Cab Radio

Functional Test Specification

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	NAME	**DATE**	**VISA**
Author	Funkwerk AG TCC		
Reviewed	ERTMS/GSM-R Operators Ad Hoc Group GSM-R IG		
Approval	ERTMS/GSM-R OG/FG/IG Groups		

EVOLUTION SHEET

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1.1	December 2011	Siemens	Update for EIRENE 7.1/15.1

Remove tests for items which are not TSI-mandatory

Add tests for some functions previously untested

List other untested items

Clarification within some tests

Some minor language and formatting modifications |
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only test cases for MI – requirements

Draft Version |

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Content

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.

1.2 Abbreviations

AC	Access Code
BC	Breakout Code
CC	Country Code
CN	Coach Number
CR	Cab Radio
CHPC	Confirmation of High Priority Calls
GSM-R	GSM-Railway, GSM train radio system
EDOR	ETCS data only radio
EN	Engine Number
eREC	enhanced Railway Emergency Call
FI	Functional Identity
FN	Functional Number
GCA	Group Call Area
GID	Group call Identity
LAS	Link Assurance Signal
LN	Location Number
MMI	Man – Machine Interface
MS	Mobile Station, GSM-R mobile phone with a valid SIM Card for the test
NDC	National Destination Code
OTA	Over The Air
PA	Public Address
PC	Primary Controller
PSC	Power Supply Controller
PTP	Point-to-Point call
PTT	Push to Talk
REC	Railway Emergency Call
SC	Secondary Controller
SEC	Shunting Emergency Call

SIM Subscriber Identification Module

SN Stock Number

SN Subscriber Number

UIC Union Internationale des Chemins de Fer

USSD Unstructured Supplementary Service Data

UUS User-User Signalling

VBC Voice Broadcast Call

VGC Voice Group Call

1.3 Reference Documents

[1]* Cab Radio User's Manual

[2] UIC, EIRENE Functional Requirements Specification
Doc.-N°: UIC CODE 950 | version: 7.3.0

[3] UIC, EIRENE System Requirement Specification
Doc.-N°: UIC CODE 951 | version: 15.3.0

[4] ERA, GSM-R B0 FRS | version: 0.1r1

[5] ERA, GSM-R B0 SRS | version: 0.1r1

[6] ITU-T, The international public telecommunication numbering plan
Doc.-N°: E.164 (2010-11)

[7] UIC, Standard numerical marking of hauled passenger stock
Doc.-N°: UIC CODE 438-1 | version: 2 (1988-01)

[8] UIC, Identification marking for tractive stock
Doc.-N°: UIC CODE 438-2 | version: 1 (1971-01)

[9] UIC, Remote control and data cable - Standard technical features for the equipping of RIC coaches
Doc.-N°: UIC CODE 558 | version: 1 (1996-01)

[10] UIC, Loudspeaker and telephone systems in RIC coaches - Standard technical characteristics
Doc.-N°: UIC CODE 568 | version: 3 (1996-01)

[11] ERA, Technical Specifications for Interoperability relating to the Control-Command and Signalling Subsystems of the trans-European rail system
Doc.-N°: 7325 | (2012/696/EU)

[12] UIC, Radio Transmission FFFIS for EuroRadio
Doc.-N°: A 11 T 6001 | version: 12.4 (2012-03)

[13] UIC, ERTMS/GSM-R Quality of Service Test Specification
Doc.-N°: UIC CODE O-2475 | version: 3.0 (2007-02)

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

1.4 Dedication

This document is based on *Nortel – Applikationtests Cab Radio* and *HFWK – Cab Radio Application Tests* and *HFWK – Testhandbuch Add-on to UIC O-3001* which are kindly provided by Nortel and Funkwerk AG TCC (Hörmann Funkwerk Kölleda before) and improved by Funkwerk AG TCC.

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 GSM-R bands around 900MHz.
- GSM Abis-tracer or GSM A-tracer, in order to check the contents on the messages exchanged between mobiles and network when required.
- One Cab Radio (device under test).
- One 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 mobiles.
- User's Manual of the other mobiles involved testing.

2.3 Network configuration

The GSM-R network (or in some test cases two networks) needs to be EIRENE compliant and compliant to [4]. It needs to support all of the different configurations required to execute the Cab Radio test cases. It must be possible to adjust various functions within the network in order to carry out the Cab Radio tests.

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.

2.4 Cab Radio configuration

2.4.1 Software

The software release of the Cab Radio and particular releases of the Cab Radio components and MMIs must be declared in the test protocol.

2.4.2 Hardware

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

2.4.3 SIM cards

The SIM cards need to be compliant to [7] and will be provided by the network operator or test lab operator.

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 and for the ETCS data only 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
- overall result on the results sheet (Appendix A)

Where the term "CR-A 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 (CR-A) or ETCS data only radio. In case that more Cab Radios are necessary for the test execution (CR-B, CR-C) the test case mentions this. If other subscribers are used they are identified by MS-A, MS-B, MS-C (for mobile subscribers) or FT1, FT2 (for fixed terminals).

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 test case needs to be retested. 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.

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

3.4 General test configuration

The following global requirements or settings apply to the test grouping:

Test system requirements:

1 GSM-R network in accordance with [2] and [3] (EIRENE FRS and SRS).
2 Subscriber for controller calls 1200, 1300 & 1400
3 Two primary controller (PC1, PC2) in different location areas
4 Shunting radio with LAS function
5 Cab Radio
6 Handhelds
7 Public address and intercom system in accordance with [10] (connected to the test unit if it supports it)
8 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.
9 External device for setting the test unit's vehicle number (e.g. personal computer with appropriate software installed)
10 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

11 Equipped with a plug-in SIM card according to [7] (FFFIS for GSM-R SIM cards)
12 Group number 299 for railway emergency call, 599 for shunting emergency call (SEC) configured on the SIM
13 Additional group numbers (e.g. 203) are enabled on the SIM
14 Voice broadcast groups (e.g. 200 or 998) are enabled on the SIM
15 Own phone number (MSISDN) entered on the SIM
16 Registered engine number entered on the SIM and on the network
17 Short numbers for the controllers have to be defined in the SIM (EFSDN) file, as defined in MORANE FFFIS for GSM-R SIM cards.
18 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

- SMS SIM cards of CR & MS are activated
- SMS service centre number is saved on CR & MS SIM cards
- SIM of CR & MS does not contain any received SMS messages
- Follow-Me feature must be activated on SIM Card.
- The following GIDs should be defined on SIM cards, and in network database:
  - national usage group: CT(50)+GCA+GID (600-699)
  - 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)
  - maintenance broadcast group: CT(51)+GCA+GID (600-699)

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

3.5 EDOR test configuration

The following requirements or settings apply to the ETCS data only radio test grouping:

Test system requirements:

1.   ETCS data only radio
2.   Fixed terminals
3.   Network software which corresponds to the in the field installed ETCS network software

Test unit requirements

4.   Equipped with a plug-in SIM card according to [7] (FFFIS for GSM-R SIM cards)
5.   Own phone number (MSISDN) entered on the SIM
6.   Notifications of voice broadcast and voice group calls should be prevented by the SIM-card configuration for the ETCS-Application. This ensures that the data flow is not disturbed by notifications
7.   ETCS data only radio is switched on unless other state is specified in precondition

Further requirements

The tests will be performed with a test application (e.g. with a terminal software) connected through a serial interface to the test equipment. With this test application manual AT commands or predefined scripts can be sent to the test equipment.
The feedback of the test equipment will be outputted to the test application through the same interface.

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 Switch on / Switch 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: General test configuration. All Cab Radio units are error-free.

References:
EIRENE FRS : § ~~5.2.1.2,~~ 5.2.3.1
EIRENE SRS : § 4.4.1, 5.4.1, 5.4.2
ETSI : EN 301 515, TS 100 906

Step	Procedure	Result / Effect
1	Switch on CR-A	- Indication of the start-up procedure visible on the MMI - Automatic self-test - Network registration to the previously registered network
2	- none - (Initialisation finished)	- MMI default settings initialised (e.g. brightness, loudspeaker volume, handset volume) - Default user language selected - Acoustic signal: ready for operation - Last used network selected - Name and signal strength of the network 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: General 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	Switch 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 - 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 Switch on loudspeaker volume

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

Precondition: General 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	Switch off CR-A	CR-A switched off
3	Switch 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: General 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	Switch 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 Switch off and back on with different network coverage

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

Precondition: General 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	Switch off CR-A	CR-A switched 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	Switch on CR-A (**previous** network available)	- Audible indication is given - Network name is displayed on the MMI.
3b	Switch on CR-A (only **other** network available)	- Audible and visual indication is given - Manual network selection needed for connecting to other network

4.1.6 Saving numbers at switch off

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

Precondition: General 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	Switch off CR-A (CR-A registered by CT4)	CR-A switched off
1b	Switch off CR-A (CR-A registered by CT3)	
1c	Switch off CR-A (CR-A registered by CT2)	
2	Switch on CR-A	CR-A switched on
3a	- none - (MS-A call CR-A by CT4 number)	Previously registered numbers can be called

	- none -	
3b	(MS-A call CR-A by CT3 number)	
3c	- none -	
	(MS-A call CR-A by CT2 number)	

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: General test configuration. MMI of CR-A is 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	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
2b	- none - (MMI was switched off more than t minutes ago)	MMI powers on with default settings.

