



TECHNICAL SPECIFICATION

**Smart Cards;
Test specification for the Host Controller Interface (HCI);
Part 1: Terminal features
(Release 13)**

ReferenceRTS/SCP-00HCITvd00

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Contents

| | |
|---|----|
| Intellectual Property Rights | 9 |
| Foreword..... | 9 |
| Modal verbs terminology..... | 10 |
| Introduction | 10 |
| 1 Scope | 11 |
| 2 References | 11 |
| 2.1 Normative references | 11 |
| 2.2 Informative references..... | 12 |
| 3 Definition of terms, symbols and abbreviations..... | 12 |
| 3.1 Terms..... | 12 |
| 3.2 Symbols..... | 12 |
| 3.3 Abbreviations | 13 |
| 3.4 Void..... | 13 |
| 3A Formats..... | 14 |
| 3A.1 Format of the table of optional features..... | 14 |
| 3A.2 Format of the applicability table..... | 14 |
| 3A.3 Status and Notations..... | 14 |
| 3A.4 Format of the conformance requirements tables | 15 |
| 4 Test environment..... | 16 |
| 4.1 Table of optional features..... | 16 |
| 4.2 Applicability table | 17 |
| 4.3 Information to be provided by the device supplier | 20 |
| 4.4 Test equipment | 20 |
| 4.4.0 Base Requirements | 20 |
| 4.4.1 Measurement/setting uncertainties..... | 21 |
| 4.4.2 Default conditions for DUT operation..... | 21 |
| 4.4.2.1 General | 21 |
| 4.4.2.2 Status of UICC interfaces..... | 21 |
| 4.4.3 Minimum/maximum conditions for DUT operation..... | 21 |
| 4.4.4 Conventions | 21 |
| 4.5 Test execution | 21 |
| 4.5.1 Parameter variations | 21 |
| 4.5.2 Execution requirements | 22 |
| 4.6 Pass criterion | 22 |
| 4.6.0 Principle..... | 22 |
| 4.6.1 Unanticipated behaviour from the DUT | 22 |
| 5 Test cases..... | 23 |
| 5.1 HCI architecture | 23 |
| 5.1.1 Overview | 23 |
| 5.1.2 Hosts | 23 |
| 5.1.3 Gates | 23 |
| 5.1.3.1 Conformance requirements | 23 |
| 5.1.3.2 Test case 1: existence of gates..... | 23 |
| 5.1.3.2.1 Test execution..... | 23 |
| 5.1.3.2.2 Initial conditions | 23 |
| 5.1.3.2.3 Test procedure | 24 |
| 5.1.3.3 Void..... | 24 |
| 5.1.4 Pipes..... | 24 |
| 5.1.4.1 Conformance requirements | 24 |
| 5.1.4.2 Test case 1: static pipe deletion..... | 25 |
| 5.1.4.2.1 Test execution..... | 25 |
| 5.1.4.2.2 Initial conditions | 25 |

| | | |
|-----------|--|----|
| 5.1.4.2.3 | Test procedure | 25 |
| 5.1.4.3 | Test case 2: initial pipe state and persistence of pipe state and registry value | 25 |
| 5.1.4.3.1 | Test execution..... | 25 |
| 5.1.4.3.2 | Initial conditions | 25 |
| 5.1.4.3.3 | Test procedure | 25 |
| 5.1.5 | Registries | 26 |
| 5.1.5.1 | Conformance requirements | 26 |
| 5.1.5.2 | Test case 1: registry deletion..... | 26 |
| 5.1.5.2.1 | Test execution..... | 26 |
| 5.1.5.2.2 | Initial conditions | 26 |
| 5.1.5.2.3 | Test procedure | 27 |
| 5.2 | HCP..... | 27 |
| 5.2.1 | HCP packets..... | 27 |
| 5.2.1.1 | Conformance requirements | 27 |
| 5.2.2 | HCP message structure | 28 |
| 5.2.2.1 | Conformance requirements | 28 |
| 5.2.2.2 | Test case 1: commands/events on pipe which is not open | 28 |
| 5.2.2.2.1 | Test execution..... | 28 |
| 5.2.2.2.2 | Initial conditions | 28 |
| 5.2.2.2.3 | Test procedure | 28 |
| 5.2.3 | Message fragmentation | 29 |
| 5.2.3.1 | Conformance requirements | 29 |
| 5.3 | Instructions | 29 |
| 5.3.1 | Commands | 29 |
| 5.3.1.1 | Overview..... | 29 |
| 5.3.1.1.1 | Conformance requirements..... | 29 |
| 5.3.1.2 | Generic commands..... | 29 |
| 5.3.1.2.1 | ANY_SET_PARAMETER | 29 |
| 5.3.1.2.2 | ANY_GET_PARAMETER..... | 30 |
| 5.3.1.2.3 | ANY_OPEN_PIPE..... | 30 |
| 5.3.1.2.4 | ANY_CLOSE_PIPE..... | 31 |
| 5.3.1.3 | Administration commands | 32 |
| 5.3.1.3.1 | ADM_CREATE_PIPE..... | 32 |
| 5.3.1.3.2 | ADM_NOTIFY_PIPE_CREATED..... | 32 |
| 5.3.1.3.3 | ADM_DELETE_PIPE | 32 |
| 5.3.1.3.4 | ADM_NOTIFY_PIPE_DELETED | 32 |
| 5.3.1.3.5 | ADM_CLEAR_ALL_PIPE..... | 33 |
| 5.3.1.3.6 | ADM_NOTIFY_ALL_PIPE_CLEARED | 33 |
| 5.3.2 | Responses | 33 |
| 5.3.2.1 | Conformance requirements | 33 |
| 5.3.2.2 | Test case 1: response to unknown command | 33 |
| 5.3.2.2.1 | Test execution..... | 33 |
| 5.3.2.2.2 | Initial conditions | 34 |
| 5.3.2.2.3 | Test procedure | 34 |
| 5.3.3 | Events | 34 |
| 5.3.3.1 | Conformance requirements | 34 |
| 5.3.3.2 | Test case 1: reception of unknown events..... | 34 |
| 5.3.3.2.1 | Test execution..... | 34 |
| 5.3.3.2.2 | Initial conditions | 35 |
| 5.3.3.2.3 | Test procedure | 35 |
| 5.4 | GATES and subclauses | 35 |
| 5.4.1 | GATES | 35 |
| 5.4.1.1 | Conformance requirements | 35 |
| 5.4.2 | Management gates | 35 |
| 5.4.2.1 | Administration gates | 35 |
| 5.4.2.1.1 | Host controller administration gate | 35 |
| 5.4.2.1.2 | Host administration gate..... | 40 |
| 5.4.2.2 | Link management gate | 40 |
| 5.4.2.2.1 | Host controller link management gate..... | 40 |
| 5.4.2.2.2 | Host link management gate | 40 |
| 5.4.2.3 | Identity management gate | 41 |
| 5.4.2.3.1 | Local registry..... | 41 |

