with eMLPP <4> and with no functional identity

Purpose: This test is to show that the Cab Radio can handle incoming calls with the lowest priority and having no functional identity information for calling party. The priority of the call makes it necessary to manually accept the call.

Precondition: Cab Radio test configuration. CR-A and MS-A does not have a registered functional identity. MSISDN of MS-A is not on the phonebook of CR-A. External network (e.g. public GSM with appropriate SIM card) connected to the test network.

References:
EIRENE FRS : § 4.2.1, 4.2.3, 5.2.2i, 5.2.2ii, 5.2.2.43, 5.2.2.45, 5.2.2.46, 5.2.3.19, 9.5.1
EIRENE SRS : § 4.3.1, 4.3.3, 5.4.4, 5.5.19, 5.5.22, 9.7.4, 11.5.3

Step	Procedure	Result / Effect
1a	- none – (MS-A initiate a PTP call from the **same network** to CR-A by MSISDN with eMLPP <4>)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Identification of the caller is displayed on the MMI
1b	- none – (MS-A initiate a PTP call from a **foreign network** to CR-A by MSISDN and Access Code)	
1c	- none – (**Fixed terminal** initiate a PTP call to CR-A by MSISDN with eMLPP <4>)	
2	CR-A accept the call using the MMI	- The call is accepted - Visual indication is displayed on the MMI - UUS1 information Tag5 is empty, MSISDN of the connected party transmitted by CLIP - MSISDN of MS-A is displayed on the MMI - Caller can be heard on CR-A loudspeaker
3	CR-A pick up handset	- Driver's loudspeaker set to reduced volume - CR-A handset activated, communication is possible
4	- none – (MS-A terminates the call)	- Ongoing PTP call terminated. - CR-A in default idle status

4.8.2 Incoming PTP call with eMLPP <4> and with train functional identity

Purpose: This test is to show that the Cab Radio can handle incoming calls with the lowest priority and including train functional identity of calling party. The priority of the call makes it necessary to manually accept the call.

Precondition: Cab Radio test configuration. CR-A and MS-A has a registered train number.

References:
EIRENE FRS : § 4.2.1, 4.2.4, 5.2.2.44, 11.2.3.1, 11.2.3.5
EIRENE SRS : § 4.3.4, 5.5.2, 5.5.3, 11.5.1

Step	Procedure	Result / Effect
1	- none – (MS-A initiate a PTP call to CR-A by **Train Number** with eMLPP <4>)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Identification of the caller is displayed on the MMI
2	CR-A accept the call using MMI or by picking-up handset	- The call is accepted - Visual indication is displayed on the MMI - UUS1 information Tag5 contains the Functional Identity - Functional Identity of the caller is displayed in a readily understandable form on the MMI - Caller can be heard on CR-A loudspeaker
3	- none – (MS-A terminates the call)	- Ongoing PTP call terminated. - CR-A in default idle status

4.8.3 Incoming PTP call with eMLPP <4> and with engine/coach functional identity

Purpose: This test is to show that the Cab Radio can handle incoming calls with the lowest priority and including engine/coach functional identity of calling party. The priority of the call makes it necessary to manually accept the call.

Precondition: Cab Radio test configuration. CR-A is functionally registered to engine/coach number.

References:
EIRENE SRS : § 5.4.4

Step	Procedure	Result / Effect
1a	- none – (MS-A initiate a PTP call to CR-A by **Engine Number** with eMLPP <4>)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Identification of the caller is displayed on the MMI
1b	- none – (MS-A initiate a PTP call to CR-A by **Coach Number** with eMLPP <4>)	
2	CR-A accept the call using MMI or by picking-up handset	- The call is accepted - Visual indication is displayed on the MMI - Identification of the caller is displayed on the MMI - Caller can be heard on CR-A loudspeaker
3	- none – (MS-A terminates the call)	- Ongoing PTP call terminated. - CR-A in default idle status

4.8.4 Incoming call with eMLPP <0-3>

Purpose: This test is to show that the Cab Radio can handle incoming calls with priority higher than 4. The call has to be automatically accepted if the call priority is of or exceeds eMLPP <3>.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.3
EIRENE SRS : § 4.3.3, 5.5.2, 10.2.1

Step	Procedure	Result / Effect
1a	- none – (incoming call to CR-A with eMLPP <3>)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A automatically accepts the call - Identification of the caller is displayed on the MMI
1b	- none – (incoming call to CR-A with eMLPP <2>)	
1c	- none – (incoming call to CR-A with eMLPP <1>)	
1d	- none – (incoming call to CR-A with eMLPP <0>)	
2	- none – (caller party terminates the call)	- CR-A in default idle status

4.8.5 Leaving or terminating incoming calls

Purpose: This test is to show that the Cab Radio can end or leave incoming calls in different ways.

Precondition: Cab Radio test configuration;

References:
EIRENE FRS : § 5.2.2iii, 5.2.2.34, 5.2.2.60
EIRENE SRS : § 5.5.3, 5.5.23, 5.5.24, 5.5.26, 5A.3

Step	Procedure	Result / Effect
	PTP call	
1	CR-A receives a PTP call Pick up handset	Communication possible
2	The following actions are carried out: a) Hang up handset b) Press "End" button	a-b) Call terminated
	Multi-party call	
3	CR-A receives a MPTY call Pick up handset	Communication possible
4	The following actions are carried out: a) Hang up handset b) Press "End" button	a-b) CR-A leaves the call (call terminated if there was only two subscribers in it)
	Group call	
5	CR-A receives a VGC Pick up handset	Communication possible
6	The following actions are carried out: a) Hang up handset. b) Press "End" button	a) VGC placed on the loudspeaker b) CR-A leaves the call
	Drivers conference (other drivers on the same train)	
7	CR-A receives a driver's conference call Pick up handset	Communication possible
8	The following actions are carried out: a) Hang up handset b) Press "End" button	a) Call placed on the loudspeaker b) CR-A leaves the call (call terminated if there was only two subscribers in it)
	Emergency call	
9	CR-A receives an emergency call (GID 299) Pick up handset	Communication possible
10	The following actions are carried out: a) Hang up handset b) Press "End" button	a) Emergency call placed on the loudspeaker b) No change, emergency call remains active

4.8.6 Outgoing PTP call – MSISDN or number of fixed network user (CoLP)

Purpose: This test is to show that the Cab Radio can initiate calls by dialling a MSISDN number and the call is established with eMLPP <4>.

Precondition: Cab Radio test configuration. CR-A and MS-A does not have a registered functional identity. Cab Radio and/or ABIS trace or protocol analyser to check message content.

References:
EIRENE FRS : § 4.2.1, 5.2.2.42, 10.2.1, 10.2.2
EIRENE SRS : § 4.3.3, 5.3.11, 5.5.4, 5.5.14, 5.5.15, 5.5.17, 5.5.18, 10.2.1, 11.5.6

Step	Procedure	Result / Effect
1a	CR-A initiates a call to MS-A by CT(8) + **SN**	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI
1b	CR-A initiates a call to fixed network user (B-Party) by dialling its telephone number	
2	- none – (MS-A/B-Party accepts the call)	- Call established to MS-A/B-Party with eMLPP <4> - Visual indication is displayed on the MMI - UUS1 information Tag5 is empty, MSISDN of the connected party transmitted by CoLP - MSISDN of the connected party is displayed on the MMI - MS-A/B-Party can be heard on the loudspeaker
3	MS-A/B-Party terminates the call	- Ongoing call terminated. - CR-A in default idle status

4.8.7 Outgoing PTP call – functional number

Purpose: This test is to show that the Cab Radio can initiate calls by dialling a functional number and the call established with eMLPP <4>

Precondition: Cab Radio test configuration. CR-A and MS-A has a registered functional identity. Cab Radio and/or ABIS trace or protocol analyser to check message content.

References:
EIRENE FRS : § 4.2.1, 5.2.2.42, 11.2.3.1
EIRENE SRS : § 4.3.3, 5.5.4, 5.5.14, 5.5.15, 11.5.1, 11.5.2, 11.5.4, 11.5.5

Step	Procedure	Result / Effect
1	CR-A initiates a call to MS-A by dialling its **Functional Number**	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI
2	- none - (MS-A accepts the call)	- Call established to MS-A with eMLPP <4> - Visual indication is displayed on the MMI - UUS1 information Tag5 contains the Functional Identity - Functional Identity of the connected party is displayed on the MMI - MS-A can be heard on the loudspeaker
3	CR-A pick up handset	- Loudspeaker set to reduced volume - CR-A handset activated, communication possible
4	- none – (MS-A terminates the call)	- Ongoing call terminated - CR-A in default idle status

4.8.8 Outgoing PTP call – controller

Purpose: This test is to show that the Cab Radio can initiate calls to any types of controllers with a minimum driver action (e.g. a single keystroke) and the call established with eMLPP <3>.

Precondition: Cab Radio test configuration. Call to Train Management Centre is only possible if an ERTMS/ETCS system is connected to the Cab Radio.

References:

EIRENE FRS : § 4.2.1, 4.2.4, 5.2.2i, 5.2.2ii, 5.2.2iii, 5.2.2.1, 5.2.2.3, 5.2.2.3i; 5.2.2.4, 5.2.2.5, 5.2.2.6, 5.2.2.7, 5.4.3, 9.3.2, 10.2.1, 10.2.2, 11.4.1, 11.4.2, 11.4.5

EIRENE SRS : § 5.3.1, 5.3.2, 5.5.1, 5.5.4, 5.5.6, 9.4.1, 9.8.1, 9.8.2, 9.8.3, 9.8.4

Step	Procedure	Result / Effect
1a	CR-A initiates a call to **Primary Controller** (no **Functional Number** registered to CR-A)	- Call dialled out with the correct four digit short code (12xx – PC, 13xx – SC, 14xx – PSC) - Audible indication for call proceeding is given on the loudspeaker - Visual indication for call proceeding is displayed on the MMI
1b	CR-A initiates a call to **Secondary Controller** (**Engine Number** registered to CR-A)	
1c	CR-A initiates a call to **Power Supply Controller** (**Train Number** registered to CR-A)	
2	- none – (Controller accepts the call)	- Call established to controller with eMLPP <3> - Audible indication for call establishment is given on the loudspeaker - Visual indication for call establishment is displayed on the MMI - Identification of the connected party is displayed on the MMI of CR-A - Identification of the connected party is displayed on the display of controller (TN / EN / MSISDN) - Controller can be heard on the loudspeaker
3	CR-A pick up handset	- Loudspeaker set to reduced volume - Communication to controller is activated on the handset of the CR-A
4	- none – (Controller terminates the call)	- Ongoing call terminated. - CR-A in default idle status

4.8.9 Outgoing PTP call – controller (fails)

Purpose: This test is to show that if the system cannot connect the call to a controller, an appropriate audible and visual indication is provided to the driver.

Precondition: Cab Radio test configuration. (Routing of) Controller calls disabled.