4.2.2 MMI deactivation

Purpose: This test is to show that the MMI can be deactivated by a soft switch-off function.

Precondition: General test configuration; CR-A is functionally registered (CT2);

References:

EIRENE FRS :   § 5.2.1.2, 5.2.3.5, 5.2.3.9

Step	Procedure	Result / Effect
1a	CR-A initiates PTP call to MS-A	PTP call established
1b	CR-A initiate Train Emergency Call	Emergency call established
2	Set CR-A's reversing switch **or** MMI's power switch during active call to "Position 0"	Start timer for deregistration time of own train number
3a	- none- (Leave reversing switch **or** MMI's power switch in "Position 0" for longer time than deregistration time of own train number)	- Active MMI becomes passive - PTP call is terminated - Deregistration of the train number - Save data
3b	- none- (Leave reversing switch **or** MMI's power switch in "Position 0" for longer time than deregistration time of own train number)	- Active MMI becomes passive - Emergency call is left - Deregistration of the train number - Save data - CHPC is sent
4	Set CR-A's reversing switch **or** MMI's power switch in "Position 1"	MMI becomes active again

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: General test configuration.

References:
EIRENE FRS : § ~~5.2.1.2,~~ 5.2.3.12, 5.2.13, 5.2.3.14, 5.2.3.16

Step	Procedure	Result / Effect
1	CR-A activates MMI menu for language settings and selection (for example as in steps 2 - 5)	According to CR-A user's manual
2	CR-A selects settings menu	Settings menu is displayed on the MMI
3	CR-A selects language settings	- Available languages are displayed - There are at least 10 different language options
4	CR-A selects different language to activate	Different language is highlighted
5	CR-A issues CONFIRM command using MMI menu	- Different language is selected - CR-A returns to default idle status
6	- none -	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: General test configuration.

References:
EIRENE FRS : § 5.2.3.44, 5.2.3.46, 5.2.4.11

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: General test configuration.

References:
EIRENE FRS : § 5.2.3.44, 5.2.3.45, 5.2.4.13

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 the preferred mobile radio network manually from a prioritised list using MMI action and the Cab Radio can roam between EIRENE networks.

Precondition: General 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 : § 5.2.1.2, 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
EIRENE SRS : § 5.6.1i, 10.5.1, 11.3.14, 11.3.15
ETSI : EN 300 940, TS 100 929, TS 122 030
MORANE : P 38 T 9001

Step	Procedure	Result / Effect
1	CR-A starts manual network selection using MMI menu	A prioritised list of all authorised mobile radio networks is displayed in the following order: - Home EIRENE network - Foreign EIRENE networks - Public networks with EIRENE facilities - Public networks without EIRENE facilities
2	CR-A selects preferred network	Preferred network is highlighted
3	CR-A starts network change	Preferred network selection is started
4	- 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
		- Network change is carried out within 20 seconds
		- CR-A returns to default idle status

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: General test configuration. CR-A is in an ongoing call with MS-A.

References:
EIRENE FRS :   § 5.2.3.23, 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: General test configuration
References:
EIRENE FRS :   § 5.4.16
EIRENE SRS :   § 4.4.1, 5.6.6
ETSI :   TS 100 906

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
1b	Network coverage breaks off (CR-A in shunting radio mode)	- Audio-visual indication for the network loss is displayed on the MMI
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: General 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 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: General 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, 9.2.12, 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, 11.3.5, 13.3.3
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) + **MSISDN**	
2	CR-A initiate an international PTP call to MS-A using MSISDN: CC + NDC + CT(8) + **MSISDN**	
3	CR-A initiate a PTP call to MS-A using Train Number: CT(2) + **TN** + FC	- Call established successfully - Communication possible - CR-A terminates the initiated call
4	CR-A initiate an international PTP call to MS-A using Train Number: CC + CT(2) + **TN** + FC	
5	CR-A initiate a PTP call to MS-A using Engine Number: CT(3) + **EN** + FC	
6	CR-A initiate a PTP call to MS-A using Coach Number: CT(4) + **CN** + FC	

Step	Procedure	
7	CR-A initiate a PTP call to MS-A using Shunting team number: CT(6) + **LN** +FC(**5**xxx)	
8	CR-A initiate a PTP call to MS-A using Maintenance team number: CT(6) + **LN** + FC(**6**xxx)	
9	(activate "high priority group call between drivers in the same area" for CR-A) CR-A initiate a group call **GID 200**	
10	(activate "operational group call to drivers in the same area" for CR-A) CR-A initiate a group call **GID 555**	
11	(activate "default trackside maintenance group" for CR-A) CR-A initiate a group call **GID 560**	
12	(activate national group for CR-A) CR-A initiate a group call **GID 600**	
13	(switch CR-A to shunting and activate "default shunting group") CR-A initiate a group call **GID 500**	
14	(activate "dedicated shunting group" for CR-A) CR-A initiate a group call **GID 50X**	

4.4.6 Access to external GSM-R networks – Breakout Code

Purpose: This test is to show that it is possible to access other GSM-R radio networks by using a Breakout Code (BC)

Precondition: General test configuration.
                  CR-A is switched on and logged onto a GSM-(R) radio network.
                  MS-A is switched on and logged onto a different public GSM-R radio network.
                  MS-B is switched on and logged onto a different private GSM-R radio network..

References:
EIRENE SRS :   § 9.4.2, 9.4.3, 9.10.1, 9.10.1ii, 9.10.1v

Step	Procedure	Result / Effect

Step	Procedure	Result / Effect
1a	(access to other **public** GSM-R network is possible) CR-A initiate a PTP call to MS-A using Breakout Code 900: BC+ IC+CT+UN (e.g. 900 + 420 + 2 + 123456 01)	PTP call is successfully dialled out, **or** transmitted to the network and can be seen in a means for tracing / logging provided by the cab radio or the ABIS trace
1b	(access to other **private** GSM-R network is possible) CR-A initiate a PTP call to MS-B using Breakout Code 901: BC+IC+CT+UN (e.g. 901 + 420 + 2 + 123456 01)	

4.4.7   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 actual location area.

Precondition: General 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	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	The call is initiated to the selected controller (PC2)

4.4.8   Bearer service

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

Precondition: General 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
ETSI :   EN 300 904

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: General 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: General test configuration.
References:
EIRENE FRS :   § 5.2.1.2, 5.2.3.18

Step	Procedure	Result / Effect
1	Select volume settings for CR-A loudspeaker	Loudspeaker volume setting is activated
2a	Increase loudspeaker volume	Loudspeaker volume increased.
2b	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: General test configuration
References:
EIRENE FRS :   § ~~5.2.1.2,~~ 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. VGS), which are reached using additional soft keys (see user's manual): - Phone book - Phone number entry (manual dialling) - Call list - VGC 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: General test configuration ; CR-A not registered to any train number previously

References:
EIRENE FRS :   § ~~5.2.1.2,~~ 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
ETSI :   EN 300 952, EN 300 957, TS 100 950, TS 122 094, TS 123 087, TS 124 090
MORANE :   E 10 T 6001, E 12 T 6001

Step	Procedure	Result / Effect
1	CR-A selects train data entry menu	- Train data entry menu activated on the MMI - The train data must be empty
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	- 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
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.

Precondition: General test configuration. MS-A has a valid train number registration on the network.

References:
EIRENE FRS : § 5.2.3.29, 5.2.3.30, 5.2.3.31, 5.2.3.32, 5.2.3.33
EIRENE SRS : § 11.3.12
MORANE : E 10 T 6001, E 12 T 6001

Step	Procedure	Result / Effect
1	CR-A selects train data entry menu	- Train data entry menu activated on the MMI - The train data must be empty
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	Return to idle mode and select train data entry menu again	- Train data entry menu activated on the MMI - The train data contains previously entered train number
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
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: General 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 : § 11.3.13, 11.3.14, 11.3.15

Step	Procedure	Result / Effect
1	CR-A registers functional number (train number) on "Network 1"	The registration is carried out
2	CR-A changes network to "Network 2" (functional number is not yet used on the new network)	- The functional number is re-registered on the new network automatically - The functional 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: General test configuration.

References:
EIRENE FRS : § 5.2.3.33, 5.2.3.34
EIRENE SRS : § 4.3.3, 4.3.4, 9.2.4
ETSI : EN 300 957, TS 124 090

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
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 (Engine Number / Coach Number) can be registered.