| | | |
|-----------|--|----|
| 5.4.2.3.2 | Remote registry | 43 |
| 5.4.2.4 | Loop back gate | 43 |
| 5.4.2.4.1 | Conformance requirements..... | 43 |
| 5.4.3 | Generic gates | 43 |
| 5.5 | HCI procedures | 44 |
| 5.5.1 | Pipe management..... | 44 |
| 5.5.1.1 | Pipe creation..... | 44 |
| 5.5.1.1.1 | Conformance requirements..... | 44 |
| 5.5.1.2 | Pipe deletion..... | 44 |
| 5.5.1.2.1 | Conformance requirements..... | 44 |
| 5.5.1.2.2 | Test case 1: valid pipe deletion from host to host controller | 45 |
| 5.5.1.3 | Clear all Pipes | 45 |
| 5.5.1.3.1 | Conformance requirements..... | 45 |
| 5.5.1.3.2 | Test case 1: identity reference data when ETSI TS 102 613 is used | 45 |
| 5.5.1.3.3 | Test case 2: reception of ADM_CLEAR_ALL_PIPE - static pipes, dynamic pipes to host | 46 |
| 5.5.2 | Registry access..... | 47 |
| 5.5.3 | Host and Gate discovery | 47 |
| 5.5.4 | Session initialization | 47 |
| 5.5.4.1 | Conformance requirements | 47 |
| 5.5.4.2 | Test case 1: inhibited state | 47 |
| 5.5.4.2.1 | Test execution..... | 47 |
| 5.5.4.2.2 | Initial conditions | 47 |
| 5.5.4.2.3 | Test procedure | 47 |
| 5.5.4.3 | Test case 2: inhibited state, followed by subsequent successful identity check | 48 |
| 5.5.4.3.1 | Test execution..... | 48 |
| 5.5.4.3.2 | Initial conditions | 48 |
| 5.5.4.3.3 | Test procedure | 49 |
| 5.5.4.4 | Test case 3: initialization using all defined gates | 49 |
| 5.5.4.4.1 | Test execution..... | 49 |
| 5.5.4.4.2 | Initial conditions | 49 |
| 5.5.4.4.3 | Test procedure | 49 |
| 5.5.5 | Loop back testing..... | 52 |
| 5.5.5.1 | Conformance requirements | 52 |
| 5.5.5.2 | Test case 1: processing of EVT_POST_DATA | 52 |
| 5.5.5.2.1 | Test execution..... | 52 |
| 5.5.5.2.2 | Initial conditions | 52 |
| 5.5.5.2.3 | Test procedure | 52 |
| 5.6 | Contactless card emulation..... | 52 |
| 5.6.1 | Overview | 52 |
| 5.6.1.1 | Conformance requirements | 52 |
| 5.6.1.2 | Test case 1: RF gate of type A | 53 |
| 5.6.1.2.1 | Test execution..... | 53 |
| 5.6.1.2.2 | Initial conditions | 53 |
| 5.6.1.2.3 | Test procedure | 53 |
| 5.6.1.3 | Test case 2: RF gate of type B..... | 53 |
| 5.6.1.3.1 | Test execution..... | 53 |
| 5.6.1.3.2 | Initial conditions | 53 |
| 5.6.1.3.3 | Test procedure | 53 |
| 5.6.1.4 | Test case 3: RF gate of type F..... | 54 |
| 5.6.1.4.1 | Test execution..... | 54 |
| 5.6.1.4.2 | Initial conditions | 54 |
| 5.6.1.4.3 | Test procedure | 54 |
| 5.6.2 | Void | 54 |
| 5.6.3 | Gates | 55 |
| 5.6.3.1 | Void..... | 55 |
| 5.6.3.2 | Identity management gate | 55 |
| 5.6.3.2.1 | Conformance requirements..... | 55 |
| 5.6.3.3 | Card RF gates..... | 55 |
| 5.6.3.3.1 | Overview | 55 |
| 5.6.3.3.2 | Commands..... | 55 |
| 5.6.3.3.3 | Events and subclauses | 55 |
| 5.6.3.3.4 | Registry and subclauses..... | 56 |

| | | |
|-----------|---|----|
| 5.6.3.4 | Card application gates | 65 |
| 5.6.3.4.1 | Overview | 65 |
| 5.6.3.4.2 | Commands | 65 |
| 5.6.3.4.3 | Events and subclauses | 66 |
| 5.6.3.4.4 | Registry | 67 |
| 5.6.4 | Procedures | 67 |
| 5.6.4.1 | Use of contactless card application | 67 |
| 5.6.4.1.1 | Conformance requirements | 67 |
| 5.6.4.1.2 | Test case 1: ISO/IEC 14443-3 Type A | 68 |
| 5.6.4.1.3 | Test case 2: ISO/IEC 14443-3 Type B | 69 |
| 5.6.4.1.4 | Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID} | 70 |
| 5.6.4.1.5 | Test case 4: ISO/IEC 14443-3 Type A | 71 |
| 5.6.4.1.6 | Test case 5: ISO/IEC 14443-3 Type B | 72 |
| 5.6.4.1.7 | Test case 6: Routing HCI events to RF Gate with MODE parameter enabled only - single card RF Gate | 73 |
| 5.6.4.1.8 | Test case 7: Routing HCI events to RF Gate with MODE parameter enabled only - multiple card RF Gates | 74 |
| 5.6.4.2 | Non ISO/IEC 14443-4 type A applications | 75 |
| 5.6.4.2.1 | Conformance requirements | 75 |
| 5.6.4.2.2 | Test case 1: Non ISO/IEC 14443-4 type A | 75 |
| 5.6.4.2.3 | Test case 2: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID} | 76 |
| 5.6.4.3 | Type B' RF technology | 77 |
| 5.6.4.3.1 | Conformance requirements | 77 |
| 5.6.4.4 | Type F RF technology | 77 |
| 5.6.4.4.1 | Conformance requirements | 77 |
| 5.6.4.4.2 | Test case 1: ISO/IEC 18092 Type F | 78 |
| 5.6.4.4.3 | Test case 2: RF off during ISO/IEC 18092 Type F commands handling | 79 |
| 5.6.4.4.4 | Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID} | 81 |
| 5.6.4.5 | Update RF technology settings | 85 |
| 5.6.4.5.1 | Conformance requirements | 85 |
| 5.6.4.6 | Identity check | 85 |
| 5.6.4.6.1 | Conformance requirements | 85 |
| 5.7 | Contactless reader | 86 |
| 5.7.1 | Overview | 86 |
| 5.7.1.1 | Conformance requirements | 86 |
| 5.7.2 | Reader RF gates | 86 |
| 5.7.2.1 | Overview | 86 |
| 5.7.2.2 | Command | 86 |
| 5.7.2.2.1 | WR_XCHG_DATA | 86 |
| 5.7.2.3 | Registries | 87 |
| 5.7.2.3.1 | Type A reader RF gate | 87 |
| 5.7.2.3.2 | Type B reader RF gate | 90 |
| 5.7.2.4 | Events and subclauses | 93 |
| 5.7.2.4.1 | Events | 93 |
| 5.7.2.4.2 | EVT_READER_REQUESTED | 93 |
| 5.7.2.4.3 | EVT_END_OPERATION | 93 |
| 5.7.2.4.4 | EVT_READER_STATUS | 94 |
| 5.7.2.5 | Responses | 94 |
| 5.7.2.5.1 | Conformance requirements | 94 |
| 5.7.3 | Reader application gates | 94 |
| 5.7.3.1 | Overview | 94 |
| 5.7.3.2 | Command | 94 |
| 5.7.3.2.1 | Conformance requirements | 94 |
| 5.7.3.3 | Registry | 95 |
| 5.7.3.3.1 | Conformance requirements | 95 |
| 5.7.3.4 | Events and subclauses | 95 |
| 5.7.3.4.1 | Events | 95 |
| 5.7.3.4.2 | EVT_TARGET_DISCOVERED | 95 |
| 5.7.4 | Procedures | 95 |
| 5.7.4.1 | Use of contactless reader application | 95 |
| 5.7.4.1.1 | Conformance requirements | 95 |
| 5.7.4.2 | Contactless reader not available | 96 |