References:
EIRENE FRS : § 5.2.2.1, 5.2.2.8

Step	Procedure	Result / Effect
1a	CR-A initiates a call to Primary Controller	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI
1b	CR-A initiates a call to Secondary Controller	
1c	CR-A initiates a call to Power Supply Controller	

Step	Procedure	Result / Effect
2	- none – (Call is not established)	- Call cannot be established - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A in default idle status

4.8.10 Outgoing PTP call – train staff

Purpose: This test is to show that the Cab Radio can initiate calls from a reconfigurable list of stored numbers and perform abbreviated dialling to named user identities.

Precondition: Cab Radio test configuration; CR-A and Chief Conductor are registered to the same Train Number.

References:
EIRENE FRS : § 4.2.1, 5.2.2.38, 5.2.2.39, 5.2.2.40, 5.2.3.39, 5.2.3.40
EIRENE SRS : § 5.3.10, 5.5.4, 5.5.6, 5.5.9, 5.5.16

Step	Procedure	Result / Effect
1	CR-A activates function for calling train staff using the MMI	- List of the trains 'generic' staff is displayed on the MMI (e.g. chief conductor; conductor; catering staff)
2	CR-A selects **Chief Conductor** from the list and initiates a call to it	- Call initiated to CR-A's Train Number with FC10 - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI
3	- none – (Chief Conductor accepts the call)	- Call established with eMLPP <3> using CT2 to the registered train number and the corresponding FC - Visual indication is displayed on the MMI - Identification of the connected party is displayed on the MMI
4	- none – (Chief Conductor terminates the call)	- Ongoing call terminated. - CR-A in default idle status

4.8.11 Outgoing PTP call – using the phone book

Purpose: This test is to show that the Cab Radio can initiate calls from the phone book of the SIM card.

Precondition: Cab Radio test configuration. Phone book has stored numbers with various different types of calls and priorities.

References:
EIRENE FRS : § 5.2.2.42, 5.2.3.39, 5.2.3.40
EIRENE SRS : § 5.5.4, 5.5.9, 5.5.11, 5.5.12, 5.5.13

Step	Procedure	Result / Effect
1	CR-A opens the phone book using MMI menu	Phone book opened, all entries are available.
2a	CR-A selects the **first phone book entry** and initiates a call to it	Voice calls are dialled and established with correct eMLPP (priority <4> unless otherwise specified in the dialled number) **or** if the subscriber is not available on the network the reason for the connection failure is signalled.
2b	CR-A initiates a **PTP** call by phone book entry	
2c	CR-A initiates a **VGCS** call by phone book entry	
2d	CR-A initiates a **VBS** call by phone book entry	
2e	CR-A initiates a **PTP** call with eMLPP <3> by phone book entry	

4.8.12 Outgoing PTP call – priorities of functional identities

Purpose: This test is to show that the registered train number of the Cab Radio has priority over other functional numbers. The functional number registration situations need to be created as described in the test step. Then a call should be initiated to another subscriber a) via MMI and b) via Intercom (when connected).

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.2.3i, 11.2.3.4
EIRENE SRS : § 4.3.3

Step	Train number (CT2)	Engine number (CT3)	Coach number (CT4)	Result (FN in display)
1	**Registered**	Not registered	**Registered**	CT2 (Train number)
2	**Registered**	**Registered**	Not registered	CT2 (Train number)
3	Not registered	**Registered**	Not registered	CT3 (Engine number)

4.8.13 Terminating outgoing calls

Purpose: This test is to show that the Cab Radio can end outgoing calls in different ways.

Precondition: Cab Radio test configuration;

References:
EIRENE FRS : § 5.2.2iii, 5.2.2.34, 5.2.2.60, 13.2.4.1
EIRENE SRS : § 5.5.3, 5.5.23, 5.5.24, 5.5.25, 5A.2

Step	Procedure	Result / Effect
	PTP call	
1	CR-A initiates a PTP call (handset in “off-hook” state)	Call established, communication possible
2	The following actions are carried out: a) Hang up handset b) Press "End" button	a-b) Call terminated
	Multi-party call	
3	CR-A initiates a Multi-party call (handset in “off-hook” state)	Call established, communication possible
4	The following actions are carried out: a) Hang up handset b) Press "End" button	a-b) Call terminated
	Broadcast call	
5	CR-A initiates a VBS call (handset in “off-hook” state)	Call established, broadcast is possible
6	The following actions are carried out: a) Hang up handset b) Press "End" button	a-b) Call terminated
	Group call	
7	CR-A initiates a VGCS call (handset in “off-hook” state)	Call established, communication possible
8	The following actions are carried out: a) Hang up handset b) Press "End" button	a-b) Call terminated or left
	Drivers conference (other drivers on the same train)	
9	CR-A initiates a drivers conference call (handset in “off-hook” state)	Call established, communication possible
10	The following actions are carried out: a) Hang up handset b) Press "End" button	a) Call placed on the loudspeaker b) Call terminated
	Emergency call	
11	CR-A initiates an emergency call (GID 299) (handset in “off-hook” state)	Call established Communication is possible
12	The following actions are carried out: a) Hang up handset b) Press "End" button	a) Emergency call placed on the loudspeaker b) Call terminated or left

4.8.14 Incoming PTP call – during ongoing PTP call (CW / HOLD)

Purpose: This test is to show that the Cab Radio manages call wait and call hold for incoming PTP voice calls during an ongoing PTP voice call with the same or with lower priority.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.3, 5.2.3.42, 5.4.3
EIRENE SRS : § 4.3.3

Step	Procedure	Result / Effect
1a	(MS-A initiate a PTP call to CR-A by MSISDN with eMLPP <4>) CR-A accept the call	Call established, communication possible
1b	(MS-A initiate a PTP call to CR-A by MSISDN with eMLPP <3>) CR-A accept the call	
2	- none – (MS-B initiate a PTP call (2nd call) to CR-A by MSISDN with eMLPP <4>)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Details of the new incoming call are displayed on the MMI
3	CR-A accept the call by MMI menu	- Call from MS-A (1st call) put on hold - Displayed information on the MMI is updated - Call from MS-B is active, communication is possible
4	CR-A swap calls by MMI menu	- Call from MS-B (2nd call) put on hold - Displayed information on the MMI is updated - Call from MS-A (1st call) is active again, communication possible
5	CR-A swap calls again by MMI menu	- Call from MS-A (1st call) put on hold - Displayed information on the MMI is updated - Call from MS-B (2nd call) is active again, communication possible
6	CR-A terminates call using the MMI menu	- Call from MS-B (2nd call) is terminated - Displayed information on the MMI is updated - Call from MS-A (1st call) is active again
7	CR-A terminates call by hanging-up handset	- Call from MS-A (1st call) is terminated - CR-A in default idle status

4.8.15 Outgoing PTP call – during ongoing PTP call

Purpose: This test is to show that a PTP call can be placed on hold and a second PTP call can be initiated.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 4.2.3, 5.2.3.42, 5.4.3
EIRENE SRS : § 4.3.3

Step	Procedure	Result / Effect
1	(MS-A initiate a PTP call to CR-A by MSISDN with eMLPP <4>) CR-A accept the call	Call established, communication possible
2	CR-A puts the ongoing call on hold and initiate 2nd PTP call with eMLPP<4> to MS-B	- Call from MS-A (1st call) put on hold - Details of the new outgoing call are displayed on the MMI
3	- none – (MS-B accept the call)	- Visual indication is displayed on the MMI - Identification of MS-B is displayed on the MMI - Call to MS-B (2nd call) is active, communication possible
4	CR-A terminates call using the MMI menu	- Call to MS-B (2nd call) is terminated - Displayed information on the MMI is updated
5	CR-A retrieve the call to MS-A (previously put on hold) automatically **or** by user action *(implementation option)*	Call from MS-A (1st call) is active again, communication possible
6	CR-A terminates call by hanging-up handset	- Call from MS-A (1st call) is terminated - CR-A in default idle status

4.8.16 Higher priority PTP call – ongoing PTP call

Purpose: This test is to show that an ongoing PTP call should be either put on hold or cleared down in case of a higher priority incoming or outgoing call

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.4.5, 5.2.4.6
EIRENE SRS : § 4.3.3

Step	Procedure	Result / Effect
1	(MS-A initiate a PTP call to CR-A by MSISDN with eMLPP <4>) CR-A accept the call	Call established, communication is possible
2	- none – (incoming PTP call to CR-A with eMLPP <3> from MS-B)	- Ongoing call terminated (“cleared down”) - Incoming call from MS-B connected
3	CR-A terminates call	- Call to MS-B is terminated - CR-A in default idle status
4	(MS-A initiate a PTP call to CR-A by MSISDN with eMLPP <4>) CR-A accept the call	Call established, communication is possible
5	Call to Chief Conductor from CR-A (over radio link) with eMLPP <3>	- Ongoing call is put on hold - New call established
6	CR-A terminates call to Chief Conductor using the MMI menu	- Call to Chief Conductor is terminated - Displayed information on the MMI is updated - Call from MS-A (1st call) is active again
7	CR-A terminates call by hanging-up handset	- Call from MS-A (1st call) is terminated - CR-A in default idle status

4.9 Group calls

4.9.1 Incoming voice group call

Purpose: This test is to show that the group call subscribed and activated on the Cab Radio is received and managed correctly.

Precondition: Cab Radio test configuration. CR-A’s GID of the VGC 20X is activated.

References:
EIRENE FRS : § 4.2.1, 5.2.2.47, 5.2.2.48, 5.2.2.49, 5.2.2.51, 5.2.2.52, 5.2.2.54, 5.2.2.61, 11.2.3.2
EIRENE SRS : § 4.3.1, 5.5.19

Step	Procedure	Result / Effect
1	CR-A handset is in “on-hook” state (MS-A initiates VGC 20X with eMLPP<3>)	- CR-A receives the call and accepts it automatically - Audible indication is given on the loudspeaker - Visual indication including GID is displayed on the MMI - MS-A can be heard on CR-A’s loudspeaker - Indication to use PTT to talk is displayed on the MMI
2	CR-A pick up handset	- Loudspeaker set to reduced volume - Communication is activated on the handset
3	CR-A press PTT button (uplink is busy)	- Audible indication is given on the loudspeaker - Visual indication (e.g. “Uplink busy”) is displayed on the MMI
4	CR-A press PTT button (uplink is free)	- Audible indication is given on the loudspeaker - Visual indication (e. g. “You can talk”) is displayed on the MMI - CR-A can be heard on MS-A loudspeaker
5	CR-A release PTT	Indication to use PTT to talk is given to MMI
6a	CR-A leaves the call	- Ongoing group call left - CR-A in default idle status
6b	- none – (MS-A terminates the call)	- Call terminated - CR-A in default idle status

4.9.2 Incoming voice group call – “other drivers in the area”

Purpose: This test is to show that a group call “other drivers in area” is received and managed by the CR-A.

Precondition: Cab Radio test configuration.