Precondition: General test configuration. Interface to external device is supported and is activated. No Train Number or Stock Number is registered to CR-A. MS-B has a registered Stock Number.

References:
EIRENE FRS : § 5.2.1.2
EIRENE SRS : § 5.4.10
ETSI : EN 300 957, TS 124 090
MORANE : E 10 T 6001, F 10 T 6003

Step	Procedure	Result / Effect
1	CR-A initiates registration of a Stock Number using maintenance functions **or** by an external device	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 registration of new Stock Number to an already used Stock Number registered to MS-B	Stock Number force-deregistered at MS-B and registered to CR-A
4	- none – (MS-A initiates a call to CR-A's new Stock Number)	Call established, communication possible

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: General test configuration. Cab Radio should have a train number registered on the network.

References:
EIRENE FRS : § 5.2.1.2, 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
ETSI : TS 122 094
MORANE : E 10 T 6001, E 12 T 6001

Step	Procedure	Result / Effect
1	CR-A selects deregistration menu	Deregistration menu activated on the display of the MMI
2	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)
3	- 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: General 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
ETSI :   EN 300 952, TS 100 950

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 - Indication of the cause for the failed deregistration is sent back to CR-A - Registration status is displayed at the MMI. (Train number has been removed from 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: General test configuration. MS-A has a train number registered on the network.
References:
EIRENE FRS :   § 5.2.3.29, 5.2.3.30, 11.3.2.4, 11.3.2.5, 11.3.3.4, 11.3.3.5
EIRENE SRS :   § 11.3.9i
ETSI :   TS 100 549, TS 123 090
MORANE :   E 10 T 6001

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

Step	Procedure	Result / Effect
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
6	- none – (MS-A initiates a PTP call to CR-A by Train Number and Function Code)	Call established, communication is possible

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: General test configuration. Cab Radio and ABIS trace or protocol analyzer.

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
ETSI : TS 100 625, TS 100 916, TS 122 090, TS 123 094, TS 124 080, TS 127 007
MORANE : E 10 T 6001, E 12 T 6001

Step	Procedure	Result / Effect
1	CR-A starts **registration** of FN	- FN registration procedure successful - "AT+CUSD" message contains: *** * 214 * SI * * * #** (where SI= International EIRENE Number) **or** ABIS trace contains DATIN message with *"2A95..."*
2	CR-A starts **deregistration** of FN	- FN de-registration procedure successful - "AT+CUSD" message contains:**# # 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 - "AT+CUSD" message contains:*** # 214 * SI * * * #** (where SI= International EIRENE Number) **or** ABIS trace contains DATIN message with *"AA91..."*
4	CR-A changes network and starts **re-registration** of FN	- FN re-registration procedure successful - "AT+CUSD" message contains:*** * 214 * SI * * * #** followed by: **# # 214 * SI * * * #** (where SI= International EIRENE Number) **or** ABIS trace contains DATIN message with *"2A95..."* and later with *"A391..."*
5	CR-A starts **forced de-registration** of FN	- FN forced de-registration procedure successful - "AT+CUSD" message contains: **# # 214 * SI * 88 * MSISDN * #** (where SI= International EIRENE Number) **or** ABIS trace contains DATIN message with *"A391..."*

4.6.10 Registration / deregistration 10 functional numbers

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 within 30 seconds and after it can be also deregistered within 30 seconds.

Precondition: General test configuration. Cab Radio has no FN registered on the network.

References:
EIRENE FRS :   § 11.3.2.3, 11.3.3.3

Step	Procedure	Result / Effect
1	CR-A starts **registration** procedure for 10 different Functional Numbers (individually, collectively or by external device)	Registration started and finished within 30 seconds
2	CR-A starts **deregistration** procedure for 10 different Functional Numbers (individually, collectively or by external device)	Deregistration started and finished within 30 seconds

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: General test configuration.

References:
EIRENE FRS :   § 4.2.2, 12.2.2
EIRENE SRS :   § 4.3.1, 12.2.1
ETSI :   TS 100 905

Step	Procedure	Result / Effect
1	CR-A sends pre-defined text message (if available) to MS-A using MMI menu or by external device	- Text message sent from CR-A - MS-A receives text message

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: General test configuration.

References:
EIRENE FRS :   § 4.2.2, ~~5.2.1.2,~~ 5.2.2.62, 12.2.2
EIRENE SRS :   § 4.3.1, 5.3.12, 12.2.1
ETSI :   TS 100 905

Step	Procedure	Result / Effect
1	- none - (MS-A sends a text message to CR-A by MSISDN)	- CR-A receives text message - Acknowledgement message sent back to the network from CR-A in the background
2	CR-A selects the SMS menu to read the received text message	Received 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: General test configuration.

References:
EIRENE FRS :   § 4.2.2, 5.2.1.2, 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 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 character

4.7.4   Receiving a text message – during PTP call

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

Precondition: General test configuration.

References:
EIRENE FRS :   § 4.2.2, 5.2.1.2, 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

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

References:
EIRENE SRS : § 4.3.1, 10.6.1
ETSI : TS 100 905

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> using MSISDN (CLIP)

Purpose: This test is to show that the Cab Radio can handle incoming calls received by MSISDN. The priority of the call makes it necessary to manually accept the call.

Precondition: General test configuration. CR-A and MS-A does not have a registered functional identity.

References:
EIRENE FRS : § 4.2.1, 4.2.3, ~~5.2.1.2,~~ 5.2.2i, 5.2.2ii, 5.2.2iii, 5.2.2.43, 5.2.2.44, 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
ETSI : EN 300 918
MORANE : F 10 T 6003, F 12 T 6003

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)	
2	CR-A accept the call using MMI menu or by picking-up handset	- 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> using train number

Purpose: This test is to show that the Cab Radio can handle incoming calls received by train number. The priority of the call makes it necessary to manually accept the call.

Precondition: General 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
ETSI :   EN 301 711, TS 123 087
MORANE :   F 10 T 6003

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 menu 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> using engine/coach number

Purpose: This test is to show that the Cab Radio can handle incoming calls received by engine/coach number. The priority of the call makes it necessary to manually accept the call.

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

References:
EIRENE SRS :   § 5.4.4, 5.6.1

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 menu 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 a predefined priority level. (for Cab Radio this priority is eMLPP <3>)

Precondition: General test configuration.

References:
EIRENE FRS :   § 4.2.3, 5.2.1.2
EIRENE SRS :   § 4.3.3, 5.5.2, 10.2.1
ETSI :   EN 122 067, EN 300 918, EN 300 924, TS 124 008, TS 127 007

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 accept the call if the priority is of or exceeds a defined priority level - 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 exit incoming calls in different ways.
Precondition: General test configuration;
References:
EIRENE FRS :   § 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	

Step	Procedure	Result / Effect
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 established with eMLPP <4>.

Precondition: General test configuration. CR-A and MS-A does not have a registered functional identity.

References:
EIRENE FRS : § 4.2.1, ~~5.2.1.2,~~ 5.2.2.42, 10.2.1, 10.2.2
EIRENE SRS : § 4.3.3, 5.3.11, 5.5.4, 5.5.14, 5.5.17, 5.5.18, 10.2.1, 11.5.6
ETSI : EN 300 918, TS 100 905
MORANE : F 10 T 6003

Step	Procedure	Result / Effect
1a	CR-A initiates a call to MS-A by MSISDN	- 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>

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: General test configuration. CR-A and MS-A has a registered functional identity.

References:
EIRENE FRS : § 4.2.1, ~~5.2.1.2,~~ 5.2.2.42, 11.2.3.1
EIRENE SRS : § 5.3.4, 5.5.4, 5.5.14, 5.5.15, 11.5.1, 11.5.2, 11.5.4, 11.5.5
ETSI : EN 300 940
MORANE : F 10 T 6001, F 10 T 6003

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: General test configuration.

References:
EIRENE FRS : § 4.2.1, 4.2.4, ~~5.2.1.2,~~ 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, 5.2.4.4, 5.2.4.9, 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
ETSI : TS 100 950, TS 124 008
MORANE : F 10 T 6001

Step	Procedure	Result / Effect
1a	CR-A initiates a call to **Primary Controller** (**no Functional Number** registered to CR-A)	
1b	CR-A initiates a call to **Train Management Centre** (e.g. RBC, CTS) (**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 is given on the loudspeaker - Visual indication is displayed on the MMI
1c	CR-A initiates a call to **Secondary Controller** (**Engine Number** registered to CR-A)	
1d	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> - Visual indication 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 – busy controller

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

Precondition: General test configuration.