| | | |
|---|---|------------|
| 5.7.4.2.1 | Conformance requirements..... | 96 |
| 5.7.4.3 | Error management..... | 96 |
| 5.7.4.3.1 | Conformance requirements..... | 96 |
| 5.8 | Connectivity | 96 |
| 5.8.1 | Overview | 96 |
| 5.8.2 | Connectivity gate and subclauses | 96 |
| 5.8.2.1 | Connectivity gate | 96 |
| 5.8.2.2 | Commands | 97 |
| 5.8.2.2.1 | PRO_HOST_REQUEST | 97 |
| 5.8.2.3 | Events and subclauses | 97 |
| 5.8.2.3.1 | Events | 97 |
| 5.8.2.3.2 | EVT_CONNECTIVITY | 97 |
| 5.8.2.3.3 | Void..... | 97 |
| 5.8.2.3.4 | EVT_OPERATION_ENDED | 97 |
| 5.8.2.3.5 | EVT_TRANSACTION | 98 |
| 5.8.2.4 | Registry | 98 |
| 5.8.2.4.1 | Conformance requirements..... | 98 |
| 5.8.3 | Connectivity application gate and subclauses..... | 99 |
| 5.8.3.1 | Connectivity application gate..... | 99 |
| 5.8.3.1.1 | Conformance requirements..... | 99 |
| 5.8.3.2 | Commands | 99 |
| 5.8.3.2.1 | Conformance requirements..... | 99 |
| 5.8.3.3 | Events and subclauses | 99 |
| 5.8.3.3.1 | Events | 99 |
| 5.8.3.3.2 | EVT_STANDBY | 99 |
| 5.8.3.3.3 | EVT_HOST_NOTIFICATION | 100 |
| 5.8.3.4 | Registry | 100 |
| 5.8.3.4.1 | Conformance requirements..... | 100 |
| 5.8.4 | Procedures..... | 100 |
| 5.8.4.1 | Use of connectivity gate..... | 100 |
| 5.9 | APDU Transport | 100 |
| 5.9.1 | Server APDU host (APDU gate) | 100 |
| 5.9.1.1 | General | 100 |
| 5.9.1.1.1 | Conformance requirements..... | 100 |
| 5.9.1.2 | Commands | 101 |
| 5.9.1.3 | Events..... | 101 |
| 5.9.1.3.1 | Conformance requirements..... | 101 |
| 5.9.1.4 | Registry | 101 |
| 5.9.1.4.1 | Conformance requirements..... | 101 |
| 5.9.1.5 | State diagram for the APDU gate..... | 102 |
| 5.9.1.5.1 | Conformance requirements..... | 102 |
| 5.9.2 | Client APDU host (APDU application gate) | 102 |
| 5.9.2.1 | General | 102 |
| 5.9.2.1.1 | Conformance requirements..... | 102 |
| 5.9.2.2 | Commands | 102 |
| 5.9.2.3 | Events..... | 102 |
| 5.9.2.3.1 | Conformance requirements..... | 102 |
| 5.9.2.4 | Registry | 102 |
| 5.9.2.5 | State diagram for the APDU gate..... | 103 |
| 5.9.2.5.1 | Conformance requirements..... | 103 |
| 5.10 | Managing Host Interface | 103 |
| 5.10.1 | General..... | 103 |
| 5.10.1.1 | Conformance requirements | 103 |
| 5.10.2 | Platform Management gate | 103 |
| 5.10.2.1 | Registry | 103 |
| 5.10.2.1.1 | Conformance requirements..... | 103 |
| 5.10.3 | Platform Management application gate | 104 |
| 5.10.3.1 | Registry | 104 |
| 5.10.3.1.1 | Conformance requirements..... | 104 |
| Annex A (informative): Bibliography..... | | 105 |

Annex B (informative): Core specification version information.....106
Annex C (informative): Change history107
History109

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The present document is part 1 of a multi-part deliverable covering the Test specification for the Host Controller Interface (HCI), as identified below:

- Part 1: "Terminal features";**
- Part 2: "UICC features";
- Part 3: "Host Controller features".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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Introduction

The present document defines test cases for the terminal relating to the Host Controller Interface (HCI) as specified in ETSI TS 102 622 [1].

The aim of the present document is to ensure interoperability between the terminal and the UICC independently of the respective manufacturer, card issuer or operator.

1 Scope

The present document covers the minimum characteristics which are considered necessary for the terminal in order to provide compliance to ETSI TS 102 622 [1].

The present document specifies the test cases for:

- the HCI core as described in the first part of ETSI TS 102 622 [1];
- the contactless platform as described in the second part of ETSI TS 102 622 [1].

Test cases for the UICC relating to ETSI TS 102 622 [1] and test cases for the Single Wire Protocol (SWP) covering both terminal and UICC are out of scope of the present document.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 102 622: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Host Controller Interface (HCI)".
- [2] ETSI TS 102 613: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Physical and data link layer characteristics".
- [3] ETSI TS 102 223: "Smart Cards; Card Application Toolkit (CAT)".
- [4] ISO/IEC 18092: "Information technology -- Telecommunications and information exchange between systems -- Near Field Communication -- Interface and Protocol (NFCIP-1)".
- [5] ISO/IEC 14443-2: "Identification cards -- Contactless integrated circuit cards -- Proximity cards - Part 2: Radio frequency power and signal interface".
- [6] ISO/IEC 14443-3: "Cards and security devices for personal identification -- Contactless proximity objects -- Part 3: Initialization and anticollision".
- [7] ISO/IEC 14443-4: "Cards and security devices for personal identification -- Contactless proximity objects -- Part 4: Transmission protocol".
- [8] ISO/IEC 7816-4: "Identification cards -- Integrated circuit cards -- Part 4: Organization, security and commands for interchange".
- [9] ISO/IEC 9646-7: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".
- [10] ETSI TS 102 695-3: "Smart Cards; Test specification for the Host Controller Interface (HCI); Part 3: Host Controller features".

- [11] ISO/IEC 7816-3: "Identification cards -- Integrated circuit cards -- Part 3: Cards with contacts - Electrical interface and transmission protocols".
- [12] ETSI TS 102 221: "Smart Cards; UICC-Terminal interface; Physical and logical characteristics".
- [13] GlobalPlatform: "Multiple Contactless Card Emulation Environments - Managing Entity v1.0".
- NOTE: Available at <http://www.globalplatform.org/>.
- [14] NFC Forum: "NFC Controller Interface (NCI) Technical Specification Version 2.0".