References:

EIRENE FRS : § 4.2.1, 5.2.2iii, 5.2.2iv, 5.2.2.11, 5.2.2.47, 5.2.2.48, 5.2.2.49, 5.2.2.51, 5.2.2.52, 5.2.2.54, 5.2.2.61

EIRENE SRS : § 4.3.1, 5.5.19

Step	Procedure	Result / Effect
1	CR-A handset is in “off-hook” state (MS-A initiates group call “other drivers in the area”)	- CR-A receives the call and accepts it automatically - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - MS-A can be heard in CR-A’s handset - Indication to use PTT to talk is displayed on the MMI
2	CR-A press PTT button (uplink is busy)	- Audible indication is given on the loudspeaker - Visual indication (e.g. “Uplink busy”) is displayed on the MMI

Step	Procedure	Result / Effect
3	CR-A press PTT button (uplink is free)	- Audible indication is given on the loudspeaker - Visual indication (e. g. “You can talk”) is displayed on the MMI - CR-A can be heard on MS-A loudspeaker
4	CR-A release PTT	Indication to use PTT to talk is given to MMI
5	- none – (MS-A press PTT and has the uplink)	- MS-A can be heard on CR-A handset
6	CR-A hangs-up handset (MS-A still has the uplink)	- Loudspeaker set to increased volume - Ongoing call transferred to the loudspeaker - MS-A can be heard on CR-A loudspeaker
7	MS-A terminates the call	- Group call “other drivers in the area” is terminated - CR-A in default idle status

4.9.3 Group call participation depending on the activated GID

Purpose: This test is to show that GIDs can be activated and deactivated on the Cab Radio and only the activated GIDs’ group calls can be received.

Precondition: Cab Radio test configuration. GID VGC 20X is deactivated for CR-A.

References:
EIRENE FRS : § 10.4.1, 10.4.2, 10.4.3

Step	Procedure	Result / Effect
1	- none - (MS-B initiate VGC 20X)	Call is not received by CR-A
2	GID VGC 20X activation for CR-A (by MMI menu / external device / SIM OTA)	- Call is received by CR-A - Communication is possible
3	- none - (MS-B terminates the call)	CR-A in idle mode
4	GID VGC 20X deactivation for CR-A (by MMI menu / external device / SIM OTA)	Display the GID status in accordance with user’s manual
5	- none - (MS-B initiate VGC 20X)	Call is not received by CR-A
6	GID VGC 299 deactivation for CR-A (by MMI menu / external device / SIM OTA)	No change (not possible to deactivate GID 299)

4.9.4 Outgoing voice group call

Purpose: This test is to show that a voice group call can be initiated by the Cab Radio.

Precondition: Cab Radio test configuration. Additional VGC GIDs (e.g. 203) are activated on CR-A and MS-A.

References:
EIRENE FRS : § 4.2.1, 5.2.3.39, 11.2.3.2
EIRENE SRS : § 5.5.4, 5.5.14, 5.5.15

Step	Procedure	Result / Effect
1	CR-A initiates a voice group call by entering phone number **or** using dedicated menu selection (e.g. VGC 203, not VGC 200 or VGC 299)	- MS-A receives the call - VGC established - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Indication to use PTT to talk is displayed on the MMI - Incoming audio is connected to the loudspeaker until the driver picks up the handset
2	CR-A pick up handset and press PTT	- Loudspeaker set to reduced volume - Communication is activated on the handset - CR-A has a dedicated uplink until the PTT button is released or the network timer expires - CR-A can be heard on MS-A loudspeaker
3	CR-A release PTT	Indication to use PTT to talk is displayed on the MMI
4	CR-A press PTT button (uplink is busy)	- Audible indication is given on the loudspeaker - Visual indication (e.g. “Uplink busy”) is displayed on the MMI
5	CR-A press PTT button (uplink is free)	- Audible indication is given on the loudspeaker - Visual indication (e. g. “You can talk”) is displayed on the MMI - CR-A can be heard on MS-A loudspeaker
6	CR-A release PTT	Indication to use PTT to talk is displayed on the MMI
7	CR-A terminates group call	- Call terminated - CR-A in default idle status

4.9.5 Outgoing high priority voice group call – "other drivers in the area"

Purpose: This test is to show that the group call "High priority group call between drivers in the same area" is initiated and managed by the Cab Radio. The call established with eMLPP <2> as it is read from the SIM Card.

Precondition: Cab Radio test configuration. MS-A and CR-A are in the same group call area.

References:
EIRENE FRS : § 4.2.1, 5.2.2iv, 5.2.2.9, 5.2.2.11, 5.2.2.12, 5.2.2.13, 5.2.2.14, 5.2.2.15, 5.2.2.48, 5.2.2.54, 5.2.2.60, 5.2.4.9, 10.2.1, 10.2.2
EIRENE SRS : § 4.3.1, 5.3.3, 5.3.4, 5.5.6, 10.2.1

Step	Procedure	Effects
1	CR-A initiates group call "High priority group call between drivers in the same area" using dedicated MMI menu selection	- MS-A receives the call - VGC established with eMLPP <2> - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Indication to use PTT to talk is displayed on the MMI - Incoming audio is connected to the loudspeaker until the driver picks up the handset
2	- none -	On the Controller's display: GID, GCA, call type and Functional umber of CR-A *(displayed information are based on the transmitted UUS1 OTDI from CR-A during VGC establishment)*
3	CR-A pick up handset and press PTT	- Loudspeaker set to reduced volume - Communication is activated on the handset - CR-A has a dedicated uplink until the PTT button is released or the network timer expires - CR-A can be heard on MS-A loudspeaker
4	CR-A release PTT	Indication to use PTT to talk is given to MMI
5	CR-A press PTT button (uplink is busy)	- Audible indication is given on the loudspeaker - Visual indication (e.g. "Uplink busy") is displayed on the MMI
6	CR-A press PTT button (uplink is free)	- Audible indication is given on the loudspeaker - Visual indication (e. g. "You can talk") is displayed on the MMI - CR-A can be heard on MS-A loudspeaker
7	CR-A release PTT	Indication to use PTT to talk is given to MMI
8	CR-A terminates group call	- Call terminated - CR-A in default idle status

4.9.6 Visualisation – "Unable to establish VGC"

Purpose: This test is to show that the failure of a group call establishment is indicated audio-visually.

Precondition: Cab Radio test configuration. VGC 20X barred in the network

References:
EIRENE FRS : § 5.2.2.17

Step	Procedure	Result / Effect
1	CR-A initiates a VGC 20X. (call establishment barred in the network)	- CR-A displays the outgoing VGC 20X on the MMI - Failure of the call establishment indicated audio-visually - CR-A in idle mode

4.9.7 Leaving voice group call

Purpose: This test is to show that the Cab Radio can leave an ongoing voice group call without terminating it.

Precondition: Cab Radio test configuration

References:
EIRENE FRS : § 5.2.2.61

Step	Procedure	Result / Effect
1	- none - (MS-B initiates VGC 20X)	CR-A receives group call and joins automatically
2	CR-A leaves the ongoing VGC	- VGC is left without being terminated - CR-A in idle mode - VGC 20X continues to exist on MS-B
3	- none - (MS-B terminates VGC 20X)	- VGC 20X terminated - CR-A still in idle mode

4.9.8 Terminating voice group call – “other drivers in the area”

Purpose: This test is to show that the group call initiated by the Cab Radio can be left when the uplink is occupied. The group call stays connected between the other participants and re-entry for the Cab Radio (initiator) is possible.

Precondition: Cab Radio test configuration. MS-A and CR-A are in the same group call area.

References:
EIRENE FRS : § 4.2.1, 5.2.2.15, 5.2.2.61
EIRENE SRS : § 5.5.24

Step	Procedure	Result / Effect
1	CR-A initiates group call "other drivers in the area"	MS-A receives group call
2	- none - (MS-A takes the uplink by pressing PTT)	MS-A can be heard on CR-A
3	CR-A tries to terminate group call	Group call "other drivers in area" cannot be terminated (uplink occupied by MS-A)
4	CR-A leaves group call automatically after the termination attempt **or** manually by another MMI action	- Group call continues without CR-A - CR-A in default idle status
5	CR-A initiates group call "other drivers in the area"	- CR-A rejoins ongoing group call "other drivers in area" - Audible indication is given on the loudspeaker - Visual indication with group identity is displayed
6	(MS-A release PTT - uplink free) CR-A press PTT button	- Audible indication is given on the loudspeaker - Visual indication (e. g. "Talk") is displayed on the MMI - CR-A can be heard on MS-A loudspeaker
7	CR-A terminates group call	- Group call "other drivers in area" is terminated - CR-A in default idle status

4.9.9 Moving out of the group call area

Purpose: This test is to show that when the Cab Radio is in an ongoing group call and it leaves the group call area the group call is also left.

Precondition: Cab Radio test configuration. CR-A first in train mode and later in shunting mode.

References:
EIRENE FRS : § 4.2.3, 5.2.2.16, 5.2.2.55

Step	Procedure	Result / Effect
1a	CR-A initiates group call GID 200 / GID 500	- Group call established - MS-A receives and joins group call
1b	- none – (MS-A initiates group call GID 200 / GID 500)	- Group call established - CR-A receives group call and joins call automatically
2	- none – (change the attenuation at the handover machine to initiate cell change and group call area change for CR-A)	- CR-A's group call area changed - CR-A leaves ongoing group call - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Group call continues at MS-A - CR-A in default idle status

4.10 Conference calls

4.10.1 Multiparty call (MPTY)

Purpose: This test is to show that a general multiparty call can be established and is handled correctly by the Cab Radio.

Precondition: Cab Radio test configuration. CR-A, MS-A and MS-B has different registered train numbers.

References:
EIRENE FRS : § 4.2.1
EIRENE SRS : § 4.3.3

Step	Procedure	Result / Effect
1	CR-A initiates a PTP call to MS-A	PTP call to MS-A established
2	CR-A creates a multiparty call with MS-A and MS-B	- CR-A initiate a PTP call to MS-B - Multiparty call created between CR-A, MS-A and MS-B - Visual indication (e.g. “Multiparty call”) is displayed on the MMI - Communication is possible for every participant
3	- none – (MS-A leaves the call)	- CR-A is notified of MS-A leaving the call *(optional)* - Call continues.
4	CR-A terminates the call	- Ongoing multiparty call terminated. - CR-A in default idle status

4.10.2 Multi-driver communication – leading driver

Purpose: This test is to show the communication with other drivers on the same train as a leading driver.

Precondition: Cab Radio test configuration. CR-A, CR-B/C or MS-A/B are different drivers of the same train.

