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Test specifications for GSM-R MI related requirements
Part 3: SIM Cards

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1.1.0	08.04.2021	UIC-OFG	Final version

Contents

1 Object

1.1 Purpose of the document

This document contains the test cases that are necessary for the functional validation of a SIM card according to the EIRENE specifications FRS (see [1]) and SRS (see [2]). The test cases cover all the requirements that have been identified as mandatory for interoperability (MI) according to the EIRENE specification and which can be validated using functional tests. QoS and performance requirements for voice and non-safety related data communications are not in the scope of this document.

1.2 Abbreviations

EDOR	ETCS data only radio
EIRENE	European Integrated Railway Radio Enhanced Network
GSM-R	GSM-Railway, GSM train radio system
MI	Mandatory for Interoperability
SIM	Subscriber Identification Module

1.3 Reference Documents

[1]	UIC, EIRENE Functional Requirements Specification Doc.-N°: UIC CODE 950 v 0.0.2 | version: 8.0.0
[2]	UIC, EIRENE System Requirement Specification Doc.-N°: UIC CODE 951 v 0.0.2 | version: 16.0.0
[3]	UIC, FFFIS for GSM-R SIM Cards Doc.-N°: P38 T 9001 version 5.0.0
[4]	Opinion on errors ERA/OPI/2020-2

2 Test Configuration

2.1 Overview

Following components of the EIRENE GSM-R system are needed to execute the tests:
- Cab Radio SIM card
- EDOR SIM card

2.2 Equipment required

- Card reader for SIM cards including SIM card reading tool

2.3 Network configuration

None.

2.4 SIM cards

The SIM cards need to be compliant to [3] 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 SIM card.

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

3.3 Completion of the tests

The tests are carried out with the SIM card reader tool and the SIM card.

3.4 SIM card configuration

The SIM cards need to be compliant to [3].

4 EIRENE MI Requirements for SIM card

4.1 Cab Radio SIM card

Purpose: This test is to show that the Cab radio SIM card is compliant to the clauses classified as MI in [3].

Precondition: SIM card and SIM card reading facility available.

References:

EIRENE SRS: § 4.1.5

FFFIS for GSM-R SIM Cards   Chapters § 5, § 6, § 7, § 8

Note: The SIM examples in section 9.1 of [3] may be helpful during the test process.

Test Procedure:

Step	Procedure	Result / Effect
A1	Insert the SIM card into the card reader unit of the SIM reading facility.	SIM card is readable by the SIM reader facility.

Case 1: Test steps related to chapter 5 Common Mandatory GSM Files of [3]

Step	Procedure	Result / Effect
B1	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) ICCID.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B2	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) LP.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B3	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) IMSI.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B4	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) KC.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B5	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) HPLMN.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B6	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) SST.	The presence and the structure comply to [3].
B7	Check according to section 5.2.1 of [3] the content of the Elementary File (EF) SST.	The content comply to [3]. The content of the Elementary File is partly operator dependent.
B8	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) BCCH.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B9	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) ACC.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B10	Check according to section 5.3.1 of [3] the content of the Elementary File (EF) ACC.	The content comply to [3].
B11	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) FPLMN.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B12	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) LOCI.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B13	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) AD.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B14	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) PHASE.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.

Case 1: Test steps related to chapter 5 Common Mandatory GSM Files of [3]

Case 2: Test steps related to chapter 6 Optional GSM Files Mandated for GSM-R of [3]

Step	Procedure	Result / Effect
C1	Check according to section 6.1.4 and 6.3 of [3] the presence, the structure and the content of the Elementary File (EF) CBMI.	The presence, the structure and the content comply to [3].
C2	Check according to section 6.1.4 and 6.4 of [3] the presence, the structure and the content of the Elementary File (EF) VGCS.	The presence, the structure and the content comply to [3].
C3	Check according to section 6.1.4 and 6.4 of [3] the presence, the structure and the content of the Elementary File (EF) VGCSS.	The presence, the structure and the content comply to [3].
C4	Check according to section 6.1.4 and 6.5 of [3] the presence, the structure and the content of the Elementary File (EF) VBS.	The presence, the structure and the content comply to [3].
C5	Check according to section 6.1.4 and 6.6 of [3] the presence, the structure and the content of the Elementary File (EF) eMLPP.	The presence, the structure and the content comply to [3].
C6	Check according to section 6.1.4 and 6.7 of [3] the presence, the structure and the content of the Elementary File (EF) AAeM.	The presence, the structure and the content comply to [3].
C7	Check according to section 6.1.4 and 6.8 of [3] the presence, the structure and the content of the Elementary File (EF) ADN.	The presence, the structure and the content comply to [3].
C8	Check according to section 6.1.4 and 6.9 of [3] the presence, the structure and the content of the Elementary File (EF) SMS.	The presence, the structure and the content comply to [3].
C9	Check according to section 6.1.4 and 6.9 of [3] the presence, the structure and the content of the Elementary File (EF) SMSS.	The presence, the structure and the content comply to [3].
C10	Check according to section 6.1.4 and 6.9 of [3] the presence, the structure and the content of the Elementary File (EF) SMSP.	The presence, the structure and the content comply to [3].
C11	Check according to section 6.1.4 and 6.10 of [3] the presence, the structure and the content of the Elementary File (EF) MSISDN.	The presence, the structure and the content comply to [3].
C12	Check according to section 6.1.4 and 6.12 of [3] the presence, the structure and the content of the Elementary File (EF) SDN.	The presence, the structure and the content comply to [3].