2.2 Informative references

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Not applicable.

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 102 622 [1] and the following apply:

allowed error response code: response code which is not ANY_OK and which is allowed for the referenced command as specified in ETSI TS 102 622 [1]

non-occurrence RQ: RQ which has been extracted from ETSI TS 102 622 [1], but which indicates a situation which should never occur

NOTE: The consequence is that such RQs cannot be explicitly tested.

user: describes any logical or physical entity which controls the test equipment in a way that it is able to trigger activities of the DUT

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI TS 102 622 [1] and the following apply:

PIPE0 the static pipe connected to the link management gate of the device under test
PIPE1 the static pipe connected to the administration gate of the device under test

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 102 622 [1] and the following apply:

| | |
|--------|---|
| (U)SIM | (Universal) Subscriber Identity Module |
| AC | AntiCollision |
| AFI | Application Family Identifier |
| AID | Application IDentifier |
| ATQA | Answer To reQuest of type A |
| ATQB | Answer To reQuest of type B |
| ATS | Answer To Select |
| CLF | ContactLess Front-end |
| CLT | ContactLess Tunnelling |
| CRC | Cyclic Redundancy Code |
| DUT | Device Under Test |
| FFS | For Further Study |
| HCI | Host Controller Interface |
| HCUT | Host Controller Under Test |
| HS | Host Simulator |
| ICRx | Initial Condition Requirement (where x is a number) |

NOTE: As used in the applicability table, see clauses 4.2 and 4.5.2.

| | |
|------|--|
| LEN | LENgth |
| MH | Managing Host |
| NAA | Network Access Application |
| PCD | Proximity Coupling Device |
| PICC | Proximity Integrated Circuit Card |
| PPS | Protocol and Parameter Selection |
| RATS | Request for Answer To Select |
| REQA | REQuest command, type A |
| RF | Radio Frequency |
| RO | Read-Only |
| RQ | Conformance requirement |
| RW | Read-Write |
| SAK | Select AcKnowledge |
| SRx | Static Requirement (where x is a number) |

NOTE: As used in the applicability table, see clauses 4.2 and 4.5.2.

| | |
|------|---|
| TC | Test Case |
| TRx | Trigger requirement (where x is a number) |
| UID | Unique IDentification |
| WO | Write Only |
| WUPB | Wake-Up command for PICC type B |

NOTE: As used in the applicability table, see clauses 4.2 and 4.5.2.

3.4 Void

Content of this clause has been moved to clause 3A.

3A Formats

3A.1 Format of the table of optional features

The columns in table 4.1 have the following meaning.

| Column | Meaning |
|----------|---|
| Option | The optional feature supported or not by the DUT. |
| Status | See clause 3A.3. |
| Support | The support columns shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [9], are used for the support column in table 4.1. Y or y supported by the implementation. N or n not supported by the implementation. N/A, n/a or - no answer required (allowed only if the status is N/A, directly or after evaluation of a conditional status). |
| Mnemonic | The mnemonic column contains mnemonic identifiers for each item. |

3A.2 Format of the applicability table

The applicability of every test in table 4.2 is formally expressed by the use of Boolean expression defined in the following clause.

The columns in table 4.2 have the following meaning.

| Column | Meaning |
|----------------------------------|--|
| Clause | The "Clause" column identifies the clause containing the test case referenced in the "Test case number and description" column. |
| Test case number and description | The "Test case number and description" column gives a reference to the test case number (along with the corresponding description) detailed in the present document and required to validate the DUT. |
| Release | The "Release" column gives the Release applicable and onwards, for the corresponding test case. |
| Execution requirements | The usage of the "Execution requirements" column is described in clause 4.5.2. |
| Rel-x Terminal | For a given Release, the corresponding "Rel-x" column lists the tests required for a DUT to be declared compliant to this Release. |
| Support | The "Support" column is blank in the proforma, and shall be completed by the manufacturer in respect of each particular requirement to indicate the choices, which have been made in the implementation. |

3A.3 Status and Notations

The "Rel-x" columns show the status of the entries as follows:

The following notations, defined in ISO/IEC 9646-7 [9], are used for the status column:

| | |
|-----|---|
| M | mandatory - the capability is required to be supported. |
| O | optional - the capability may be supported or not. |
| N/A | not applicable - in the given context, it is impossible to use the capability. |
| X | prohibited (excluded) - there is a requirement not to use this capability in the given context. |
| O.i | qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table. |

Ci conditional - the requirement on the capability ("M", "O", "X" or "N/A") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." shall be used to avoid ambiguities.

References to items

For each possible item answer (answer in the support column) there exists a unique reference, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns shall be discriminated by letters (a, b, etc.), respectively.

EXAMPLE: 4.1/4 is the reference to the answer of item 4 in table 4.1.

3A.4 Format of the conformance requirements tables

The conformance requirements tables contained in the present document have the following format and meaning:

| Column Status | Meaning | | | | | | | | | | |
|----------------|--|----------------|--|--|---|----------------|----------------------|---------------|--|-------|-------------|
| Mandatory | This mandatory column contains the conformance requirement number (e.g. RQ3). | | | | | | | | | | |
| Optional | This optional column is present when the containing clause sources conformance requirements from multiple clauses in the core specification. In this case, the cells in this column indicate the specific clause from the core specification from which the conformance requirement was sourced. If the conformance requirements are sourced from a single clause in the core specification, this column is not present. | | | | | | | | | | |
| Optional | This optional column is present when the table contains conformance requirements which are applicable to only a subset of the releases which are covered by the present document. In this case, the content of the cells indicates the release(s) to which the conformance requirement is applicable. Additionally, a cell being empty indicates that the conformance requirement is applicable to every release which is covered by the present document. Examples of the content of cells in this column are given below: <table border="1" data-bbox="339 1184 1418 1332"> <thead> <tr> <th>Sample Content</th> <th>Applicability of conformance requirement</th> </tr> </thead> <tbody> <tr> <td></td> <td>All releases covered by the present document.</td> </tr> <tr> <td>Rel-7 to Rel-8</td> <td>Rel-7 to Rel-8 only.</td> </tr> <tr> <td>Rel-9 upwards</td> <td>Rel-9 up to the latest release which is covered by the present document.</td> </tr> <tr> <td>Rel-7</td> <td>Rel-7 only.</td> </tr> </tbody> </table> The absence of this column indicates that all conformance requirements are applicable to every release which is covered by the present document. | Sample Content | Applicability of conformance requirement | | All releases covered by the present document. | Rel-7 to Rel-8 | Rel-7 to Rel-8 only. | Rel-9 upwards | Rel-9 up to the latest release which is covered by the present document. | Rel-7 | Rel-7 only. |
| Sample Content | Applicability of conformance requirement | | | | | | | | | | |
| | All releases covered by the present document. | | | | | | | | | | |
| Rel-7 to Rel-8 | Rel-7 to Rel-8 only. | | | | | | | | | | |
| Rel-9 upwards | Rel-9 up to the latest release which is covered by the present document. | | | | | | | | | | |
| Rel-7 | Rel-7 only. | | | | | | | | | | |
| Mandatory | This mandatory column contains the text of the conformance requirement. | | | | | | | | | | |

4 Test environment

4.1 Table of optional features

The device supplier shall state the support of possible options in table 4.1. See clause 3A for the format of table 4.1.