References:
EIRENE FRS : § 5.2.1.2, 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	
2	- none – (Controller cannot be reached due to link capacity)	- Call cannot be established - Audible indication is given on the loudspeaker - Visual indication (e.g. "busy") is displayed on the MMI. - CR-A in default idle status

4.8.10 Outgoing PTP call – train personnel

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

References:
EIRENE FRS : § 4.2.1, 5.2.1.2, 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 initiates a call to **Chief Conductor** (FC10) by selecting menu entry **or** by dedicated / soft key using the MMI	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI

2	- none – (Chief Conductor accepts the call)	- Call established with 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
3	- 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: General test configuration

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 **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 **VGS** call by phone book entry	
2d	CR-A initiates a **VBS** call by phone book entry *(optional)*	

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.

Precondition: General test configuration

References:
EIRENE FRS : § 5.2.2.3i, 11.2.3.4
EIRENE SRS : § 4.3.3
MORANE : F 10 T 6003

Step	Train number (CT2)	Engine number (CT3)	Coach number (CT4)	Result (FN in display)	Comment
1	Not registered	Not registered	Not registered	No FN (MSISDN)	Check the UUS1 data of the SETUP message
2	**Registered**	Not registered	Not registered	CT2 (Train number)	
3	**Registered**	Not registered	**Registered**	CT2 (Train number)	
4	**Registered**	**Registered**	**Registered**	Not applicable	
5	**Registered**	**Registered**	Not registered	CT2 (Train number)	

6	Not registered	**Registered**	Not registered	CT3 (Engine number)
7	Not registered	**Registered**	**Registered**	Not applicable
8	Not registered	Not registered	**Registered**	CT4 (Coach 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: General test configuration;
References:
EIRENE FRS :   § 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 VGS 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

Step	Procedure	Result / Effect
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: General test configuration.

References:

EIRENE FRS :   § 4.2.3, ~~5.2.1.2,~~ 5.2.3.42

EIRENE SRS :   § 4.3.3

ETSI :   EN 300 918, EN 301 702, TS 122 087, TS 127 007

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: General test configuration.

References:
EIRENE FRS :   § 4.2.3, ~~5.2.1.2,~~ 5.2.3.42
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 initiate 2nd PTP call 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 incoming 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 call

Precondition: General test configuration.

References:
EIRENE FRS :   § 5.2.4.5, 5.2.4.6
EIRENE SRS :   § 4.3.3
ETSI :   EN 122 067, EN 300 924

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
2a	- none – (incoming PTP call to CR-A with eMLPP <3>)	Implementation option "put on hold": - First call is put on hold - Automatic acceptance of second call - Communication is possible
2b		Implementation option "clear down": - First call is terminated - Automatic acceptance of second call - Communication is possible

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: General test configuration. CR-A's GID of the VGC 20X is activated.

References:
EIRENE FRS : § 4.2.1, ~~5.2.1.2,~~ 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
ETSI : EN 300 925, TS 100 925, TS 100 932, TS 100 933

Step	Procedure	Result / Effect
1	CR-A handset is in "on-hook" state (MS-A initiates VGC 20X)	- 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	- Audible indication is given on the loudspeaker - Indication to use PTT to talk is given to MMI
6a	CR-A exit the call using MMI menu	- CR-A leaves ongoing call - 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: General test configuration.

References:
EIRENE FRS : § 4.2.1, ~~5.2.1.2,~~ 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
ETSI : EN 300 925, TS 100 925, TS 100 932, TS 100 933, TS 100 948, TS 103 169

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
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	- Audible indication is given on the loudspeaker - 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)	- 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: General test configuration. GID VGC 20X is deactivated for CR-A.

References:
EIRENE FRS : § 10.4.1, 10.4.2, 10.4.3
ETSI : EN 300 925, TS 100 925

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 ends 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 sets up VGC 20X)	Call is not received by CR-A

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: General 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
ETSI : EN 300 925, TS 100 925, TS 100 932, TS 100 933, TS 127 007, TS 103 169
MORANE : F 10 T 6001

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 with eMLPP <4>. - 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/downlink up to the time when the network decides that he shall join the voice group call channel - CR-A can be heard on MS-A loudspeaker
3	CR-A release PTT	- Audible indication is given on the loudspeaker - 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	- Audible indication is given on the loudspeaker - Indication to use PTT to talk is displayed on the MMI
7	CR-A terminates call using MMI menu	- Call terminated - CR-A in default idle status

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

Purpose: This test is to show that the group call "other drivers in the area" is initiated and managed by the Cab Radio. The call established with eMLPP <2>.

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

References:
EIRENE FRS : § 4.2.1, 5.2.1.2, 5.2.2iv, 5.2.2.9, 5.2.2.10, 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, 5.5.6, 10.2.1
ETSI : EN 300 925, TS 100 925, TS 100 932, TS 100 933, TS 100 948, TS 103 169
MORANE : F 10 T 6001

Step	Procedure	Effects
1	CR-A initiates group call "other drivers in 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 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/downlink up to the time when the network decides that he shall join the voice group call channel - CR-A can be heard on MS-A loudspeaker
4	CR-A release PTT	- Audible indication is given on the loudspeaker - 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	- Audible indication is given on the loudspeaker - Indication to use PTT to talk is given to MMI
8	CR-A terminates group call using MMI menu	- Group call "other drivers in area" is 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: General 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 switches back to idle mode

4.9.7 Exiting voice group call

Purpose: This test is to show that the Cab Radio can exit a voice group call without ending it.
Precondition: General test configuration
References:
EIRENE FRS : § 5.2.2.61
ETSI : TS 100 933

Step	Procedure	Result / Effect
1	- none - (MS-B sets up VGC 20~~0~~X)	CR-A receives group call and joins automatically
2	CR-A exit VGC	- VGC is exited without being terminated, - CR-A in idle mode - VGC 20X~~0~~ continues to exist on MS-B
3	- none - (MS-B ends VGC 20X~~0~~)	- VGC 20X~~0~~ ended - 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 exited 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: General test configuration. MS-A and CR-A are in the same group call area.

References:
EIRENE FRS : § 4.2.1, ~~5.2.1.2,~~ 5.2.2.15, 5.2.2.61
EIRENE SRS : § 4.3.1, 5.5.24
ETSI : TS 100 933

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 using MMI menu	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 using MMI menu	- 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: General 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 "other drivers in the area"	- Group call "other drivers in the area" established - MS-A receives and joins group call "other drivers in the area"
1b	- none – (MS-A initiates group call GID 200 / GID 500"other drivers in the area")	- Group call "other drivers in the area" established - CR-A receives group call "other drivers in the area" 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 - 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: General 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, 5.5.19
ETSI : EN 300 918, EN 301 702, TS 122 087, TS 124 080

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
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: General test configuration. CR-A, MS-A and MS-B are different drivers of the same train.

References:
EIRENE FRS : § 4.2.1, 4.2.4, 5.2.1.2, 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) and 3rd driver (MS-B) by simplified automation *or* guidance using the MMI	- Multiparty call established - Visual indication (e.g. "multi-drivers") is displayed on the MMI - When creating the "Multi-driver call" the following steps were made by CR-A: 　　CR-A initiates PTP call to MS-AB 　　CR-A places PTP call on hold 　　CR-A initiates next PTP call to MS-B 　　CR-A requests multiparty call
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 call using MMI menu	- 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: General test configuration. CR-A and, CR-BMS-A and MS-B are different drivers of the same train.

References:
EIRENE FRS : § 5.2.2.28, 5.2.2.30, 5.2.2.34, 5.2.2.35

Step	Procedure	Result / Effect
1	- none – (CR-BMS-A as leading driver initiates a "multi-drivers" call and connects CR-A to it)	- Multiparty call established - Visual indication (e.g. "multi-drivers") 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 hang up handset	- Loudspeaker set to increased volume - Ongoing call can be heard on the loudspeaker
4	CR-A put the ongoing multiparty call on hold	- Indication that the call is on hold is displayed on the MMI
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-BMS-A 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: General 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 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)
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 Call arbitration

4.11.1 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

Precondition: General test configuration;
                CR-A is in an ongoing railway emergency call
                (eMLPP <0> , GID 299 , GID 599)

References:
EIRENE SRS :   § 5.5.20, 5.5.21, 5A.1
ETSI :   TS 100 932

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A (eMLPP <0>)	- No change (only displayed to the controller)
1b	Call to the *Intercom* from CR-A	- *Intercom* connected to the handset - Emergency call transferred to the loudspeaker
1c	Call to the *Public Address* from CR-A	- *Public Address* connected to the handset - Emergency call transferred to the loudspeaker
1d	Call to the *Chief Conductor* from CR-A	- Emergency call maintained - New call sent by *UIC Intercom* link (or no change if no *UIC Intercom* link present)
	New incoming calls	
1e	Other incoming call (eMLPP <4>)	- Emergency call maintained - Incoming call indicated but cannot be accepted

4.11.2 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

Precondition: General 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 :   § 10.2.3
EIRENE SRS :   § 5.5.20, 5.5.21, 5A.1
ETSI :   TS 100 932, TS 103 169

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A	- On-going call left

Step	Procedure	Result / Effect
	(eMLPP <0>)	- Emergency call established
1b	Call to the *Intercom* from CR-A	- *Intercom* connected to the handset - High priority group call transferred to the loudspeaker
1c~~b~~	Call to the *Public Address* from CR-A	- *Public Address* connected to the handset - High priority group call transferred to the loudspeaker
1d~~c~~	Call to the *Chief Conductor* from CR-A	- Call sent by *UIC Intercom* link (or no change if no *UIC Intercom* link present)
	New incoming calls	
1e~~d~~	Emergency call (eMLPP <0>)	- On-going call left - Emergency call connected
1f~~f~~	Other incoming call (eMLPP <4>)	- On-going call maintained - Incoming call clearly indicated.