References:
EIRENE FRS : § 4.2.1, 4.2.4, 5.2.2.26, 5.2.2.28, 5.2.2.29, 5.2.2.30, 5.2.2.31, 5.2.2.32, 5.2.2.33, 5.2.3.42
EIRENE SRS : § 4.3.3, 4.3.4, 5.3.8, 5.3.9, 5.5.6, 5.5.7

Step	Procedure	Result / Effect
1	CR-A creates a "Multi-driver call" connecting 2nd driver (MS-A), 3rd driver (MS-B) and 4th driver (CR-B) by simplified automation ***or*** guidance using the MMI	- When creating the "Multi-driver call" the following steps were made by CR-A: CR-A initiates PTP call to MS-A CR-A places PTP call on hold CR-A initiates next PTP call to MS-B CR-A requests multiparty call CR-A initiates next PTP call to CR-B CR-A requests multiparty call - Multiparty call established - Visual indication (e.g. “multi-drivers”) is displayed on the MMI - Communication is possible for every participant
2	- none – (MS-A put the ongoing multiparty call on hold)	- Notification is given for leading driver (CR-A) for MS-A putting the call on hold - Call is still active between the other participants
3a	- none – (MS-A disconnects from ongoing multiparty call)	- Notification is given for leading driver (CR-A) about disconnection of MS-A - Call is still active between the other participants
3b	CR-A removes MS-A from ongoing multiparty call	
4	CR-A terminates multiparty call	- Multiparty call terminated - CR-A in default idle status

4.10.3 Multi-driver communication – other driver

Purpose: This test is to show the communication with other drivers on the same train as a non-leading driver.

Precondition: Cab Radio test configuration. CR-A and CR-B/C or MS-A/B are different drivers of the same train.

References:
EIRENE FRS : § 5.2.2iii, 5.2.2.28, 5.2.2.30, 5.2.2.34, 5.2.2.35
EIRENE SRS : § 5.5.19

Step	Procedure	Result / Effect
1	- none – (CR-B as leading driver initiates a “multi-drivers” call and connects CR-A/C to it)	- Multiparty call established between CR-B and CR-A and -C - Visual indication (e.g. “multi-drivers”) is displayed on the MMI - Communication is possible for every participant
2	CR-A pick up handset	- Loudspeaker set to reduced volume - Communication is activated on the handset
3	CR-A hang up handset	- Loudspeaker set to increased volume - Ongoing call transferred to the loudspeaker
4	CR-A put the ongoing multiparty call on hold	- Indication that the call is on hold is displayed on the MMI

Step	Procedure	Result / Effect
5	CR-A rejoins the call from hold	- Multiparty call rejoined, communication possible
6a	- none – (network coverage breaks off)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - After network coverage returns, CR-A in default idle mode
6b	- none – (CR-A is being disconnected from ongoing multiparty call)	- CR-A in default idle status
6c	- none – (CR-B terminates the ongoing multiparty call)	

4.10.4 Multi-driver communication – controller

Purpose: This test is to show that a controller can be added to a driver conference and can be called separately via call waiting.

Precondition: Cab Radio test configuration

References:
EIRENE FRS : § 5.2.2.37

Step	Procedure	Result / Effect
1	CR-A as leading driver initiates a “multi-drivers” call and connects other drivers (at least two) to it	Conference established and communication is possible
2a	CR-A adds the controller to the "multi-drivers" call using the driver conference menu	- Call is put through and displayed at the controller - The controller accepts the call - Controller added to the “multi-drivers” call
2b	CR-A initiates a PTP call to a controller using the Hold menu option **or** soft key	- Call is put through and displayed at the controller - Controller accepts the call, communication between CR-A and the controller is possible - The ”multi-drivers” call is on hold (call waiting is possible) - Communication is possible for the other participants of the “multi-drivers” call
2c	- none – (incoming call from Controller to CR-A using functional number)	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Controller is automatically added to the “multi-drivers” call

4.11 Broadcast calls

4.11.1 Incoming voice broadcast call

Purpose: This test is to show that the Cab Radio accepts voice broadcast calls automatically and the call can be heard on the loudspeaker or in the handset, depending on the handset state.

Precondition: Cab Radio test configuration; Broadcast groups are activated on CR-A

References:
EIRENE FRS : § 5.2.2.49, 5.2.2.50, 11.2.3.2
EIRENE SRS : § 4.3.1, 5.5.19

Step	Procedure	Result / Effect
1a	CR-A handset is in “on-hook” state (incoming broadcast call with eMLPP<3>)	- Broadcast call is accepted automatically - Visual indication for broadcast service - Group identity of the caller is displayed on the MMI - Incoming call can be heard in the loudspeaker
1b	CR-A handset is in “off-hook” state (incoming broadcast call with eMLPP<3>)	- Broadcast call is accepted automatically - Visual indication for broadcast service - Group identity of the caller is displayed on the MMI - Loudspeaker set to reduced volume - Incoming call can be heard in the handset
2	Initiator terminates the call	CR-A in default idle status

4.11.2 Leaving a voice broadcast call

Purpose: This test is to show that the Cab Radio can leave an ongoing voice broadcast call without terminating it.

Precondition: Cab Radio test configuration; Broadcast groups are activated on CR-A

References:
EIRENE FRS : § 5.2.2.61i
EIRENE SRS : § 5A.3, 5.5.19

Step	Procedure	Result / Effect
1	- none - (MS-A initiates VBC 200)	CR-A receive voice broadcast service
2	CR-A pick up handset	Broadcast call placed on the handset
3	CR-A hang up handset	Broadcast call placed on the loudspeaker
4	CR-A leaves broadcast call	- Broadcast call left - Broadcast call continues to exist on other participants - CR-A in default idle status

4.11.3 Outgoing voice broadcast call

Purpose: This test is to show that a voice broadcast call can be initiated by the Cab Radio.

Precondition: Cab Radio test configuration; Dedicated broadcast group (e.g. 203) is activated on the Cab Radio.

References:
EIRENE FRS : § 4.2.1
EIRENE SRS : § 4.3.1, 5.5.14, 5.5.15

Step	Procedure	Result / Effect
1	CR-A initiates a broadcast call by entering phone number **or** using dedicated menu selection (GID VBC 20X)	- MS-A receives the call - VBC established - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI
2	CR-A pick up handset	- Communication is activated on the handset - CR-A has a dedicated uplink after call establishment - CR-A can be heard on MS-A loudspeaker
3	CR-A terminates broadcast call	- Call terminated - CR-A in default idle status

4.11.4 Moving out of the broadcast call area

Purpose: This test is to show that when the Cab Radio is in an ongoing broadcast call and it leaves the broadcast call area the broadcast call is also left.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.2.16, 5.2.2.55

Step	Procedure	Result / Effect
1	- none – (MS-A initiates broadcast call VBS 200)	- Broadcast call established - CR-A receives broadcast call and joins the call automatically
2	- none – (change the attenuation at the handover machine to initiate cell change that invokes broadcast call area change for CR-A)	- CR-A's broadcast call area changed - CR-A leaves ongoing broadcast call - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A in default idle status

4.12 Call arbitration

4.12.1 Call arbitration – ongoing railway emergency call

Purpose: This test is to show the call arbitration with an ongoing emergency call.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing railway emergency call (eMLPP <0> , GID 299)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	No change
1b	**PtP** call from CR-A (eMLPP <**2**>)	- Ongoing call maintained - New call not established
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no *UIC Intercom* link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call maintained - New call not established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)

Step	Procedure	Result / Effect
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call maintained - Incoming call indicated but cannot be accepted
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.2 Call arbitration – ongoing high priority point-to-point call

Purpose: This test is to show the call arbitration with an ongoing high priority point-to-point call.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing high priority point-to-point call (eMLPP <2>)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - Emergency call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	- Ongoing call is on hold - New call established
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	***Preferred Implementation**:* - Ongoing call is put on hold - New call established ***Optional Implementation** (If system limitations prevent an ongoing PTP call from being put on hold):* - Ongoing terminated - New call established
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call is maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call maintained - New call not established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected

Step	Procedure	Result / Effect
2b	**PtP** call to CR-A (eMLPP <**2**>)	- Ongoing call maintained - Incoming call indicated
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.3 Call arbitration – ongoing high priority group call between drivers in the same area

Purpose: This test is to show the call arbitration with an ongoing high priority group call between drivers in the same area.

Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing high priority group call between drivers in the same area (eMLPP <2> , GID 200)

References:

EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7

EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call left - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	- Ongoing call maintained - New call not established
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call maintained - New call not established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	

Step	Procedure	Result / Effect
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call left - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	- Ongoing call maintained - Incoming call indicated
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.4 Call arbitration – ongoing operational group call to drivers in the same area

Purpose: This test is to show the call arbitration with an ongoing operational group call to drivers in the same area.

Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing operational group call to drivers in the same area (eMLPP <3> , GID 555)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call left - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call left - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call is maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call maintained - New call not established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call left - New call is established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained

Step	Procedure	Result / Effect
1p	**VBC** call from CR-A (eMLPP <**4**>)	- New call not established
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call left - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call is maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.5 Call arbitration – ongoing call from a controller

Purpose: This test is to show the call arbitration with an ongoing call from a controller (or operational calls).
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing call from a controller (eMLPP <3>)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - *Public Address* connected (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call is maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - *Intercom* connected (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call is on hold - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call is maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	***Preferred Implementation**:*

Step	Procedure	Result / Effect
1m	**VBC** call from CR-A (eMLPP <**3**>)	- Ongoing call is put on hold - New call established ***Optional Implementation*** *(If system limitations prevent an ongoing PTP call from being put on hold):* - Ongoing terminated - New call established
1n	**PtP** call from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	- Ongoing call is on hold - New call established
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.6 Call arbitration – ongoing "other drivers on same train" call

Purpose: This test is to show the call arbitration with an ongoing "other drivers on same train" call.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing "other drivers on same train" call as leading driver (Multi-driver call with eMLPP <3>)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the "other drivers on same train" call) - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1f	"**Other drivers same train**" call from CR-A	- Ongoing call maintained - New call not established
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call is on hold - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	***Preferred Implementation**:*

Step	Procedure	Result / Effect
1m	**VBC** call from CR-A (eMLPP <**3**>)	- Ongoing call is put on hold - New call established ***Optional Implementation*** *(If system limitations prevent an ongoing PTP call from being put on hold):* - Ongoing terminated - New call established
1n	**PtP** call from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the "other drivers on same train" call) - Incoming call connected
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	- Ongoing call terminated - Incoming call connected
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Controller has joined the ongoing call
2f	"**Other drivers same train**" call to CR-A	Not possible
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.7 Call arbitration – ongoing chief conductor call (over radio link)

Purpose: This test is to show the call arbitration with an ongoing "chief conductor" call over radio link.

Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing "chief conductor" call (over radio link MLPP <3>)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - New call connected to *Public Address* (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - New call connected to *Intercom* (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	No change
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	***Preferred Implementation**:*

Step	Procedure	Result / Effect
1m	**VBC** call from CR-A (eMLPP <**3**>)	- Ongoing call is put on hold - New call established ***Optional Implementation*** *(If system limitations prevent an ongoing PTP call from being put on hold):* - Ongoing terminated - New call established
1n	**PtP** call from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	”**Other drivers same train**” call to CR-A	
2g	Call to CR-A’s **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A’s **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.8 Call arbitration – ongoing voice group call (eMLPP<3>)

Purpose: This test is to show the call arbitration with an ongoing voice group call with eMLPP<3>.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing voice group call (eMLPP <3> , GID 20x)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call left - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call left - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	Not possible
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call left - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	

Step	Procedure	Result / Effect
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call left - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.9 Call arbitration – ongoing voice broadcast call (eMLPP<3>)

Purpose: This test is to show the call arbitration with an ongoing voice broadcast call with eMLPP<3>.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing voice broadcasting call (eMLPP <3> , GID 2xx)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**) *For mobile terminated VBC*	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**) *For mobile terminated VBC*	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Not possible
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	

Step	Procedure	Result / Effect
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.10 Call arbitration – ongoing point-to-point call (eMLPP<3>)

Purpose: This test is to show the call arbitration with an ongoing point-to-point call with eMLPP<3>.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing point-to-point call (eMLPP <3>)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - New call connected to *Public Address* (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - New call connected to *Intercom* (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call is on hold - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	***Preferred Implementation**:*

Step	Procedure	Result / Effect
1m	**VBC** call from CR-A (eMLPP <**3**>)	- Ongoing call is put on hold - New call established ***Optional Implementation*** *(If system limitations prevent an ongoing PTP call from being put on hold):* - Ongoing terminated - New call established
1n	**PtP** call from CR-A (eMLPP <**3**>)	- Ongoing call is on hold - New call established
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.11 Call arbitration – ongoing voice group call (eMLPP<4>)

Purpose: This test is to show the call arbitration with an ongoing voice group call with eMLPP<4>.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing other group call (eMLPP <4> , GID 20x)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call left - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call left - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call left - New call established (or no change if no UIC Intercom link present)
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call left - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call left - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	

Step	Procedure	Result / Effect
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call left - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	- Ongoing call maintained - Incoming call indicated
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call left - Incoming call connected
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	- Ongoing call maintained - Incoming call indicated
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.12 Call arbitration – ongoing voice broadcast call (eMLPP<4>)

Purpose: This test is to show the call arbitration with an ongoing voice broadcast call with eMLPP<4>.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing voice broadcasting call (eMLPP <4> , GID 2xx)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**) *For mobile terminated VBC*	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**) *For mobile terminated VBC*	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of
1m	**VBC** call from CR-A (eMLPP <**3**>)	

Step	Procedure	Result / Effect
1n	**PtP** call from CR-A (eMLPP <**3**>)	the voice broadcast call) - New call established
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	- Ongoing call maintained - Incoming call indicated
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call terminated or left (depends on whether CR-A was the initiator of the voice broadcast call) - Incoming call connected
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	- Ongoing call maintained - Incoming call indicated
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.13 Call arbitration – ongoing point-to-point call (eMLPP<4>)

Purpose: This test is to show the call arbitration with an ongoing point-to-point call with eMLPP<4>.

Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing point-to-point call (eMLPP <4>)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - New call connected to *Public Address* (or no change if no UIC Intercom link present)
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call is on hold - New call established (or no change if no UIC Intercom link present)
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call terminated - New call connected to *Intercom* (or no change if no UIC Intercom link present)
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call is on hold - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	***Preferred Implementation**:*

Step	Procedure	Result / Effect
1p	**VBC** call from CR-A (eMLPP <**4**>)	- Ongoing call is put on hold - New call established ***Optional Implementation*** *(If system limitations prevent an ongoing PTP call from being put on hold):* - Ongoing terminated - New call established
1q	**PtP** call from CR-A (eMLPP <**4**>)	- Ongoing call is on hold - New call established
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	- Ongoing call maintained - Incoming call indicated
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call terminated - Incoming call connected
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	- Ongoing call maintained - Incoming call indicated
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

4.12.14 Call arbitration – ongoing shunting emergency call

Purpose: This test is to show the call arbitration with an ongoing shunting emergency call.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration;
CR-A is in an ongoing shunting emergency call (eMLPP <0> , GID 599)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	No change
1b	**PtP** call from CR-A (eMLPP <**2**>)	- Ongoing call maintained - New call not established
1c	Call to **Controller** from CR-A (eMLPP <**3**>)	
1d	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1e	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1f	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1g	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1h	**PtP** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1i	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**PtP** call to CR-A (eMLPP <**2**>)	- Ongoing call maintained - Incoming call indicated but cannot be accepted
2b	Call from **Controller** to CR-A (eMLPP <**3**>)	
2c	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call rejected
2d	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2e	Call to CR-A from the **Intercom** (**using UIC intercom link**)	- Ongoing call maintained - Incoming call indicated but cannot be accepted

Step	Procedure	Result / Effect
2f	**PtP** call to CR-A (eMLPP <**3**>)	
2g	**PtP** call to CR-A (eMLPP <**4**>)	
2h	**Shunting Emergency** call to CR-A (eMLPP <**0**>)	
2i	**SGC 500** call to CR-A (eMLPP <**3**>)	
2j	**SGC 50X** call to CR-A (eMLPP <**3**>)	

4.12.15 Call arbitration – ongoing default group call in shunting mode

Purpose: This test is to show the call arbitration with an ongoing group call in shunting mode (GID 500).

Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration; Shunting mode;
CR-A is in an ongoing default group call in shunting mode (eMLPP <3> , GID 500)

References:
EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call left - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	Call to **Controller** from CR-A (eMLPP <**3**>)	
1d	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1e	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1f	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1g	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1h	**PtP** call from CR-A (eMLPP <**3**>)	- On-going call left - New call established

Step	Procedure	Result / Effect
1i	**PtP** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1j	**SGC 500** call from CR-A (eMLPP <**3**>)	No change
	New incoming calls	
2a	**PtP** call to CR-A (eMLPP <**2**>)	- Ongoing call left - Incoming call connected
2b	Call from **Controller** to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2c	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call rejected
2d	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2e	Call to CR-A from the **Intercom** (**using UIC intercom link**)	- Ongoing call maintained - Incoming call indicated
2f	**PtP** call to CR-A (eMLPP <**3**>)	
2g	**PtP** call to CR-A (eMLPP <**4**>)	
2h	**Shunting Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call left - Incoming call connected

4.12.16 Call arbitration – ongoing dedicated group call in shunting mode

Purpose: This test is to show the call arbitration with an ongoing dedicated group call in shunting mode (GID 50X).

Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1.1 and §5A.1.2

Precondition: Cab Radio test configuration; Shunting mode;
CR-A is in an ongoing dedicated group call in shunting mode (eMLPP <3> , GID 501-529)

References:

EIRENE FRS : § 5.2.4.4, 5.2.4.5, 5.2.4.6, 5.2.4.7

EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call left - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	Call to **Controller** from CR-A (eMLPP <**3**>)	
1d	Call to the **Public Address** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Public Address* connected to the handset (or no change if no UIC Intercom link present)
1e	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	- Ongoing call maintained - New call not established
1f	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call transferred to the loudspeaker - *Intercom* connected to the handset (or no change if no UIC Intercom link present)
1g	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address* (or no change if no *UIC Intercom* link present)
1h	**PtP** call from CR-A (eMLPP <**3**>)	- On-going call left - New call established
1i	**PtP** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1j	**SGC 50X** call from CR-A (eMLPP <**3**>)	No change
	New incoming calls	
2a	**PtP** call to CR-A (eMLPP <**2**>)	- Ongoing call left - Incoming call connected
2b	Call from **Controller** to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2c	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call rejected
2d	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2e	Call to CR-A from the **Intercom** (**using UIC intercom link**)	- Ongoing call maintained - Incoming call indicated
2f	**PtP** call to CR-A (eMLPP <**3**>)	
2g	**PtP** call to CR-A (eMLPP <**4**>)	
2h	**Shunting Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call left - Incoming call connected

4.13 Railway emergency calls

4.13.1 Incoming railway emergency call

Purpose: This test is to show that when the Cab Radio receives an incoming railway emergency call automatically joins the call.

Precondition: Cab Radio test configuration; CR-A and MS-A in Train Mode and later in Shunting Mode.

References:
EIRENE FRS : § 4.2.4, 5.2.2iii, 5.2.2.56, 5.2.2.60, 10.4.5, 13.2.4.1, 13.3.1
EIRENE SRS : § 4.3.1, 4.3.4, 5.5.4, 5.5.19, 13.4.1, 13.4.2

Step	Procedure	Result / Effect
1	- none - (MS-A initiates „railway emergency call")	- CR-A receives and joins call automatically - Audible indication (different to common VGCS) is given on the loudspeaker for 5 seconds - Visual indication is displayed on the MMI including group identity *(299/599 or textual translation)* - Caller can be heard on the loudspeaker - Indication to use PTT to talk is displayed on the MMI
2	CR-A pick up handset	- Loudspeaker set to reduced volume - Communication is activated on the handset
3	CR-A hangs-up handset	- Loudspeaker set to increased volume - Ongoing call transferred to the loudspeaker - MS-A can be heard on CR-A loudspeaker
4	CR-A tries to leave or terminate the railway emergency call	- CR-A cannot leave or terminate the „railway emergency call"
5	- none - (MS-A terminates emergency call)	- Emergency call terminated - CR-A in default idle status
6	Check CR-A's VGCS/VBS subscription state via MMI	- A list with all GIDs from the SIM Card is presented except for GID 299 and 599

4.13.2 Outgoing railway emergency call

Purpose: This test is to show that a railway emergency call is initiated and managed by the Cab Radio using emergency access and that this established with eMLPP <0> (railway emergency). The functional number of the Cab Radio is transmitted to the controller when sending a train emergency call.

Precondition: Cab Radio test configuration. CR-A in Train Mode and later in Shunting Mode.