Table 4.1: Options

| Item | Option | Status | Support | Mnemonic |
|--|---|--------|---------|-----------------------|
| 1 | Data link layer specified in ETSI TS 102 613 [2] is used | O | | O_102_613 |
| 2 | Card RF gate for technology A is supported | O | | O_CE_TypeA |
| 3 | Card RF gate for technology B is supported | O | | O_CE_TypeB |
| 4 | Reader RF gate for technology A is supported | O | | O_Reader_TypeA |
| 5 | Reader RF gate for technology B is supported | O | | O_Reader_TypeB |
| 6 | Card RF gate for technology F is supported | O | | O_CE_TypeF |
| 7 | Low power mode is supported | O | | O_Low_Power_Mode |
| 8 | Void | | | |
| 9 | Connectivity gate is supported in the terminal host | O | | O_Conn |
| 10 | In addition to the UICC, at least a further host which can be connected/disconnected from the HCI network is supported | O | | O_Connectable_HOST |
| 11 | Terminal supports CLT, ISO/IEC 14443-3 [6] Type A independently of whether the UICC indicates support of extended bit durations (see note) | O | | O_CLT_A_FULL |
| 12 | Terminal supports CLT, ISO/IEC 14443-3 [6] Type A only when the UICC indicates support of extended bit durations down to 0,590 μ s (see note) | O | | O_CLT_A_EXTENDED_ONLY |
| NOTE: If item 11 or 12 is supported, then items 1 and 2 shall also be supported. It is not valid for the terminal to support both O_CLT_A_FULL and O_CLT_A_EXTENDED_ONLY. | | | | |

4.2 Applicability table

Table 4.2 specifies the applicability of each test case to the device under test. See clause 3A for the format of table 4.2.

Clause 4.5.2 should be referenced for usage of the execution requirements which are referenced in table 4.2 a) and described in table 4.2 c).

Table 4.2 a): Applicability of tests

| Clause | Test case number and description | Release | Execution requirements | Rel-7 Terminal | Rel-8 Terminal | Rel-9 Terminal | Rel-10 Terminal | Rel-11 Terminal | Rel-12 Terminal | Rel-13 Terminal | Support |
|-------------|--|---------|------------------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 5.1.3.2 | Test case 1: existence of gates | Rel-7 | | M | M | M | M | M | M | M | |
| 5.1.4.2 | Test case 1: static pipe deletion | Rel-7 | | M | M | M | M | M | M | M | |
| 5.1.4.3 | Test case 2: initial pipe state and persistence of pipe state and registry value | Rel-7 | TR1 | M | M | M | M | M | M | M | |
| 5.1.5.2 | Test case 1: registry deletion | Rel-7 | SR1 | M | M | M | M | M | M | M | |
| 5.2.2.2 | Test case 1: commands/events on pipe which is not open | Rel-7 | | M | M | M | M | M | M | M | |
| 5.3.1.2.3.2 | Test case 1: ANY_OPEN_PIPE reception | Rel-7 | | M | M | M | M | M | M | M | |
| 5.3.1.2.4.2 | Test case 1: ANY_CLOSE_PIPE reception | Rel-7 | | M | M | M | M | M | M | M | |
| 5.3.2.2 | Test case 1: response to unknown command | Rel-7 | | M | M | M | M | M | M | M | |
| 5.3.3.2 | Test case 1: reception of unknown events | Rel-7 | | M | M | M | M | M | M | M | |
| 5.4.2.1.1.2 | Test case 1: SESSION_IDENTITY | Rel-7 | | M | M | M | M | M | M | M | |
| 5.4.2.1.1.3 | Test case 2: MAX_PIPE | Rel-7 | | M | M | M | M | M | M | M | |
| 5.4.2.1.1.4 | Test case 3: WHITELIST | Rel-7 | | M | M | M | M | M | M | M | |
| 5.4.2.1.1.5 | Test case 4: HOST_LIST | Rel-7 | | M | M | M | M | M | M | M | |
| 5.4.2.1.1.6 | Test case 5: EVT_HOT_PLUG - initial power-up | Rel-12 | | N/A | N/A | N/A | N/A | N/A | M | M | |
| 5.4.2.1.1.7 | Test case 6: EVT_HOT_PLUG - connected/disconnect host from HCl network | Rel-12 | | N/A | N/A | N/A | N/A | N/A | C113 | C113 | |
| 5.4.2.3.1.2 | Test case 1: registry parameters | Rel-7 | | M | M | M | M | M | N/A | N/A | |
| 5.4.2.3.1.3 | Test case 2: registry parameters | Rel-12 | | N/A | N/A | N/A | N/A | N/A | M | M | |
| 5.5.1.2.2 | Test case 1: valid pipe deletion from host to host controller | Rel-7 | | M | M | M | M | M | M | M | |
| 5.5.1.3.2 | Test case 1: identity reference data when ETSI TS 102 613 [2] is used | Rel-7 | | C101 | C101 | C101 | C101 | C101 | C101 | C101 | |
| 5.5.1.3.3 | Test case 2: reception of ADM_CLEAR_ALL_PIPE - static pipes, dynamic pipes to host | Rel-7 | | M | M | M | M | M | M | M | |
| 5.5.4.2 | Test case 1: inhibited state | Rel-7 | | M | M | M | M | M | M | M | |
| 5.5.4.3 | Test case 2: inhibited state, followed by subsequent successful identity check | Rel-7 | | M | M | M | M | M | M | M | |
| 5.5.4.4 | Test case 3: initialization using all defined gates | Rel-7 | | N/A | N/A | M | M | M | M | M | |
| 5.5.5.2 | Test case 1: processing of EVT_POST_DATA | Rel-7 | | M | M | M | M | M | M | M | |