Case 3: Test steps related to chapter 7 EIRENE Files of [3]

Step	Procedure	Result / Effect
D1	Check according to section 7.1.2 and 7.1.3 of [3] the location of all EIRENE Elementary Files on the SIM card.	The location comply to [3].
D2	Check according to section 7.1.5 of [3] the identifier of the Dedicated File.	The identifier comply to [3].
D3	Check according to section 7.1.8 and 7.2 of [3] the presence, the structure and the content of the Elementary File (EF) FN.	The presence, the structure and the content comply to [3].
D4	Check according to section 7.1.8, 7.3 and 7.4 of [3] the presence, the structure and the content of the Elementary File (EF) CallConfC.	The presence, the structure and the content comply to [3].
D5	Check according to section 7.1.8, 7.3 and 7.5 of [3] the presence, the structure and the content of the Elementary File (EF) CallConfI.	The presence, the structure and the content comply to [3].
D6	Check according to section 7.1.8 and 7.6 of [3] the presence, the structure and the content of the Elementary File (EF) Shunting.	The presence, the structure and the content comply to [3].
D7	Check according to section 7.1.8 and 7.7 of [3] the presence, the structure and the content of the Elementary File (EF) GsmrPLMN.	The presence, the structure and the content comply to [3].
D8	Check according to section 7.1.8 and 7.8 of [3] the presence, the structure and the content of the Elementary File (EF) IC.	The presence, the structure and the content comply to [3].
D9	Check according to section 7.1.8 and 7.9 of [3] the presence, the structure and the content of the Elementary File (EF) NW.	The presence, the structure and the content comply to [3].

Case 4: Test steps related to chapter 8 EIRENE Files Supporting Numbering plan of [3]

Step	Procedure	Result / Effect
E1	Check according to section 8.1.4 and 8.1.5 of [3] the location of all EIRENE Elementary Files on the SIM card.	The location comply to [3].
E2	Check according to section 8.1.6 of [3] the identifier of the Dedicated File.	The identifier comply to [3].
E3	Check according to section 8.1.8, 8.4 and 8.9 of [3] the presence, the structure and the content of the Elementary File (EF) CT.	The presence, the structure and the content comply to [3].
E4	Check according to section 8.1.8, 8.4 and 8.10 of [3] the presence, the structure and the content of the Elementary File (EF) SC.	The presence, the structure and the content comply to [3].
E5	Check according to section 8.1.8, 8.6 and 8.11 of [3] the presence, the structure and the content of the Elementary File (EF) 5to8digits.	The presence, the structure and the content comply to [3].
E6	Check according to section 8.1.8, 8.6 and 8.12 of [3] the presence, the structure and the content of the Elementary File (EF) 2digits.	The presence, the structure and the content comply to [3].
E7	Check according to section 8.1.8, 8.6 and 8.13 of [3] the presence, the structure and the content of the Elementary File (EF) 8digits.	The presence, the structure and the content comply to [3].
E8	Check according to section 8.1.8, 8.6 and 8.14 of [3] the presence, the structure and the content of the Elementary File (EF) 9digits.	The presence, the structure and the content comply to [3].
E9	Check according to section 8.1.8, 8.6 and 8.15 of [3] the presence, the structure and the content of the Elementary File (EF) SSSSS.	The presence, the structure and the content comply to [3].
E10	Check according to section 8.1.8, 8.6 and 8.16 of [3] the presence, the structure and the content of the Elementary File (EF) LLLLL.	The presence, the structure and the content comply to [3].
E11	Check according to section 8.1.8, 8.6 and 8.17 of [3] the presence, the structure and the content of the Elementary File (EF) Location.	The presence, the structure and the content comply to [3].