4.11.3 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

Note: same area .

Intercom / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1

Precondition: General test configuration;

CR-A is in an ongoing operational group call to drivers in the same area (eMLPP <3> , GID 555)

References:

EIRENE FRS :   § 10.2.3

EIRENE SRS :   § 5.5.20, 5.5.21, 5A.1

ETSI :   TS 100 932

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A (eMLPP <0>)	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	- *Intercom* connected to the handset - Operational group call transferred to the loudspeaker
1c~~b~~	Call to the *Public Address* from CR-A	- *Public Address* connected to the handset - Operational group call ~~"Other drivers in the same area" call~~ transferred to the loudspeaker
1d~~c~~	Call to the *Chief Conductor* from CR-A	- Call sent by *UIC Intercom* link (or no change if no *UIC Intercom* link present)
	New incoming calls	
1e~~d~~	Emergency call (eMLPP <0>)	- On-going call left - Emergency call connected
~~1e~~	~~*Intercom* call to CR-A~~	- ~~*Intercom* connected to the handset~~ - ~~"Other drivers in the same area" call transferred to the loudspeaker~~

Step	Procedure	Result / Effect
1f	High priority group call between drivers in the same area (eMLPP <2>) (GID 200)	- On-going call left - Incoming call established
1g	Other incoming call (eMLPP <4>)	- On-going call maintained - Incoming call clearly indicated

4.11.4 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

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

References:
EIRENE FRS : § 10.2.3
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1
ETSI : TS 100 932

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A (eMLPP <0>)	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	- On-going call left - *Intercom* connected
1c	Call to the *Public Address* from CR-A	- On-going call left - *Public Address* connected
1d	Call to the *Chief Conductor* from CR-A	- Call sent by *UIC Intercom* link (or no change if no *UIC Intercom* link present)
1e	Other call from CR-A (eMLPP <4>)	- New call connected - On-going call put on hold
	New incoming calls	
1f	Emergency call from controller (eMLPP <0>)	- On-going call left - Emergency call established
1g	High priority group call between drivers in the same area (eMLPP <2>) (GID 200)	- On-going call left - Incoming call established
1h~~e~~	Operational group call to drivers in the same area (eMLPP<3>) (GID 555)	- On-going call maintained - Incoming call indicated
1i~~f~~	Other incoming call (eMLPP <4>)	

4.11.5 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

Precondition: General test configuration;
                     CR-A is in an ongoing "other drivers on same train" call
                     (Multi-driver call with eMLPP <3>)
References:
EIRENE FRS :   § 10.2.3
EIRENE SRS :   § 5.5.20, 5.5.21, 5A.1
ETSI :   TS 100 932

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A (eMLPP <0>)	- On-going call left - Emergency call established (Leading driver may re-establish call to non leading drivers at the end of emergency call)
1b	Call to the *Intercom* from CR-A	- *Intercom connected* to the handset - "Other drivers on same train" call transferred to the loudspeaker
1c	Call to the *Public Address* from CR-A	- *Public Address* connected to the handset - "Other drivers on same train" call transferred to the loudspeaker
1d	Call to the *Chief Conductor* from CR-A	- Call sent by *UIC Intercom* link (or no change if no *UIC Intercom* link present)
1e	Call to the Controller from CR-A (eMLPP <3>)	- Call connected (Multi-driver communications placed on hold or driver may add controller to the multi-driver communication)
1f	Other call from CR-A (eMLPP <4>)	- New call connected - Multi-driver communication put on hold
	New incoming calls	
1g	Emergency call from controller (eMLPP <0>)	- On-going call left - Emergency call established
1h	High priority group call between drivers in the same area (eMLPP <2>) (GID 200)	- On-going call left - Incoming call established
1i	Other incoming calls from controller (eMLPP <3>)	- On-going call is maintained - Controller is added to the ongoing call
1j	Operational group call to drivers in the same area (eMLPP<3>) (GID 555)	- On-going call is maintained - Incoming call is clearly indicated
1k	Other incoming call (eMLPP <4>)	

4.11.6 Call arbitration – ongoing group call in shunting mode

Purpose: This test is to show the call arbitration with an ongoing group call in shunting mode intercom call.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has
                 priorities according to EIRENE SRS §5A.1
Precondition: General test configuration; Shunting mode;
                 CR-A is in an ongoing group call in shunting mode
                 (eMLPP <3> , GID 500)
References:

EIRENE FRS : § 10.2.3
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1
ETSI : TS 100 932

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A (eMLPP <0>)	- On-going call is left - Emergency call established
1b	Call to the *Intercom* from CR-A	- *Intercom* connected to the handset - Shunting group call transferred to the loudspeaker (or no change if no *UIC Intercom* link present)
1c	Call to the *Public Address* from CR-A	- *Public Address* connected to the handset - Shunting group call transferred to the loudspeaker
1d	Call to the *Chief Conductor* from CR-A	- Call sent by *UIC Intercom* link - Shunting group call transferred to the loudspeaker (or no change if no *UIC Intercom* link present)
1e	Other outgoing call from CR-A (eMLPP <4>)	Only possible if group call is left first
	New incoming calls	
1f	Shunting emergency call from controller (eMLPP <0>)	- On-going call is left - Emergency call connected
1g	High priority group call between drivers in the same area (eMLPP <2>) (GID 200)	No change
1h	Other incoming call (eMLPP <4>)	- On-going call maintained - Incoming call clearly indicated

4.11.7 Call arbitration – ongoing PTP call in shunting mode

Purpose: This test is to show the call arbitration with an ongoing intercom call.
Note: *Intercom* / *Public Address* / *Chief Conductor* (with *UIC Intercom* link) has no eMLPP but has priorities according to EIRENE SRS §5A.1
Precondition: General test configuration; Shunting mode;
CR-A is in an ongoing PTP call in shunting mode (eMLPP <3>)
References:
EIRENE FRS : § 10.2.3
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1
ETSI : TS 100 932

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A (eMLPP <0>)	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	- *Intercom* connected to the handset - PTP call transferred to the loudspeaker (or no change if no *UIC Intercom* link present)
1c	Call to the *Public Address* from CR-A	- *Public Address* connected to the handset

			- PTP call transferred to the loudspeaker
1d	Call to the *Chief Conductor* from CR-A	-	Call sent by *UIC Intercom* link
		-	PTP call transferred to the loudspeaker (or no change if no *UIC Intercom* link present)
1e	Other outgoing call from CR-A (eMLPP <4>)	-	New call connected
		-	On-going call put on hold
	New incoming calls		
1f	Shunting emergency call from controller (eMLPP <0>)	-	On-going call left
		-	Emergency call connected
1g	High priority group call between drivers in the same area (eMLPP <2>) (GID 200)	No change	
1h	Other incoming call (eMLPP <4>)	-	On-going call maintained
		-	Incoming call is clearly indicated

4.12 Railway emergency calls

4.12.1 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: General test configuration; CR-A and MS-A in Train Mode and after in Shunting Mode.

References:
EIRENE FRS : § 4.2.4, 5.2.2.56, 5.2.2.60, 10.4.5, 13.1.6, 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
ETSI : TS 103 169

Step	Procedure	Result / Effect
1	- none - (MS-A initiates „railway emergency call")	- CR-A receives and joins call automatically - Audible indication 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 tries to leave emergency call using MMI menu	- CR-A cannot leave the „train emergency call"
4	- none - (MS-A terminates emergency call)	- Emergency call terminated - CR-A in default idle status

4.12.2 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:	General test configuration. CR-A in Train Mode and after in Shunting Mode.

References:
EIRENE FRS : § 4.2.4, ~~5.2.1.2,~~ 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, 13.1.6, 13.2.2.1, 13.2.2.2, 13.2.2.4, 13.2.2.6, 13.2.3.1, 13.2.3.3, 13.2.4.1
EIRENE SRS : § 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
ETSI : EN 300 925, TS 100 905, TS 100 933
MORANE : F 10 T 6001

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 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
5a	CR-A terminates emergency call using MMI menu	
5b	- none – (Controller terminates emergency call)	- Emergency call terminated - Visual indication - regarding the call - cleared - CR-A in default idle status
5c	- none – (network terminates the call after predefined time of no speech)	

4.12.3 Railway emergency call – during ongoing call

Purpose:	This test is to show that the Cab Radio participating in an ongoing non-emergency call can initiate a "railway emergency call".
Precondition:	General test configuration. CR-A is in an ongoing PTP/group call with other participant(s)

References:
EIRENE FRS : § 5.2.4.7, 10.2.3

Step	Procedure	Result / Effect
1a	(CR-A is in an ongoing PTP call) CR-A initiates "railway emergency call"	- Ongoing PTP call is terminated - Emergency call is established.
1b	(CR-A is in an ongoing voice group call) CR-A initiates "railway emergency call"	- Ongoing group call is exited **or** terminated - Emergency call is established.