| Clause | Test case number and description | Release | Execution requirements | Rel-7 Terminal | Rel-8 Terminal | Rel-9 Terminal | Rel-10 Terminal | Rel-11 Terminal | Rel-12 Terminal | Rel-13 Terminal | Support |
|---------------|--|---------|------------------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 5.6.1.2 | Test case 1: RF gate of type A | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.1.3 | Test case 2: RF gate of type B | Rel-7 | TR2 | C103 | C103 | C103 | C103 | C103 | C103 | C103 | |
| 5.6.1.4 | Test case 3: RF gate of type F | Rel-7 | TR2 | N/A | N/A | C112 | C112 | C112 | C112 | C112 | |
| 5.6.3.3.4.2.2 | Test case 1: UID_REG - default | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.3.3.4.2.3 | Test case 2: SAK | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.3.3.4.2.4 | Test case 3: ATS - default parameters | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.3.3.4.2.5 | Test case 4: APPLICATION_DATA | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.3.3.4.2.6 | Test case 5: DATARATE_MAX | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.3.3.4.3.2 | Test case 1: PUPI_REG - default | Rel-7 | TR2 | C103 | C103 | C103 | C103 | C103 | C103 | C103 | |
| 5.6.3.3.4.3.3 | Test case 2: ATQB - verify the different parameter | Rel-7 | TR2 | C103 | C103 | C103 | C103 | C103 | C103 | C103 | |
| 5.6.3.3.4.3.4 | Test case 3: HIGHER_LAYER_RESPONSE | Rel-7 | TR2 | C103 | C103 | C103 | C103 | C103 | C103 | C103 | |
| 5.6.4.1.2 | Test case 1: ISO/IEC 14443-3 [6] Type A | Rel-7 | TR2 | C102 | C102 | C102 | C102 | C102 | C102 | C102 | |
| 5.6.4.1.3 | Test case 2: ISO/IEC 14443-3 [6] Type B | Rel-7 | TR2 | C103 | C103 | C103 | C103 | C103 | C103 | C103 | |
| 5.6.4.1.4 | Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID} | Rel-7 | TR2 | N/A | N/A | C107 | C107 | C107 | C107 | C107 | |
| 5.6.4.1.5 | Test case 4: ISO/IEC 14443-3 [6] Type A | Rel-10 | TR2 | N/A | N/A | N/A | C102 | C102 | C102 | C102 | |
| 5.6.4.1.6 | Test case 5: ISO/IEC 14443-3 [6] Type B | Rel-10 | TR2 | N/A | N/A | N/A | C103 | C103 | C103 | C103 | |
| 5.6.4.1.7 | Test case 6: Routing HCI events to RF Gate with MODE parameter enabled only - single card RF Gate | Rel-11 | TR2 | N/A | N/A | N/A | N/A | C102 | C102 | C102 | |
| 5.6.4.1.8 | Test case 7: Routing HCI events to RF Gate with MODE parameter enabled only - multiple card RF Gates | Rel-11 | TR2 | N/A | N/A | N/A | N/A | C107 | C107 | C107 | |
| 5.6.4.2.2 | Test case 1: Non ISO/IEC 14443-4 [7] type A | Rel-7 | TR2, TR5 | N/A | N/A | C109 | C109 | C109 | C109 | C109 | |
| 5.6.4.2.3 | Test case 2: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID} | Rel-7 | TR2, TR5 | N/A | N/A | C110 | C110 | C110 | C110 | C110 | |
| 5.6.4.4.2 | Test case 1: ISO/IEC 18092 [4] Type F | Rel-7 | TR2 | N/A | N/A | C112 | C112 | C112 | C112 | C112 | |
| 5.6.4.4.3 | Test case 2: RF off during ISO/IEC 18092 [4] Type F commands handling | Rel-7 | TR2 | N/A | N/A | C112 | C112 | C112 | C112 | C112 | |
| 5.6.4.4.4 | Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID} | Rel-7 | TR2 | N/A | N/A | C108 | C108 | C108 | C108 | C108 | |
| 5.6.4.4.5 | Test case 4: ISO/IEC 18092 [4] Type F commands handling without a previous initialization | Rel-12 | TR2 | N/A | N/A | N/A | N/A | N/A | C112 | C112 | |
| 5.6.4.4.6 | Test case 5: Receiving RF frames during ISO/IEC 18092 [4] Type F commands handling. | Rel-12 | TR2 | N/A | N/A | N/A | N/A | N/A | C112 | C112 | |
| 5.6.4.4.7 | Test case 6: ISO/IEC 18092 [4] Type F commands handling for empty EVT_SEND_DATA. | Rel-12 | TR2 | N/A | N/A | N/A | N/A | N/A | C112 | C112 | |
| 5.7.2.3.1.2 | Test case 1: ISO/IEC 14443-4 [7] compliant type A | Rel-7 | TR3 | C104 | C104 | C104 | C104 | C104 | C104 | C104 | |

| Clause | Test case number and description | Release | Execution requirements | Rel-7 Terminal | Rel-8 Terminal | Rel-9 Terminal | Rel-10 Terminal | Rel-11 Terminal | Rel-12 Terminal | Rel-13 Terminal | Support |
|-------------|---|---------|------------------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 5.7.2.3.2.2 | Test case 1: ISO/IEC 14443-4 [7] compliant type B | Rel-7 | TR3 | C105 | C105 | C105 | C105 | C105 | C105 | C105 | |
| 5.8.2.3.5.2 | Test case 1: EVT_TRANSACTION | Rel-7 | TR4 | N/A | N/A | C111 | C111 | C111 | C111 | C111 | |

Table 4.2 b): Conditional items referenced by table 4.2 a)

| Conditional item | Condition | Description |
|------------------|---|--|
| C101 | IF 4.1/1 THEN M ELSE N/A | O_102_613 |
| C102 | IF 4.1/2 THEN M ELSE N/A | O_CE_TypeA |
| C103 | IF 4.1/3 THEN M ELSE N/A | O_CE_TypeB |
| C104 | IF 4.1/4 THEN M ELSE N/A | O_Reader_TypeA |
| C105 | IF 4.1/5 THEN M ELSE N/A | O_Reader_TypeB |
| C106 | IF 4.1/6 THEN M ELSE N/A | O_CE_TypeF |
| C107 | IF 4.1/2 AND 4.1/3 THEN M ELSE N/A | O_CE_TypeA AND O_CE_TypeB |
| C108 | IF (4.1/2 OR 4.1/3) AND 4.1/6 THEN M ELSE N/A | (O_CE_TypeA OR O_CE_TypeB) AND O_CE_TypeF |
| C109 | IF (4.1/11 OR 4.1/12) THEN M ELSE N/A | O_CLT_A_FULL OR O_CLT_A_EXTENDED_ONLY |
| C110 | IF (4.1/11 OR 4.1/12) AND 4.1/3 THEN M ELSE N/A | (O_CLT_A_FULL OR O_CLT_A_EXTENDED_ONLY) AND O_CE_TypeB |
| C111 | IF 4.1/9 THEN M ELSE N/A | O_Conn |
| C112 | IF 4.1/1 AND 4.1/6 THEN M ELSE N/A | O_102_613 AND O_CE_TypeF |
| C113 | IF 4.1/10 THEN M ELSE N/A | O_Connectable_HOST |

Table 4.2 c): Execution requirements referenced by table 4.2 a)

| Execution requirement | Description |
|-----------------------|--|
| SR1 | A gate which accepts dynamic pipe and has a RW registry parameter; the default value of the registry parameter shall be known. |
| TR1 | The DUT manufacturer has to provide information how the host controller can be powered down and powered up. |
| TR2 | The DUT manufacturer has to provide information how the card emulation mode can be configured and used by the host simulator. |
| TR3 | The DUT manufacturer has to provide information how the reader mode hosted by the UICC can be enabled in the host controller. |
| TR4 | An application which can be launched by using EVT_TRANSACTION is present on the terminal and the conditions required to launch this application are satisfied. |
| TR5 | If the terminal supports O_CLT_A_FULL, then the UICC simulator shall indicate in ACT_SYNC frames that extended bit durations are not supported. If the terminal supports O_CLT_A_EXTENDED_ONLY, the UICC simulator shall indicate support of extended bit duration down to 0,590 µs in ACT_SYNC frames. |

NOTE: Clause 4.5.2 should be referenced for the meaning and usage of the execution requirements which are described in table 4.2 c).