E12	Check according to section 8.1.8, 8.6 and 8.18 of [3] the presence, the structure and the content of the Elementary File (EF) FreeNumber.	The presence, the structure and the content comply to [3].
E13	Check according to section 8.1.8, 8.5 and 8.19 of [3] the presence, the structure and the content of the Elementary File (EF) FC.	The presence, the structure and the content comply to [3].
E14	Check according to section 8.1.8, 8.5 and 8.20 of [3] the presence, the structure and the content of the Elementary File (EF) Service.	The presence, the structure and the content comply to [3].
E15	Check according to section 8.1.8, 8.5 and 8.21 of [3] the presence, the structure and the content of the Elementary File (EF) Call.	The presence, the structure and the content comply to [3].
E16	Check according to section 8.1.8, 8.5 and 8.22 of [3] the presence, the structure and the content of the Elementary File (EF) FctTeam.	The presence, the structure and the content comply to [3].
E17	Check according to section 8.1.8, 8.5 and 8.23 of [3] the presence, the structure and the content of the Elementary File (EF) Controller.	The presence, the structure and the content comply to [3].
E18	Check according to section 8.1.8, 8.5 and 8.24 of [3] the presence, the structure and the content of the Elementary File (EF) Gateway.	The presence, the structure and the content comply to [3].
E19	Check according to section 8.25 of [3] the presence, the structure and the content of the Elementary File (EF) IC.	The presence, the structure and the content comply to [3].

4.2   EDOR SIM card

Purpose: This test is to show that the EDOR SIM card is compliant to the clauses classified as MI in [3].

Precondition: SIM card and SIM card reading facility available.

References:
EIRENE SRS: § 4.1.5
FFFIS for GSM-R
SIM Cards   Chapters § 5, § 6, § 7

Note: The SIM examples in section 9.1 of [3] may be helpful during the test process.

Test Procedure:

Step	Procedure	Result / Effect
A1	Insert the SIM card into the card reader unit of the SIM reading facility.	SIM card is readable by the SIM reader facility

Case1: Test steps related to chapter 5 Common Mandatory GSM Files of [3]

Step	Procedure	Result / Effect
B1	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) ICCID.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B2	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) LP.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B3	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) IMSI.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B4	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) KC.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B5	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) HPLMN.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B6	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) SST.	The presence and the structure comply to [3].
B7	Check according to section 5.2.1 of [3] the content of the Elementary File (EF) SST.	The content comply to [3]. The content of the Elementary File is partly operator dependent.
B8	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) BCCH.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B9	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) ACC.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B10	Check according to section 5.3.1 of [3] the content of the Elementary File (EF) ACC.	The content comply to [3].
B11	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) FPLMN.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B12	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) LOCI.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B13	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) AD.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.
B14	Check according to section 5.1.3 of [3] the presence and the structure of the Elementary File (EF) PHASE.	The presence and the structure comply to [3]. The content of the Elementary File is operator dependent.

Case 2: Test steps related to chapter 6 Optional GSM Files Mandated for GSM-R of [3]

Step	Procedure	Result / Effect
C1	Check according to section 6.1.4 and 6.6 of [3] the presence, the structure and the content of the Elementary File (EF) eMLPP.	The presence, the structure and the content comply to [3].
C2	Check according to section 6.1.4 and 6.7 of [3] the presence, the structure and the content of the Elementary File (EF) AAeM.	The presence, the structure and the content comply to [3].
C3	Check according to section 6.1.4 and 6.12 of [3] the presence, the structure and the content of the Elementary File (EF) SDN.	The presence, the structure and the content comply to [3].
C4	Check according to section 6.1.4 and 6.13 of [3] the presence, the structure and the content of the Elementary File (EF) KcGPRS.	The presence, the structure and the content comply to [3].
C5	Check according to section 6.1.4 and 6.14 of [3] the presence, the structure and the content of the Elementary File (EF) LOCIGPRS.	The presence, the structure and the content comply to [3].

Case 3: Test steps related to chapter 7 EIRENE Files of [3]

Step	Procedure	Result / Effect
D1	Check according to section 7.1.2 and 7.1.3 of [3] the location of all EIRENE Elementary Files on the SIM card.	The location comply to [3].
D2	Check according to section 7.1.5 of [3] the identifier of the Dedicated File.	The identifier comply to [3].
D3	Check according to section 7.1.8 and 7.7 of [3] the presence, the structure and the content of the Elementary File (EF) GsmrPLMN.	The presence, the structure and the content comply to [3].