References:

EIRENE FRS : § 4.2.4, 5.2.2iii, 5.2.2.18, 5.2.2.20, 5.2.2.21, 5.2.2.22, 5.2.2.24, 5.2.2.60, 5.2.4.9, 9.3.2, 10.2.1, 10.2.2, 13.1.4, 13.1.5, 13.2.2.1, 13.2.2.4, 13.2.2.6, 13.2.3.1, 13.2.4.1
§ 4.3.4, 4.4.3, 5.3.5, 5.3.6, 5.5.4, 5.5.5, 10.2.1, 13.2.2, 13.3.1

EIRENE SRS :

Step	Procedure	Result / Effect
1a	CR-A initiates „railway emergency call" using "Emergency button" (handset is **off-hook**)	- Dialling **or** status indication for dialling starts within 2 seconds - An attention sound with reduced volume is in the loudspeaker for 5 seconds while the call is initiated
1b	CR-A initiates „railway emergency call" using "Emergency button" (handset is **on-hook**)	- Dialling **or** status indication for dialling starts within 2 seconds - An attention sound with increased volume is in the loudspeaker for 5 seconds while the call is initiated
2	- none -	- Permanent visual indication is displayed on the MMI; - Emergency call established with eMLPP <0> - GID, GCA, Call Type (and FN of CR-A) is displayed at the controller - Indication to use PTT to talk is displayed on the MMI
3	(pick up handset if it is on-hook) CR-A press PTT button (uplink is free)	- Audible indication is given on the loudspeaker - Visual indication (e. g. "You can talk") is - displayed on the MMI - CR-A has a dedicated uplink until the PTT button is released or the network timer expires - CR-A can be heard on MS-A loudspeaker
4	Release PTT on CR-A	- Audible indication is given on the loudspeaker - Indication to use PTT to talk is given to the driver on the MMI
5	CR-A hangs-up handset	- Loudspeaker set to increased volume - Ongoing call transferred to the loudspeaker - MS-A can be heard on CR-A loudspeaker
6a	CR-A terminates emergency call	- Emergency call terminated - Visual indication - regarding the call - cleared - CR-A in default idle status
6b	- none – (Controller terminates emergency call)	

Step	Procedure	Result / Effect
6c	- none – (network terminates the call after predefined time of no speech)	

4.13.3 Deleted

4.13.4 Railway emergency call – leaving group call area

Purpose: This test is to show that the Cab Radio leaves the "railway emergency call" after moving out of the group call area.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.2.23, 13.2.4.2

Step	Procedure	Result / Effect
1a	- none – (MS-A initiates "railway emergency call")	CR-A receives and joins the call automatically
1b	CR-A initiates "railway emergency call"	MS-A receives and joins the call automatically
2	- none – (change of attenuation at the handover machine to initiate a cell change that invokes group call area change for CR-A)	- CR-A leaves emergency call - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Emergency call continues at MS-A - CR-A returns in default idle status

4.13.5 Railway emergency call – entering group call area

Purpose: This test is to show that the Cab Radio when entering a group call area with an ongoing "railway emergency call" automatically receives and joins it.

Precondition: Cab Radio test configuration. Ongoing "train emergency call" is present in a different group call area than CR-A. A VGC 20X shall be present in both group call areas.

References:
EIRENE FRS : § 3.5.6, 13.2.2.7

Step	Procedure	Result / Effect
1a	- none - CR-A is in idle mode	CR-A is in idle mode
1b	- none - CR-A is in an ongoing PtP call with eMLPP <3>	CR-A is in an ongoing PtP call
1c	- none - CR-A is in an ongoing, mobile terminated VGC 20X with eMLPP <3> as listener (no uplink)	CR-A is in an ongoing, mobile terminated VGC 20X as listener (no uplink)
1d	- none - CR-A is in an ongoing, mobile terminated VGC 20X with eMLPP <3> as talker (PTT pressed)	CR-A is in an ongoing, mobile terminated VGC 20X as talker (PTT pressed)
2	- none - (change of attenuation at the handover machine to initiate a cell change that invokes group call area change for CR-A)	CR-A enters the group call area where the ongoing "railway emergency call" is present
3	- none -	- CR-A receives and joins the emergency call automatically - Other ongoing calls are terminated or left immediately - An attention sound is in the loudspeaker for 5 seconds - Visual indication is displayed on the MMI including group identity - Caller can be heard on driver's loudspeaker - Indication to use PTT to talk is given to the driver on the MMI

4.13.6 Railway emergency call – re-dial after unsuccessful call

Purpose: This test is to show that the Cab Radio shall automatically re-attempt call initiation for 30 seconds when a "railway emergency call" establishment is unsuccessful. If the call cannot be initiated within this time an audible and visual indication is provided to the driver.

Precondition: Cab Radio test configuration.

References:
EIRENE FRS : § 5.2.2.25, 13.2.2.3, 13.2.2.3i, 13.2.2.3ii
EIRENE SRS : § 4.3.5, 4.3.6, 4.4.3

Step	Procedure	Result / Effect
1	CR-A initiates „ railway emergency call" **(call cannot be established)**	(after approx. 2 seconds) - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI about the unsuccessful emergency call establishment status
2	- none – (CR-A automatically tries re-establishing the emergency call for 30 seconds)	- Audible indication is given on the loudspeaker - Visual indication (e.g. "trying to connect the call") is displayed on the MMI
3	- none – (after 30 seconds)	- CR-A gives up trying to establish the emergency call Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A in default idle status

4.13.7 eREC backward compatibility

Purpose: This test is to show that eREC capable Cab Radio can operate in either eREC or non-eREC capable network.

Precondition: Cab Radio test configuration. CR-A has eREC functionalities. Two GSM-R networks available, one with eREC capabilities and another without eREC capabilities. CR-A camped on the eREC capable network and has eREC registration first without and later with active Sector Identity(-ies). ABIS trace or protocol analyser.

References:
EIRENE SRS : § 4.3.4, 13A.2.2

Step	Procedure	Result / Effect
1a	(CR-A in eREC Standby Mode – no Sector Identities are active) CR-A initiates emergency call	- Emergency call initiated by dialling 299 / 599 - REC call established
1b	(CR-A in eREC Mode – at least one Sector Identity is active) CR-A initiates emergency call	- Emergency call initiated by dialling S299 / S599 (S is the first active Sector Identity of CR-A) - eREC call established
1c	(CR-A in eREC Mode – at least one Sector Identity is active) - none - (incoming eREC call to CR-A with the same Sector Identity activated on CR-A)	CR-A receives and joins emergency call automatically
2	Initiator terminates the emergency call	Call terminated
3	CR-A change network to non-eREC network	- Network changed - CR-A in default idle mode
4a	- none - (incoming REC call to CR-A)	CR-A receives and joins emergency call automatically

Step	Procedure	Result / Effect
4b	CR-A initiates emergency call	- Emergency call initiated by dialling 299 / 599 - REC call established
5	CR-A change network to eREC network	- Network changed - CR-A in eREC Standby Mode - No Sector Identities are active on CR-A

4.14 Shunting mode

4.14.1 Entering shunting mode – during ongoing call

Purpose: This test shall verify that the change from train radio mode into shunting mode is not possible during an on-going call involving the Cab radio.

Precondition: Cab Radio test configuration. CR-A in train mode.

References:
EIRENE FRS : § 5.2.2.65

Step	Procedure	Result / Effect
1a	(MS-A initiates a PTP call to CR-A) CR-A accepts the call	Call established, communication is possible
1b	(MS-A initiates a group call) CR-A accepts the call	
1c	(MS-A initiates a broadcast call) CR-A accepts the call	
2	CR-A activates shunting mode using MMI menu (if available)	Activation of shunting mode not possible CR-A maintains the ongoing call

4.14.2 Entering shunting mode – idle mode

Purpose: This test shall verify that the change from train radio mode into shunting mode is supported by the Cab Radio.

Precondition: Cab Radio test configuration. CR-A in train mode and has train number registered.

References:
EIRENE FRS : § 4.2.4, 14.2.2
EIRENE SRS : § 4.3.4, 5.3.13, 14.4.1, 14.5.2

Step	Procedure	Result / Effect
1	CR-A activates shunting mode using MMI menu	- CR-A performs the following steps during transition: • All active GIDs deactivated (except GID 299) • GID 599 activated • Emergency button assigned to GID 599 • GID 299 deactivated - Display is according to shunting mode (see user's manual) - CR-A in default idle status
2a	- none – (MS-A initiates PTP call to CR-A by TN)	CR-A does not receive the call (TN deregistered)
2b	- none – (MS-A initiates group call 200)	- Group call GID 200/299 is established - Group call is not received by CR- A - CR-A in default idle status
2c	- none – (MS-A initiates train emergency call 299)	
2d	- none – (MS-B initiates shunting group call 500)	- CR-A receives and accepts the call automatically.
2e	- none – (MS-B initiates shunting emergency call)	

4.14.3 Shunting registration

Purpose: This test is to show that the Cab Radio provides options for selecting shunting area and group (and also role in dedicated shunting group) during shunting registration procedure.

Precondition: Cab Radio test configuration. CR-A in shunting mode.

References:
EIRENE FRS : § 14.3.1
EIRENE SRS : § 11.3.5, 14.4.6, 14.5.2

Step	Procedure	Result / Effect
1	CR-A selects MMI menu for changing shunting registration	Shunting registration menu is displayed on the MMI
2	CR-A changes the shunting area and shunting group using MMI menu	- Only valid group ID (501-529) can be entered **or** selected from a list
3	CR-A changes the shunting group to a dedicated group where ongoing shunting group call is present (previously set up by MS-A) using MMI menu	- CR-A enters the selected shunting group - New CT6 registration carried out - CR-A automatically joins ongoing group call

Step	Procedure	Result / Effect
4	CR-A leaves ongoing group call	- Ongoing group call left - CR-A in default idle status
5	CR-A changes the shunting area using MMI menu	- CR-A enters the selected shunting area - New CT6 registration carried out

4.14.4 Shunting registration – failed registration

Purpose: This test is to show that a failed registration is indicated to the user.

Precondition: Cab Radio test configuration. CR-A in shunting mode and in a defined group area with a registered functional identity. Prepare possibility to produce registration failure (e.g. network configuration denies a specific shunting group).

References:
EIRENE FRS : § 11.3.2.4i
EIRENE SRS : § 14.4.7

Step	Procedure	Result / Effect
1	CR-A selects MMI menu for changing shunting registration	Shunting registration menu is displayed on the MMI
2	CR-A changes call area and group number using MMI menu	- Automatic (de-) registration of the FN for group number is attempted (de-) registration NOT successful) - Indication is given to the user of the failure

4.14.5 Shunting group activation

Purpose: This test is to show that during shunting operation, besides the emergency group ID 599, only one group ID can be activated.

Precondition: Cab Radio test configuration. Shunting group ID 500, 50X are available;

References:
EIRENE SRS : § 14.4.9

Step	Procedure	Result / Effect
1	(CR registered to shunting GID 500) CR-A changes to a dedicated shunting group (GID 50X)	CR-A changes to dedicated shunting group 50X
2	– none – (MS-A initiate a SGC in GID 500)	- Shunting group call established - CR-A in default idle status
3	– none – (MS-A initiate a shunting emergency call)	- Shunting emergency call established - CR-A joins the emergency call automatically
4	– none – (MS-A initiate a SGC in GID 50X)	- Shunting group call established - CR-A joins the call GID 50X automatically

4.14.6 Shunting area change – joining ongoing shunting emergency call

Purpose: This test is to show that the Cab Radio joins an ongoing shunting emergency call automatically when entering into an area with an ongoing shunting emergency call.

Precondition: Cab Radio test configuration; CR-A in shunting mode;

References:
EIRENE FRS : § 13.2.2.7

Step	Procedure	Result / Effect
1	CR-A enters a shunting area with an ongoing shunting emergency call (GID 599)	- CR-A changes the area and joins the ongoing call automatically - Audible and visual indication of the call - Initiator of the emergency can be heard on CR-A

4.14.7 Shunting area change – during shunting group call

Purpose: This test is to show that the Cab Radio leaves the shunting group call after moving out of the group call area.

Precondition: Cab Radio test configuration. CR-A in shunting mode.

References:
EIRENE FRS : § 5.2.2.55

Step	Procedure	Result / Effect
1	- none – (MS-A initiates shunting group call 500)	CR-A receives and accepts call automatically
2	Change of attenuation at the handover machine to initiate a cell change that invokes group call area change for CR-A	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A leaves ongoing group call - Shunting group call remains ongoing for the other participants

4.14.8 Exiting shunting mode

Purpose: This test is to show that the Cab Radio can leave shunting radio mode and enter train radio mode.