4.3 Information to be provided by the device supplier

The device supplier shall provide the information indicated in table 4.3.

Table 4.3: Default configuration

| Item | Description | Presence/Value | Status | Mnemonic |
|------|--|----------------|--------|-----------------|
| 1 | Void | | | |
| 2 | Void | | | |
| 3 | Void | | | |
| 4 | Void | | | |
| 5 | Void | | | |
| 6 | Value of GATES_LIST | | M | V_GATES_LIST |
| 7 | Value of MAX_PIPE | | M | V_MAX_PIPE |
| 8 | Value of HOST_LIST | | M | V_HOST_LIST |
| 9 | Maximum data rate supported in Card Emulation for technology A | | C | V_DRATE_MAX_CEA |
| 10 | Maximum data rate supported in Card Emulation for technology B | | C | V_DRATE_MAX_CEB |

NOTE: Conditional values shall be provided if the corresponding option is supported in the table 4.1.

4.4 Test equipment

4.4.0 Base Requirements

The test equipment shall provide a host simulator which is connected to the DUT during test procedure execution, unless otherwise specified.

With respect to the DUT, the host simulator shall act as a valid host according to ETSI TS 102 622 [1] unless otherwise specified. In particular, the host simulator shall ensure that the value GATES_LIST is valid, according to the particular requirements of the test case being executed.

With respect to the DUT, the host simulator shall comprise a valid host according to the specific DUT. The details are out of the scope of the present document.

For some test cases, usage of a PCD is required. The detailed requirements are specified in the individual test cases.

The test equipment shall ensure that a matching SYNC_ID is used during test case execution, unless otherwise specified.

Some terminals might require the presence of an NAA (e.g. (U)SIM), which shall be provided by the test equipment.

NOTE 1: The implementation of the terminal may imply certain activities or settings on the HCI layer. This should be taken into account when testing the HCI interface (e.g. PIPE state should be checked, activity after initialization, already open pipes, etc.).

With respect to the DUT, the host simulator shall act as a valid host according to ETSI TS 102 622 [1] unless otherwise specified. In particular, the host simulator shall ensure before running a test case that all static pipes are closed, all dynamic pipes are deleted and the registry values are set to their defaults by running the sequence in table 4.4.

Table 4.4: HCI test case initialization sequence

| Step | Direction | Description |
|------|-----------|--|
| a1 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. |
| a2 | HCUT → HS | Send ANY_OK. |
| a3 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with parameter ('FF FF'). |
| a4 | HCUT → HS | Send ANY_OK. |

With respect to the DUT, the host simulator shall act as a valid host according to ETSI TS 102 622 [1] unless otherwise specified. In particular, before running a test case which is only applicable from Release 12 onwards, the host simulator shall ensure that HCI_VERSION in the Identity Management gate is set to '02', shall set the HOST_TYPE in the Host Controller administration gate to '02 00' and shall accept H_{ID} value '02' or dynamically allocated H_{ID}.

Before the execution of the RF technology test cases, RF gate parameters has to be modified properly to run the test.

When the DUT is expected to send an HCI response or event in response to a prior HCI message sent by the simulator, and this HCI response or event is not received within 200 ms of the HCI message, the DUT shall be considered to have failed the relevant part of the test case.

NOTE 2: The value of 200 ms specified above is not derived from any value in ETSI TS 102 622 [1]. This value was selected to optimize the duration of the test execution.

4.4.1 Measurement/setting uncertainties

Void.

4.4.2 Default conditions for DUT operation

4.4.2.1 General

Unless otherwise specified, the following applies during test procedure execution.

The test equipment shall attempt to ensure that the identity check mechanism of the lower layer passes (see ETSI TS 102 622 [1], clause 8.4).

If the test procedure indicates that the host simulator is to send ANY_OK in response to an ANY_OPEN_PIPE command, the parameter shall contain the number of pipes already open on the gate before the execution of the command.

4.4.2.2 Status of UICC interfaces

Void.

4.4.3 Minimum/maximum conditions for DUT operation

Void.

4.4.4 Conventions

Unless otherwise specified, ADM_CREATE_PIPE is sent by the test equipment with source $H_{ID} = H_{ID}$ of host simulator and destination $H_{ID} = H_{ID}$ of host controller.

If the pipe for a response is not explicitly specified, then the pipe for the response is required to be the pipe on which the preceding command was sent.

4.5 Test execution

4.5.1 Parameter variations

Unless otherwise specified, all test cases shall be carried out in full power mode only, and for the parameter variations specified individually for each test case.

4.5.2 Execution requirements

Table 4.2, Applicability of tests, specifies "execution requirements" for several test cases. For these test cases, it has not been possible to specify the corresponding test procedure in such a way that it can be guaranteed that the test procedure can be executed against every possible DUT.

Some sample scenarios of test requirements are listed below:

- The test case requires certain state to be present on the DUT in order to test a particular feature, but there is no mandatory requirement in the core specification (ETSI TS 102 622 [1]) for this state to be present.
- The test case requires the DUT to perform a particular operation in order to test that feature, but the core specification (ETSI TS 102 622 [1]) does not provide a standardized mechanism to trigger that operation to be executed by the DUT.

The test requirements have been split into various categories, as indicated by table 4.2 c):

- Static requirements (SRx): information about, for example, particular gates or registry parameters which can be used in the test procedure execution.
- Trigger requirements (TRx): mechanisms for triggering the DUT to perform certain operations.
- Initial condition requirements (ICRx): information about how to establish initial condition states.

The DUT supplier should make every effort to provide appropriate information or mechanisms to allow these execution requirements to be satisfied for the DUT.

It is recognized that this might not always be possible. For example, if the configuration of the DUT does not allow for the required state to be present; or if it is not possible to provide a particular trigger mechanism for the DUT. In these cases, it is acceptable that the test case is not carried out. However, it should be recognized that the consequence is that the particular feature will not be tested.

4.6 Pass criterion

4.6.0 Principle

A test shall only be considered as successful, if the test procedure was carried out successfully under all parameter variations with the DUT respecting all conformance requirements referenced in the test procedure. This is subject to the additional qualifications described in clause 4.6.1.

NOTE: Within the test procedures, the RQs are referenced in the step where they are observable. In some cases, this is different from the step where they occur with respect to the DUT.

4.6.1 Unanticipated behaviour from the DUT

In the specification of the test procedures, every attempt has been made to ensure that the interface between the simulator and the DUT is in a known state before and during test procedure execution. However, as the DUT is an autonomous device, it is not possible to fully guarantee this.

If the DUT unexpectedly closes or deletes a pipe which is intended to be used during a subsequent part of the test procedure, this should not be considered as a failure of the DUT, even though the test procedure cannot be completed successfully. Instead, the test procedure should be executed again to attempt to execute the test procedure to completion. If the unexpected behaviour occurs again, further effort should be applied by the tester to attempt to ensure that the unexpected behaviour does not occur.

5 Test cases

5.1 HCI architecture

5.1.1 Overview

Reference: ETSI TS 102 622 [1], clause 4.1.