4.12.4 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: General test configuration.

References:
EIRENE FRS :   § 5.2.2.23, 13.2.4.2
ETSI :   TS 100 933

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 and 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 - CR-A returns in default idle status

4.12.5 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: General test configuration. Ongoing "train emergency call" is present in a different group call area than CR-A.

References:
EIRENE FRS :   § 3.5.6, 13.2.2.7

Step	Procedure	Result / Effect
1	- none - (change of attenuation at the handover machine to initiate a cell change and group call area change for CR-A)	CR-A enters the group call area where the ongoing "railway emergency call" is present
2	- none -	- CR-A receives and joins the emergency call automatically - 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

4.12.6 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: General 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 finishes re-establishing the emergency call - Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A in default idle status

4.12.7 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: General 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).

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	CR-A receives and joins emergency call automatically

	Sector Identity activated on CR-A)	
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
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

4.13 Shunting mode

4.13.1 Entering shunting mode – during ongoing call

Purpose: This test is to show that entering shunting mode is not possible when there is an on-going call involving the Cab radio.

Precondition: General test configuration. CR-A in train mode.

References:

EIRENE FRS :   § 5.2.2.65

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

4.13.2 Entering shunting mode – idle mode

Purpose: This test is to show that entering shunting mode from default idle status is supported by the Cab Radio.

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

References:

EIRENE FRS :   § 4.2.4, 5.2.1.2, 13.1.7, 14.2.2

EIRENE SRS :   § 4.3.4, 5.3.13, 14.4.1

ETSI :   TS 127 007

Step	Procedure	Result / Effect
1	CR-A activates shunting mode using MMI menu	- CR-A enters to shunting radio mode - Display is according to shunting mode (see user's manual) - Group IDs of train radio deactivated (except GID 299) - GID 599 activated

		- Emergency button assigned to shunting emergency call
		- GID 299 deactivated
		- CR-A in default shunting idle status
2a	- none – (MS-A initiates PTP call to CR-A by FN)	- CR does not receive the call (FN deregistered)
2b	- none – (MS-A initiates group call 200)	- Group call 200/299 is established
2c	- none – (MS-A initiates train emergency call 299)	- Group call is not received by CR- A - CR-A in default shunting idle status
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)	

4.13.3 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 data registration.

Precondition: General test configuration. CR-A in shunting mode.

References:

EIRENE FRS : § 14.3.1

EIRENE SRS : § 11.3.5, 14.4.6, 14.5.2

MORANE : E 10 T 6001

Step	Action	Result / Effect
1	CR-A selects MMI menu for changing shunting data	Shunting data menu is displayed on the MMI
2	CR-A changes the shunting area and shunting group using MMI menu	- Only valid group ID (500-529) can be entered **or** selected from a list
3	CR-A changes the shunting role to driver, leader or team member using MMI menu	- Shunting role is changed - CT6 registration carried out by USSD message
4	CR-A changes the shunting group to a dedicated group where ongoing shunting group call is present using MMI menu	- CR-A enters the selected shunting group - New CT6 registration carried out - CR-A automatically joins ongoing group call
5	CR-A changes the shunting area using MMI menu	- CR-A leaves ongoing group call - CR-A enters the selected shunting area - New CT6 registration carried out

4.13.4 Shunting registration – failed registration

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

Precondition: General test configuration. CR-A in shunting mode and in a defined group area with a registered functional identity.

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 data	Shunting data menu is displayed on the MMI
2	CR-A changes call area and group number using MMI menu	- Automatic deregistration of the FN for group number is attempted (deregistration NOT successful) - Indication is given to the user of the failure

4.13.5 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: General test configuration. Shunting group ID 500, 50X are available;

References:

EIRENE SRS : § 14.4.9

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

4.13.6 Shunting group 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: General 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

4.13.7 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: General 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 and group call area change for CR-A	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - CR-A returns to default shunting idle status - Shunting group call remains ongoing for the other participants

4.13.8 Exiting shunting mode

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

Precondition: General test configuration; CR-A in shunting mode;

References:
EIRENE FRS : § 5.2.1.2, 5.2.2.64
EIRENE SRS : § 14.4.15, 14.4.16, 14.4.18, 14.4.19, 14.4.20

Step	Procedure	Result / Effect
1	CR-A initiates system change to train radio system using MMI menu	- CR-A starts procedure to change mode to train radio system - CR-A displays the transition procedure on the MMI - All shunting group IDs except emergency group ID 599 are de-activated - Group ID 200 and train emergency group ID 299 are activated - Emergency call button assigned to group ID 299 - Emergency group ID 599 is de-activated - CR-A display is according to train mode - CR-A in default idle status (train radio system)
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)

4.13.9 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: General test configuration; CR-A in shunting mode;
References:
EIRENE SRS :   § 14.4.14

Step	Action	Result / Effect
1	CR-A initiates shunting group call	Call is established, MS-A and MS-B joins the call
2	(MS-A takes the uplink) CR-A initiates system change to train radio system using MMI menu	- Shunting group call is exited - Switching 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) - Switching to train radio mode is not possible until shunting group call ends - CR-A stays connected to the ongoing group call

4.13.10 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: General 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 switched off
2	Power on CR-A	- CR-A performs its normal start-up - CR-A is in default train idle status **or** in default shunting idle status. - Shunting data are the same as was before

4.13.11 PTP call in shunting mode

Purpose: This test is to show that the Cab Radio can initiate and receive PTP calls in shunting radio mode.

Precondition: General test configuration; CR-A in shunting mode;

References:
EIRENE FRS : § 14.2.1, 14.2.2i, 14.2.2ii
EIRENE SRS : § 5.5.15, 10.2.1

Step	Procedure	Result / Effect
1a	(MS-A initiates PTP call to CR-A by MSISDN) CR-A accepts incoming call	- Audible indication is given on the loudspeaker - Visual indication is displayed on the MMI - Call established with: a-b) eMLPP <4> c) eMLPP <3>
1b	CR-A initiates PTP call to MS-A by MSISDN (MS-A accepts the call)	
1c	CR-A initiates PTP call to MS-A by CT6 (MS-A accepts the call automatically)	
2	- none –	- Ongoing PTP call terminated.

	(MS-A terminates the call)	- CR-A in default idle status

4.13.12 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: General 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
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/downlink up to the time when the network decides that he shall join the voice group call channel - CR-A can be heard on MS-A loudspeaker
3	CR-A release PTT	- Audible indication is given on the loudspeaker - 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	- Audible indication is given on the loudspeaker - Indication to use PTT to talk is displayed on the MMI
7	CR-A terminates call using MMI menu	- Call terminated - CR-A in default idle status

4.13.13 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: General 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, 14.2.4, 14.2.9, 14.2.12, 14.4.5, 14.4.6

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
3	- none – (MS-A speaks while LAS transmitted)	MS-A can be heard on CR-A's loudspeaker
4a	- none – (MS-B initiates „shunting emergency call")	- LAS interrupted on CR-A's loudspeaker - CR-A receives and accepts call automatically
4b	CR-A initiates „shunting emergency call"	

4.14 Call confirmation

4.14.1 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. (CHPC) Every registration situation (**Cases a,b,c,d,e**) has to be created and all test steps must be carried out and analyzed.

Precondition: General test configuration. Cab radio trace or protocol analyzer. CR-A in train mode and after that in shunting mode according to registration situations.

References:
EIRENE FRS :   § 5.2.1.2, 5.2.2.58, 13.4.2, 13.4.3, 13.4.5, 13.4.6, 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
ETSI :   EN 300 925, EN 300 940, EN 301 710, TS 100 925, TS 102 610
MORANE :   F 10 T 6002, F 12 T 6002

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	Train Number (CT2)
f	not registered	not 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	
2a	- none – (initiator ends emergency call)	CR-A in default idle status and
2b	CR-A ends emergency call	

		- Call initiated after random time (T_RAN)
		- Call initiated by short code "1612"
		- Call has eMLPP <4>
		- CHPC is sent by UUS1
3	- none – (CR-A initiates PTP call for emergency call confirmation in the background)	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 (GR_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

4.14.2 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: General test configuration. Cab radio trace or protocol analyzer. CR-A in train mode and after that 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

4.14.3 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: General test configuration. Cab radio trace or protocol analyzer. CR-A in train mode and after that in shunting mode.