Precondition: Cab Radio test configuration; CR-A in shunting mode;

References:
EIRENE FRS : § 5.2.2.64
EIRENE SRS : § 14.4.15, 14.4.16, 14.4.18, 14.4.19

Step	Procedure	Result / Effect
1	CR-A initiates system change to train radio system using MMI menu	- CR-A performs the following steps during transition: • All active GIDs deactivated (except GID 599) • GID 299 activated • Emergency button assigned to GID 299 • GID 599 deactivated • GIDs that were active before entering shunting mode are re-activated - Display is according to train mode (see user's manual) - CR-A in default idle status
2a	- none – (MS-A initiates shunting group call)	- Shunting group call is established - CR-A does not receive the call - CR-A in default idle status (train radio system)
2b	- none – (MS-B initiates PTP call to CR-A by FN)	- CR-A receives the call (FN registered)
2c	- none – (MS-B initiates group call 200)	- CR-A receives and accepts the call automatically.
2d	- none – (MS-B initiates emergency call 299)	
2e	- none – (MS-A initiates shunting emergency call)	- Shunting emergency call is established - CR-A does not receive the call - CR-A in default idle status (train radio system)

4.14.9 Exiting shunting mode – during shunting group call

Purpose: This test is to show that the Cab Radio won't terminate an ongoing shunting group call if the function for system change to train mode is activated. The system change procedure can result in two different ways and it is an implementation option.

Precondition: Cab Radio test configuration; CR-A in shunting mode;

References:
EIRENE SRS : § 14.4.14

Step	Procedure	Result / Effect
1a	- none – (MS-A initiates shunting group call)	- Shunting group call is established - CR-A and MS-B join the call automatically
1b	CR-A initiates shunting group call	- Shunting group call is established - MS-A and MS-B join the call automatically

Step	Procedure	Result / Effect
2	(MS-A takes the uplink) CR-A initiates system change to train radio system using MMI menu	- Shunting group call left - Changing to train radio mode (shunting group call remains active, MS-A and MS-B can communicate) - CR-A in default idle status (train radio system)
		- Changing to train radio mode is not possible until shunting group call terminated or left - CR-A stays connected to the ongoing group call

4.14.10 Storage of shunting data

Purpose: This test is to show that shunting data is stored in non-volatile memory to be used for the start-up procedure.

Precondition: Cab Radio test configuration. CR-A in shunting mode and registered to a dedicated shunting group.

References:
EIRENE SRS : § 14.4.11

Step	Procedure	Result / Effect
1	Power-off CR-A	CR-A powered off
2	Power-on CR-A	- CR-A performs its normal start-up - CR-A is in default train idle status **or** in default idle status. - Shunting data are the same as was before

4.14.11 Group call in shunting mode

Purpose: This test is to show that a voice group call can be initiated in shunting mode by the Cab Radio.

Precondition: Cab Radio test configuration. Cab Radio and MS-A in shunting mode and registered to the same dedicated shunting group.

References:
EIRENE FRS : § 5.2.2.9, 5.2.2.60

Step	Procedure	Result / Effect
1	CR-A initiates a voice group call by entering phone number **or** using dedicated menu selection **or** by pressing PTT	- MS-A receives the call - SGC established with eMLPP <3> - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Indication to use PTT to talk is displayed on the MMI - Incoming audio is connected to the loudspeaker until the driver picks up the handset

Step	Procedure	Result / Effect
2	CR-A pick up handset and press PTT	- Loudspeaker set to reduced volume - Communication is activated on the handset - CR-A has a dedicated uplink until the PTT button is released or the network timer expires - CR-A can be heard on MS-A loudspeaker
3	CR-A release PTT	Indication to use PTT to talk is displayed on the MMI
4	CR-A press PTT button (uplink is busy)	- Audible indication is given on the loudspeaker - Visual indication (e.g. “Uplink busy”) is displayed on the MMI
5	CR-A press PTT button (uplink is free)	- Audible indication is given on the loudspeaker - Visual indication (e. g. “You can talk”) is displayed on the MMI - CR-A can be heard on MS-A loudspeaker
6	CR-A release PTT	Indication to use PTT to talk is displayed on the MMI
7	CR-A terminates group call	- Call terminated - CR-A in default idle status

4.14.12 Link Assurance Signal

Purpose: This test is to show that the Cab Radio can receive the Link Assurance Signal (LAS) during a shunting group call. Incoming and outgoing shunting emergency calls are automatically takes priority over the link assurance signal

Precondition: Cab Radio test configuration. CR-A in shunting mode with dedicated shunting group activation. MS-A is an operational shunting radio that supports link assurance signal (LAS).

References:
EIRENE FRS : § 5.2.2.63, 5.2.2.66, 13.1.8, 14.2.9, 14.2.12, 14.4.5
EIRENE SRS : § 14.7.16, 14.7.17

Step	Procedure	Result / Effect
1	- none – (MS-A initiates shunting group call 501)	CR-A receives shunting group call GID 501 and accepts the call automatically
2	- none – (MS-A start LAS transmission)	- Shunting group call 501 ongoing - LAS can be heard on CR-A’s loudspeaker
3a	- none – (MS-B initiates „shunting emergency call”)	- LAS interrupted on CR-A’s loudspeaker - CR-A receives and accepts call automatically
3b	CR-A initiates „shunting emergency call”	

4.15 Call confirmation

4.15.1 Emergency call confirmation

Purpose: This test is to show that the Cab Radio uses the correct functional identity in the process of railway emergency call confirmation as well as specific CHPC tags. Every registration situation (**Cases a, b, c, d, e**) has to be created and all test steps must be carried out and analysed.

Precondition: Cab Radio test configuration. Cab radio trace or protocol analyser. CR-A in train mode and later in shunting mode according to registration situations.

References:
EIRENE FRS : § 5.2.2.58, 13.4.2, 13.4.3, 13.4.5, 13.4.6, 13.4.9, 14.2.11, 14.4.7
EIRENE SRS : § 13.5.2, 13.5.3, 13.5.4, 13.5.5, 13.5.6, 13.5.7, 13.5.9, 13.5.10

Case	Train number (CT2)	Engine number (CT3)	Coach number (CT4)	Shunting registration (CT6)	SETUP message Tag5
a	not registered	not registered	not registered	not registered	Empty (00)
b	not registered	not registered	**registered**	not registered	Coach Number (CT4)
c	not registered	**registered**	not registered	not registered	Engine Number (CT3)
d	**registered**	**registered**	not registered	not registered	Train Number (CT2)
e	**registered**	not registered	**registered**	not registered	
f	not registered	**registered**	not registered	**registered**	Shunting registration (CT6)

Step	Procedure	Result / Effect
1a	- none – (incoming emergency call to CR-A)	Call established, communication is possible
1b	CR-A initiates emergency call	
1c	(Change SIM Card field $EF_{CallConfC}$ – PL_ACK to eMLPP <2>) CR-A initiates VGCS 200 with eMLPP <2>	
1d	(Enable CHPC flag for VGCS 20X via network settings) CR-A initiates VGCS 20X	
2a	- none – (initiator terminates emergency call)	CR-A in default idle status
2b	CR-A terminates emergency call	
2c	CR-A terminates VGCS 200	

Step	Procedure	Result / Effect
2d	CR-A terminates VGCS 20X	
3	- none – (CR-A initiates PTP call for emergency call confirmation in the background)	- Confirmation data cannot be modified by the user - Call initiated after random time (T_RAN) - Call initiated by short code “1612” - Call has eMLPP <4> - CHPC is sent by UUS1 Tag2 (incoming call) **or** Tag3 (outgoing call) contains: - duration of the call (T_DUR) - relative time of termination (T_REL) - priority level of call (PL_CALL) - cause of termination (CAUSE) - group call reference (GC_REF) Tag5 contains: a) Empty (no FN registered) b) Coach Number (CT4) c) Engine Number (CT3) d-e) Train Number (CT2) f) Shunting registration (CT6) *(optionally Tag2/Tag3 and Tag5 can be combined)*
4	- none –	CR-A receives RELEASE COMPLETE message by UUIE with positive confirmation (CAUSE 0x00) in Tag2/Tag3

4.15.2 Emergency call confirmation – group call area change

Purpose: This test is to show that the Cab Radio starts emergency call confirmation after leaving the group call area. The test has to be conducted in Train Radio Mode and after that in Shunting Radio Mode.

Precondition: Cab Radio test configuration. Cab radio trace or protocol analyser. CR-A in train mode and later in shunting mode.

References:
EIRENE FRS : § 13.4.3

Step	Procedure	Result / Effect
1a	- none – (incoming emergency call to CR-A)	Call established, communication is possible
1b	CR-A initiates emergency call	
2	CR-A leaves Group Call Area (in the new GCA group call is not active)	CR-A leaves ongoing emergency call CR-A in default idle status
3	- none – (CR-A initiates PTP call for emergency call confirmation in the background)	CR-A sends confirmation with CAUSE 0x00

4.15.3 Emergency call confirmation – network or power loss

Purpose: This test is to show that the Cab Radio starts emergency call confirmation after power loss or network loss if it was shorter than 5 minutes. The test has to be conducted in Train Radio Mode and after that in Shunting Radio Mode.

Precondition: Cab Radio test configuration. Cab radio trace or protocol analyser. CR-A in train mode and later in shunting mode.

References:
EIRENE FRS : § 13.4.4

Step	Procedure	Result / Effect
	Network loss	
1a	- none – (incoming emergency call to CR-A)	Call established, communication is possible
1b	CR-A initiates emergency call	
2	- none – (interrupt network coverage for CR-A)	- CR-A leaves emergency call - Call for emergency call confirmation cannot be established
3a	- none – (restore network coverage for CR-A t < 5 minutes)	- Call for emergency call confirmation initiated - CR-A sends confirmation with CAUSE 0x02 (radio link error)
3b	- none – (restore network coverage for CR-A t > 5 minutes)	Call for emergency call confirmation not initiated
	Power loss	
4a	- none – (incoming emergency call to CR-A)	Call established, communication is possible
4b	CR-A initiates emergency call	
5a	Power-off CR-A (emergency call terminated while CR-A is powered off)	- CR-A leaves ongoing emergency call - CR-A is powered off
5b	CR-A terminates emergency call and is switched off (controlled power off according to [1])	- CR-A terminates ongoing emergency call - CR-A is (controlled) powered off *and during that time:* - Call for emergency call confirmation initiated - CR-A sends confirmation with CAUSE 0x00 (no error)
6a	Power-on CR-A	- Call for emergency call confirmation initiated - CR-A sends confirmation with CAUSE 0x01 (loss of power)
6b	Power-on CR-A	CR-A in default idle status

5 EIRENE Requirements for Cab Radio: Mandatory for Interoperability – optional components

5.1 Public Address

5.1.1 Public Address – incoming call

Purpose: This test is to show that the Cab Radio can receive and join an incoming call and terminate communication involving the Cab Radio's Public Address system.