References:
EIRENE FRS :   § 13.4.4
MORANE :   F 10 T 6002

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	
5	Power off CR-A (emergency call ends while CR-A is powered off)	CR-A is switched off
6	Power on CR-A.	- Call for emergency call confirmation initiated - CR-A sends confirmation with CAUSE 0x01 (loss of power)

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: General test configuration. Public Address has a registered FN.

References:
EIRENE FRS : § ~~5.2.1.2,~~ 5.2.2.41, 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 <4> 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
3	CR-A initiates another call using MMI menu	- 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 that the call arbitration with an ongoing public address call.

Precondition: General test configuration; **CR-A is in an ongoing call with its Public Address**;

References:
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	- *Public Address* released - Intercom connected
1c	Call to the *Public Address* from CR-A	- No change (or no access if Public Address is busy by other)
1d	Call to the *Chief Conductor* from CR-A	- *Public Address* released - Chief Conductor connected

Step	Procedure	Result / Effect
1e	Call to the Controller from CR-A	- *Public Address* released - Controller connected
	New incoming calls	
1f	Other incoming call	- *Public Address* call is maintained on the handset - Incoming call connected to the loudspeaker

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

Purpose: This test is to show that the call arbitration with an ongoing public address call.
Precondition: General test configuration; **MS-A is in an ongoing call with CR-A's Public Address**;
References:
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	- *Public Address* call is maintained - *Intercom* connected
1c	Call to the *Public Address* from CR-A	- No change (or no access if *Public Address* is busy by other)
1d	Call to the *Chief Conductor* from CR-A	- Call sent (by *Public Address*)
1e	Call to the Controller from CR-A	- *Public Address* released - Controller connected
	New incoming calls	
1f	Emergency call from controller	
1g	"Other drivers in the same area" call	- *Public Address* released - Incoming call connected
1h	Other incoming calls from controller	
1i	Intercom call from the controller	
1j	Other incoming call	- *Public Address* call is maintained - Incoming call is indicated

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: General test configuration. Intercom has a registered FN

References:
EIRENE FRS : § 5.2.1.2, 5.2.2.41, 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) - 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 using MMI menu	- 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.
Precondition: General test configuration; **CR-A is in an ongoing call with its Intercom**;
References:
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	No change
1c	Call to the *Public Address* from CR-A	- On-going call left - *Public Address* connected
1d	Call to the *Chief Conductor* from CR-A	Call sent (by *Public Address* or radio)
	New incoming calls	
1e	Other incoming call	- *Intercom* call is maintained on the handset - Incoming call connected to the loudspeaker

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.
Precondition: General test configuration; **MS-A is in an ongoing call with CR-A's Intercom**;
References:
EIRENE SRS : § 5.5.20, 5.5.21, 5A.1

Step	Procedure	Result / Effect
	New outgoing calls	
1a	Emergency call from CR-A	- On-going call left - Emergency call established
1b	Call to the *Intercom* from CR-A	No change
1c	Call to the *Public Address* from CR-A	- On-going call left - *Public Address* connected
1d	Call to the *Chief Conductor* from CR-A	Call sent (by *Public Address* or radio)
1e	Call to the Controller from CR-A	- On-going call left

Step	Procedure	Result / Effect
		- Controller connected
	New incoming calls	
1f	Other incoming call	- On-going call left - Incoming call connected

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: General 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 FRS :   § 5.8.1

EIRENE SRS :   § 5.8.1, 13.5.8

MORANE :   F 10 T 6002, F 12 T 6002

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)

6 EIRENE Requirements for EDOR: Mandatory for Interoperability

6.1 Dialling calls (ATD)

Purpose: This test is to show that the EDOR can initiate calls with different eMLPP priorities.

Precondition: EDOR test configuration.

References:
EIRENE FRS : § 10.2.1, 10.2.2, 16.2.1.3
EIRENE SRS : § 16.3.2
EURORADIO : § 2.1.1.3, 2.1.2.1, 2.1.2.2, 2.3.1, 4.4.5.2.1, 4.4.5.2.2, 4.4.5.2.3, 4.4.5.3.1, 4.4.5.3.3
ETSI : EN 122 067, EN 300 904, EN 300 924, EN 300 940, TS 100 549; TS 100 625, TS 100 932, TS 123 090;TS 124 008

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Set automatic call answering to *disable*		ATS0=0		OK
2	Set the escape sequence to "+++"	**ATS2=43**		**OK**	
3	Select bearer service type	**AT+CBST=71,0,0**	AT+CBST=71,0,0	**OK**	OK
6~~4~~a	Set up data call to Fixed terminal with default eMLPP	**ATD*75#** <MSISDN>			RING
4~~6~~b	Set up data call to Fixed terminal with eMLPP <0>	**ATD*750#** <MSISDN>			RING
6~~4~~c	Set up data call to Fixed terminal with eMLPP <1>	**ATD*751#** <MSISDN>			RING
6~~4~~d	Set up data call to Fixed terminal with eMLPP <2>	**ATD*752#** <MSISDN>			RING
6~~4~~e	Set up data call to Fixed terminal with eMLPP <3>	**ATD*753#** <MSISDN>			RING
6~~4~~f	Set up data call to Fixed terminal with eMLPP <4>	**ATD*754#** <MSISDN>			RING
5~~7~~	Accept incoming call		ATA	**CONNECT 9600**	CONNECT 9600
6~~9~~	Switch from data to command mode	**+++**		**OK**	
7~~10~~	Terminate data call	**ATH**		**OK**	NO CARRIER

6.2 Terminating calls (ATH)

Purpose: This test is to show that the EDOR can terminate calls.

Precondition: EDOR test configuration.

References:
EIRENE FRS :   § 16.2.1.3
EURORADIO :   § 4.4.6.1
ETSI :   TS 124 080

Step	Procedure			Result / Effect	
	Description	**EDOR**	Fixed terminal	**EDOR**	Fixed terminal
1	Set automatic call answering to *disable*		ATS0=0		OK
2	Select bearer service type	**AT+CBST=71,0,0**	AT+CBST=71,0,0	**OK**	OK
3	Set up data call to Fixed terminal	**ATD**<MSISDN>			
4	Terminate data call	**ATH**		**OK**	NO CARRIER

6.3   Connected line identification presentation (+COLP)

Purpose: This test is to show that the EDOR can test, read or set the Connected Line Identification
                 Presentation.

Precondition: EDOR test configuration.

References:
EIRENE FRS :   § 4.2.3
EIRENE SRS :   § 4.3.3
EURORADIO :   § 2.3.1, 4.4.5.4.1
ETSI :   EN 300 918, TS 100 950, TS 124 080

Step	Procedure			Result / Effect	
	Description	**EDOR**	Fixed terminal	**EDOR**	Fixed terminal
1	Test possible values for COLP	**AT+COLP=?**		**+COLP: (0,1)** OK	
2	Set COLP to *disable*	**AT+COLP=0**		OK	
3	Read current value of COLP	**AT+COLP?**		**+COLP: 0,1** OK*	
4	Set COLP to *enable*	**AT+COLP=1**		OK	
5	Read current value of COLP	**AT+COLP?**		**+COLP: 1,1** OK**	

* +COLP: 0,1 if COLP is supported by the network, +COLP: 0,0 if COLP is not supported by the network

** +COLP: 1,1 if COLP is supported by the network, +COLP: 1,0 if COLP is not supported by the network

6.4   Calling line identification presentation (+CLIP)

Purpose: This test is to show that the EDOR can test, read or set the Calling Line Identification
                 Presentation.

Precondition: EDOR test configuration.

References:
EIRENE FRS : § 4.2.3
EIRENE SRS : § 4.3.3
EURORADIO : § 2.3.1, 4.4.6.2.1
ETSI : EN 300 918, TS 100 950

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Test possible values for CLIP	**AT+CLIP=?**		**+CLIP: (0,1)** **OK**	
2	Set CLIP to *disable*	**AT+CLIP=0**		**OK**	
3	Read current value of CLIP	**AT+CLIP?**		**+CLIP: 0,1** **OK**	
4	Set CLIP to *enable*	**AT+CLIP=1**		**OK**	
5	Read current value of CLIP	**AT+CLIP?**		**+CLIP: 1,1** **OK**	
6	Set automatic call answering to *disable*		ATS0=0		OK
7	Set the escape sequence to "+++"	**ATS2=43**		**OK**	
8	Select bearer service type	**AT+CBST=71,0,0**	AT+CBST=71,0,0	**OK**	OK
9	Set up data call to Fixed terminal	**ATD**<MSISDN>			**RING** +CLIP: "MSISDN",145
10	Accept incoming call		ATA	**CONNECT 9600**	CONNECT 9600
11	Check if data transmission in both directions possible				
12	Switch from data to command mode	**+++**		**OK**	
13	Terminate data call	**ATH**		**OK**	NO CARRIER
14	Set CLIP to *disable*	**AT+CLIP=0**	AT+CLIP=0	**OK**	OK

6.5 Incoming call priority presentation (+CRING)

Purpose: This test is to show that the EDOR can show the eMLPP priority of an incoming call.