Precondition: Cab Radio test configuration. Public Address has a registered FN.

References:
EIRENE FRS : § 5.2.2.71, 5.2.2.73, 5.2.2.74
EIRENE SRS : § 5.6.1

Step	Procedure	Result / Effect
1	- none – (MS-A initiate call with eMLPP <3> to CR-A's Public Address by FN)	- Call is established and connected to *Public Address* - Indication is given to the driver that CR-A is busy - MS-A can be heard on the loudspeaker of *Public Address*
2	CR-A picks up handset	Driver of CR-A joins the communication as a listener or as stated in [1]
3	CR-A initiates another call	- Communication between MS-A and *Public Address* terminated - New call initiated

5.1.2 Call arbitration – ongoing public address call

Purpose: This test is to show the call arbitration with an ongoing public address call using UIC intercom link.

Precondition: Cab Radio test configuration; **CR-A is in an ongoing call with its Public Address using UIC intercom link;**

References:
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call terminated

Step	Procedure	Result / Effect
1f	”**Other drivers same train**” call from CR-A	- New call established
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	No change
1h	Call to Controller from CR-A’s **Intercom** (**over radio link**, eMLPP <**3**>)	***Preferred Implementation**:* - Ongoing call maintained - New call established ***Optional Implementation**:* - Ongoing call maintained - New call not established
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call not established
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	Not possible
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address*
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
1r	**Shunting Emergency** call from CR-A (eMLPP <**0**>)	
1s	**SGC 500** call from CR-A (eMLPP <**3**>)	
1t	**SGC 50X** call from CR-A (eMLPP <**3**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call maintained in the handset - Incoming call connected to the loudspeaker
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	”**Other drivers same train**” call to CR-A	
2g	Call to CR-A’s **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2h	Call to CR-A’s **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	

Step	Procedure	Result / Effect
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained in the handset - Incoming call connected to the loudspeaker
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	- Ongoing call maintained - Incoming call indicated
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	
2p	**Shunting Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call maintained in the handset - Incoming call connected to the loudspeaker
2q	**SGC 500** call to CR-A (eMLPP <**3**>)	
2r	**SGC 50X** call to CR-A (eMLPP <**3**>)	

5.1.3 Call arbitration – ongoing public address call (over radio link)

Purpose: This test is to show the call arbitration with an ongoing public address call over radio link.

Precondition: Cab Radio test configuration; **MS-A is in an ongoing call with CR-A's Public Address over radio link (eMLPP<3>)**;

References:
EIRENE SRS: § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call connected to *Intercom*
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	Not possible
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address*
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained

Step	Procedure	Result / Effect
1m	**VBC** call from CR-A (eMLPP <**3**>)	- New call not established
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A *This test is only applicable if CR-A allows a non-leading driver to register FC08.*	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call rejected
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

5.2 Intercom

5.2.1 Intercom system - incoming call

Purpose: This test is to show that the Cab Radio can receive and join an incoming call and terminate communication involving the Cab Radio's Intercom system.

Precondition: Cab Radio test configuration. Intercom has a registered FN

References:
EIRENE FRS : § 5.2.2.71, 5.2.2.73, 5.2.2.74
EIRENE SRS : § 5.6.1

Step	Procedure	Result / Effect
1	(MS-A is in an ongoing call with CR-A's Intercom, eMLPP <4>) - none -	- Indication is given to the driver that CR-A is busy - MS-A can be heard on the *Intercom*
2	CR-A picks up handset	Driver of CR-A joins the communication
3	CR-A initiates another call	- Communication between MS-A and *Intercom* terminated - New call initiated

5.2.2 Call arbitration – ongoing intercom call

Purpose: This test is to show that the call arbitration with an ongoing intercom call using UIC intercom link.

Precondition: Cab Radio test configuration; **CR-A is in an ongoing call with its Intercom** u**sing UIC intercom link;**

References:
EIRENE SRS: § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	Not possible
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	No change
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	- Ongoing call terminated - New call established
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address*
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	
1p	**VBC** call from CR-A (eMLPP <**4**>)	

Step	Procedure	Result / Effect
1q	**PtP** call from CR-A (eMLPP <**4**>)	
1r	**Shunting Emergency** call from CR-A (eMLPP <**0**>)	
1s	**SGC 500** call from CR-A (eMLPP <**3**>)	
1t	**SGC 50X** call from CR-A (eMLPP <**3**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call maintained in the handset - Incoming call connected to the loudspeaker
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A	
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	Not possible
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained in the handset - Incoming call connected to the loudspeaker
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	- Ongoing call maintained - Incoming call indicated
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	
2p	**Shunting Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call maintained in the handset - Incoming call connected to the loudspeaker
2q	**SGC 500** call to CR-A (eMLPP <**3**>)	
2r	**SGC 50X** call to CR-A (eMLPP <**3**>)	

5.2.3 Call arbitration – ongoing intercom call (over radio link)

Purpose: This test is to show that the call arbitration with an ongoing intercom call over radio link.

Precondition: Cab Radio test configuration; **CR-A's Intercom is in an ongoing call with Contorller over radio link (eMLPP<3>);**

References:
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1.1, 5A.1.2

Step	Procedure	Result / Effect

Step	Procedure	Result / Effect
	New outgoing calls	
1a	**Emergency** call from CR-A (eMLPP <**0**>)	- Ongoing call terminated - New call established
1b	**PtP** call from CR-A (eMLPP <**2**>)	
1c	**VGC 200** call from CR-A (eMLPP <**2**>)	
1d	**VGC 555** call from CR-A (eMLPP <**3**>)	- Ongoing call maintained - New call not established
1e	Call to **Controller** from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1f	"**Other drivers same train**" call from CR-A	
1g	Call to the **Public Address** from CR-A (**using UIC intercom link**)	***Preferred Implementation:*** - Ongoing call maintained - *Public Address* connected ***Optional Implementation:*** - Ongoing call terminated - *Public Address* connected
1h	Call to Controller from CR-A's **Intercom** (**over radio link**, eMLPP <**3**>)	Not possible
1i	Call to the **Intercom** from CR-A (**using UIC intercom link**)	No change
1j	Call to the **Chief Conductor** from CR-A (**over radio link**)	Not possible
1k	Call to the **Chief Conductor** from CR-A (**using UIC intercom link**)	- Ongoing call maintained - New call sent on *Public Address*
1l	**VGC 20X** call from CR-A (eMLPP <**3**>)	- Ongoing call terminated - New call established
1m	**VBC** call from CR-A (eMLPP <**3**>)	
1n	**PtP** call from CR-A (eMLPP <**3**>)	
1o	**VGC 20X** call from CR-A (eMLPP <**4**>)	- Ongoing call maintained - New call not established
1p	**VBC** call from CR-A (eMLPP <**4**>)	
1q	**PtP** call from CR-A (eMLPP <**4**>)	
	New incoming calls	
2a	**Emergency** call to CR-A (eMLPP <**0**>)	- Ongoing call terminated - Incoming call connected
2b	**PtP** call to CR-A (eMLPP <**2**>)	
2c	**VGC 200** call to CR-A (eMLPP <**2**>)	
2d	**VGC 555** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2e	Call from **Controller** to CR-A (eMLPP <**3**>)	
2f	"**Other drivers same train**" call to CR-A *This test is only applicable if CR-A allows a non-leading driver to register FC07.*	

Step	Procedure	Result / Effect
2g	Call to CR-A's **Public Address** (**over radio link,** eMLPP <**3**>)	
2h	Call to CR-A's **Intercom** (**over radio link,** eMLPP <**3**>)	- Ongoing call maintained - Incoming call rejected
2i	Call to CR-A from the **Intercom** (**using UIC intercom link**)	Not possible
2j	**VGC 20X** call to CR-A (eMLPP <**3**>)	- Ongoing call maintained - Incoming call indicated
2k	**VBC** call to CR-A (eMLPP <**3**>)	
2l	**PtP** call to CR-A (eMLPP <**3**>)	
2m	**VGC 20X** call to CR-A (eMLPP <**4**>)	
2n	**VBC** call to CR-A (eMLPP <**4**>)	
2o	**PtP** call to CR-A (eMLPP <**4**>)	

5.3 Train-borne recorder

Purpose: This test is to show that the Cab Radio records the details of the call confirmation in the train-borne recorder.

Precondition: Cab Radio test configuration. CR-A has a train borne recorder connected via Train Interface Unit or directly by means of a nationally determined interface.

References:
EIRENE SRS : § 13.5.8

Step	Procedure	Result / Effect
1	CR-A initiates emergency call	Call established, communication possible
2	CR-A terminates emergency call	Call terminated
3	- none – (CR-A starts call confirmation in the background)	- Call confirmation finished - Details of the call confirmation stored in the train-borne recorded: Entry #1: - PL_CALL (Priority of confirmed call) - GC_REF (Group Call Reference) - FNR (Functional Number) Entry#2: - T_DUR (Duration of call) - CAUSE (Reason for termination) Entry #3: - ACK/CAUSE (Value of the final acknowledge) - N_ACK (Number of retries)

5.4 Bulk registration / deregistration

Purpose: This test is to show that it is possible to register up to ten Functional Numbers to items of equipment physically connected to the Cab Radio using bulk registration within 30

seconds and later it can be also deregistered within 30 seconds using bulk deregistration.

Note: If the network has basic bulk registration capabilities registrations are performed for all function codes which were requested by the Cab Radio. Otherwise if the network has enhanced bulk registration capabilities it may override the request and registers predefined function codes for the Cab Radio. “SI” is the International EIRENE Number with Function Code 01. “FC_LIST” is a list of two-digit function codes starting with a space character (0x20) to be registered to the Cab Radio in addition to Function Code 01.

Precondition: Cab Radio test configuration. Cab Radio has no FN registered on the network. Both the network and the Cab Radio has bulk registration / deregistration capabilities.

References:
EIRENE FRS : § 11.3.2.3, 11.3.3.3

Step	Procedure	Result / Effect
1	CR-A starts **bulk registration** procedure for 10 different Functional Numbers (using the MMI or by external device)	- Registration started using **only one UUSD message** containing: *** * 214 * SI * * * BULK9 FC_LIST #** *(optionally * * 214 * SI * * * BULK0 # can be used when network has enhanced bulk registration capabilities and override the registration request with the same amount of Function Codes)* - Registration finished within 30 seconds
2	- none - (MS-A initiates a call to all registered Function Codes of CR-A)	Call established, communication possible
3	- none - (initiator terminates the call)	Call terminated
4	CR-A starts **bulk deregistration** procedure for the previously registered10 Functional Numbers (using the MMI or by external device)	- Deregistration started using **only one UUSD message** containing: **# # 214 * SI * * * BULK9 FC_LIST #** - Deregistration finished within 30 seconds
5	- none - (MS-A initiates a call to the previously registered10 Functional Numbers of CR-A)	Call cannot be established