Precondition: EDOR test configuration.

References:
EIRENE FRS : § 10.2.1, 10.2.2
EIRENE SRS : § 4.3.3
EURORADIO : §4.4.6.3.1

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Set automatic call answering to *disable*	**ATS0=0**		**OK**	
2	Set the escape sequence to "+++"		ATS2=43		OK
3	Select bearer service type	**AT+CBST=71,0,0**	AT+CBST=71,0,0	**OK**	OK
4	Set CRC to *enable extended format*	**AT+CRC=1**		**OK**	

5	Set up data call to EDOR		ATD*751# <MSISDN>	**+CRING:ASYNC [,<Prio>, [<subaddr>, <satype>]]**	
6	Accept incoming call	**ATA**		**CONNECT 9600**	CONNECT 9600
7	Check if data transmission in both directions possible				
8	Switch from data to command mode		+++		OK
9	Terminate data call		ATH	**NO CARRIER**	OK
10	Set CRC to *disable extended format*	**AT+CRC=0**		**OK**	

6.6   Automatic answering (ATS0)

Purpose: This test is to show that the EDOR can answer incoming calls automatically.

Precondition: EDOR test configuration.

References:
EIRENE FRS :   § 4.2.3
EURORADIO :   § 4.4.6.1.1

Step	Procedure			Result / Effect	
	Description	**EDOR**	Fixed terminal	**EDOR**	Fixed terminal
1	Set automatic call answering to *enable after 2 rings*	**ATS0=2**		**OK**	
2	Set the escape sequence to "+++"		ATS2=43		OK
3	Select bearer service type	**AT+CBST=71,0,0**	AT+CBST=71,0,0	**OK**	OK
4	Set the DTE serial link baud rate*	**AT+IPR=9600**	AT+IPR=9600	**OK**	OK
5	Read current used baud rate	**AT+IPR?**	AT+IPR?	**+IPR: 9600 OK**	+IPR: 9600 OK
6	Set up data call to EDOR		ATD<MSISDN>	**RING RING**	
7	Accept incoming call automatically			**CONNECT 9600**	CONNECT 9600
8	Check if data transmission in both directions possible				
9	Switch from data to command mode		+++		OK
10	Terminate data call		ATH	**NO CARRIER**	OK

* Set the PC com-port to the same baud rate

6.7   Subscriber number (+CNUM)

Purpose: This test is to show that the EDOR can read out the MSISDNs for available services from the SIM card.

Precondition: EDOR test configuration.

References:
EIRENE SRS :   § 9.7.1, 9.7.4

EURORADIO : § 4.4.10.1.1

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Read MSISDN from the SIM card	AT+CNUM		+CNUM: "infotext", "MSISDN" OK	

6.8 Network registration (+CREG)

Purpose: This test is to show that the EDOR can show the registration status of the device.

Precondition: EDOR test configuration.

References:
EIRENE FRS :   § 16.2.1.3, 16.2.2.1
EURORADIO :   § 4.4.10.2.1, 4.4.10.2.2.3

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Test possible values for network registration	AT+CREG=?		+CREG: <list of supported networks> OK	
2	Read current value of network registration	AT+CREG?		+CREG: 1,1 OK	
3	Interrupt network coverage for EDOR			+CREG: 0	
4	Restore network coverage for EDOR			+CREG: 1	
5	Read current value of network registration	AT+CREG?		+CREG: 1,1 OK	

6.9 Operator selection (+COPS)

Purpose: This test is to show that the EDOR can register to different GSM network operators.

Precondition: EDOR test configuration.

References:
EIRENE FRS :   § 16.2.1.3, 16.2.2.1
EURORADIO :   § 4.4.1, 4.4.10.3.1, 4.4.13.1

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Set the error result code to *enable and use numeric values*	AT+CMEE=1		OK	

				+COPS:
2	Test possible values for operator selection	AT+COPS=?		<list of supported operators> **OK**
3	Set operator selection mode to *automatic*	AT+COPS=0		**OK**
4	Read current value of operator selection	AT+COPS?		**+COPS:** **0,**<format>, <oper> **OK**
5	Set invalid value for operator selection	AT+COPS=5		**+CME ERROR:** **4**

6.10   Data call – transparent 4800 bps (V.110)

Purpose: This test is to show that the EDOR can set up a transparent data call with 4800 bit/s.

Precondition: EDOR test configuration.

References:
EIRENE FRS :   § 4.2.2
EIRENE SRS :   § 4.1.3.7, 4.3.2
EURORADIO :   § 2.1.1.1, 2.1.2.1, 4.4.5.2.3
ETSI :   EN 300 904, EN 300 918

Step	Procedure			Result / Effect	
	Description	**EDOR**	Fixed terminal	**EDOR**	Fixed terminal
1	Set automatic call answering to *disable*		ATS0=0		OK
2	Set the escape sequence to "+++"	**ATS2=43**		**OK**	
3	Select bearer service type	**AT+CBST=70,0,0**	AT+CBST=70,0,0	**OK**	OK
4	Set the DTE serial link baud rate*	**AT+IPR=4800**	AT+IPR=4800	**OK**	OK
5	Read current used baud rate	**AT+IPR?**	AT+IPR?	**+IPR: 4800** **OK**	+IPR: 4800 OK
6	Set up data call to Fixed terminal	**ATD**<MSISDN>			RING
7	Accept incoming call		ATA	**CONNECT 4800**	CONNECT 4800
8	Check if data transmission in both directions possible				
9	Switch from data to command mode	**+++**		**OK**	
10	Terminate data call	**ATH**		**OK**	NO CARRIER

* Set the PC com-port to the same baud rate

6.11   Data call – transparent 9600 bps (V.110)

Purpose: This test is to show that the EDOR can set up a transparent data call with 9600 bit/s.

Precondition: EDOR test configuration.

References:
EIRENE FRS : § 4.2.2
EIRENE SRS : § 4.1.3.7, 4.3.2
EURORADIO : § 2.1.1.1, 2.1.2.1, 4.4.5.2.3
ETSI : EN 300 904, EN 300 918

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Set automatic call answering to *disable*		ATS0=0		OK
2	Set the escape sequence to "+++"	**ATS2=43**		**OK**	
3	Select bearer service type	**AT+CBST=71,0,0**	AT+CBST=71,0,0	**OK**	OK
4	Set the DTE serial link baud rate*	**AT+IPR=9600**	AT+IPR=9600	**OK**	OK
5	Read current used baud rate	**AT+IPR?**	AT+IPR?	**+IPR: 9600 OK**	+IPR: 9600 OK
6	Set up data call to Fixed terminal	**ATD**<MSISDN>			RING
7	Accept incoming call		ATA	**CONNECT 9600**	CONNECT 9600
8	Check if data transmission in both directions possible				
9	Switch from data to command mode	**+++**		**OK**	
10	Terminate data call	**ATH**		**OK**	NO CARRIER

* Set the PC com-port to the same baud rate

6.12   Call setup with UUS1 (+CUUS1)

Purpose: This test is to show that the EDOR can send UUS1 messages.

Precondition: EDOR test configuration.

References:
EIRENE SRS : § 4.3.3
EURORADIO : § 2.3.1
ETSI : EN 301 702, EN 301 710, EN 301 711, TS 122 087

Step	Procedure			Result / Effect	
	Description	EDOR	Fixed terminal	EDOR	Fixed terminal
1	Set UUS1 signalling to *send specified UUIE in ANY message (e.g. Presentation of Functional Number)*	**AT+CUUS1=1,1,0, "7E000005062143 658709F1"**	AT+CUUS1=1,1,0, "7E000005069078 563402F1"	**OK**	OK
2	Set up voice call to Fixed terminal	**ATD**<MSISDN>;		**+CUUS1I: 1, "7E0000050690 78563402F1"**	+CRING: … +CUUS1U: 1, "7E0000050621 43658709F1"
3	Accept incoming call		ATA	**+CUUS1I: 3, "7E0000050690 78563402F1"OK**	OK

					+CLCC: **1,0,0,0,0,** **"MSISDN",** **<type>,,4**	+CLCC: 1,1,0,0,0, "MSISDN", <type>,,4
4	List current calls	**AT+CLCC**	AT+CLCC	**+CLCC:** **1,0,0,0,0,** **"MSISDN",** **<type>,,4**	+CLCC: 1,1,0,0,0, "MSISDN", <type>,,4
5	Terminate voice call	**ATH**		**OK**	+CUUS1U: 2, "7E0000050621 43658709F1"N O CARRIER
6	Set UUS1 signalling to *send no UUIE message*	**AT+CUUS1=1,1,0,** **""**	AT+CUUS1=1,1,0, ""	**OK**	OK