There are no conformance requirements for the terminal for the referenced clause.

5.1.2 Hosts

Reference: ETSI TS 102 622 [1], clause 4.2.

| | | |
|--|----------------|--|
| RQ4.1 | | The host controller shall not use host identifiers which are RFU. |
| RQ4.2 | | The host controller shall reject received host identifiers which are RFU. |
| RQ4.28 | Rel-12 upwards | The dynamically allocated range of values shall be used by the host controller to assign a host identifier to any host not identified in table 1. |
| RQ4.29 | Rel-12 upwards | The host controller shall always assign the same H_{ID} to a given host throughout different sessions as long as there is no modification in the hardware configuration of the device. |
| RQ4.30 | Rel-12 upwards | The host controller shall assign the H_{ID} value '02' to pre-release 12 UICC. Others UICCs if present will use dynamically allocated H_{ID} values. |
| RQ4.31 | Rel-12 upwards | In the case of several pre-release 12 UICCs, the host controller should avoid having these UICCs active at the same time as they present the same HID. |
| NOTE 1: RQ4.1 is a non-occurrence RQ. | | |
| NOTE 2: Development of test cases for RQ4.2, RQ4.28, RQ4.29, RQ4.30 and RQ4.31 is FFS. | | |

5.1.3 Gates

5.1.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 4.3.

| | |
|---|--|
| RQ4.3 | The host controller shall have one administration gate. |
| RQ4.4 | The host controller shall have one link management gate. |
| RQ4.5 | The host controller shall have one identity management gate. |
| RQ4.6 | The host controller shall have one loop back gate. |
| RQ4.7 | The host controller shall not use gate identifiers which are RFU. |
| RQ4.8 | Void. |
| RQ4.9 | The host controller shall not use gate identifiers which are host specific but not yet allocated in ETSI TS 102 622 [1]. |
| RQ4.10 | Void. |
| NOTE: RQ4.7 and RQ4.9 are not tested, as they are non-occurrence RQs. | |

5.1.3.2 Test case 1: existence of gates

5.1.3.2.1 Test execution

There are no test case-specific parameters for this test case.

5.1.3.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE0 is open.

- PIPE1 is open.

5.1.3.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|--------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER(REC_ERROR) on PIPE0. | |
| 2 | HCUT → HS | Send ANY_OK (parameters are not checked). | RQ4.4 |
| 3 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of identity management gate. | |
| 4 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPE_ID_MAN. | RQ4.3, RQ4.5 |
| 5 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_ID_MAN. | |
| 6 | HCUT → HS | Send ANY_OK. | RQ4.5 |
| 7 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on PIPE_ID_MAN. | |
| 8 | HCUT → HS | Send ANY_OK. Check that the GATES_LIST returned contains the G _{ID} of the identity management gate and the G _{ID} of the loop back gate. | RQ4.5, RQ4.6 |

5.1.3.3 Void

5.1.4 Pipes

5.1.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 4.4.

| | |
|---------|---|
| RQ4.11 | The host controller shall not attempt to delete a static pipe. |
| RQ4.12 | The host controller shall reject any attempts to delete a static pipe. |
| RQ4.13 | The state of a pipe (i.e. open or closed) shall remain persistent if the hosts are powered down and up again. |
| RQ4.14 | The state of a dynamic pipe after creation shall be closed. |
| RQ4.15 | The initial state of a static pipe shall be closed. |
| RQ4.16 | The host controller shall not use pipe identifiers which are RFU. |
| RQ4.17 | The state of a pipe shall remain persistent if a host is temporarily removed from the host network and was not replaced by a different device in the meantime. |
| RQ4.18 | For dynamic pipes, pipe identifiers are dynamically allocated by the host controller. |
| RQ4.19 | All pipe identifiers allocated by the host controller for dynamic pipes shall be in the range '02' to '6F'. |
| RQ4.20 | Dynamic pipe identifiers shall be unique in the host network. |
| NOTE 1: | RQ4.11 and RQ4.16 are not tested, as they are non-occurrence RQs. |
| NOTE 2: | RQ4.15 is not tested, as it is not clear when the initial state of the static pipe applies. |
| NOTE 3: | RQ4.18 is covered in clause 8.1.1 of ETSI TS 102 622 [1], covered by clause 5.5.1.1 of the present document. This RQ is therefore not tested within this clause, as it is effectively tested in clause 5.5.1.1. |
| NOTE 4: | RQ4.19 and RQ4.20 are tested implicitly in different test cases in this test specification. |

Reference: ETSI TS 102 622 [1], clause 7.1.1.1.

| | |
|-------|--|
| RQ7.2 | The registry of the host controller administration gate shall be persistent. |
|-------|--|

Reference: ETSI TS 102 622 [1], clauses 8.1.1, 6.1.3.1 and 6.1.3.2.

| | |
|--------|---|
| RQ8.3 | The host controller assigns an unused pipe identifier. |
| RQ6.30 | When the pipe was successfully created, the host controller shall send the response ANY_OK in response to the ADM_CREATE_PIPE command, with parameters as specified in ETSI TS 102 622 [1]. |
| RQ8.7 | When a pipe is created towards the host controller then only steps 1 and 4 in figure 6 of ETSI TS 102 622 [1] are needed. |

5.1.4.2 Test case 1: static pipe deletion

5.1.4.2.1 Test execution

The test procedure shall be executed once for each of following parameters:

- PIPE0.
- PIPE1.

5.1.4.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.

5.1.4.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|--------|
| 1 | HS → HCUT | Send ADM_DELETE_PIPE containing the pipe indicated in the test execution clause, on PIPE1. | |
| 2 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ4.12 |

5.1.4.3 Test case 2: initial pipe state and persistence of pipe state and registry value

5.1.4.3.1 Test execution

There are no test case-specific parameters for this test case.

5.1.4.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.
- The value of SESSION_IDENTITY in the registry is not 'FFFFFFFFFFFFFFFF'.

5.1.4.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|--|---|
| 1 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = 'EE' and destination G _{ID} = G _{ID} of the loop back gate. | |
| 2 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPE_LOOP_BACK. | |
| 3 | HS → HCUT | Open PIPE on PIPE_LOOP_BACK. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '00' and destination G _{ID} = G _{ID} of identity management gate. | |
| 6 | HCUT → HS | Send ANY_OK, with parameters of 5 bytes as follows: <ul style="list-style-type: none"> • Source H_{ID} = H_{ID} of host simulator. • Source G_{ID} = source G_{ID} in command. • Destination H_{ID} = destination H_{ID} in command. • Destination G_{ID} = destination G_{ID} in command. • P_{ID} = a previously unallocated P_{ID}. Designate the create pipe PIPE_ID_MAN. | RQ4.14, RQ4.18, RQ7.2 RQ8.3, RQ6.30, RQ8.7 |
| 7 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on (PIPE_ID_MAN). | |
| 8 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ4.14 |
| 9 | User → HCUT | Trigger both the host controller and the host simulator to be powered down. | |
| 10 | HCUT → HS | Power down the host simulator. | |
| 11 | HCUT | Powered down. | |

| Step | Direction | Description | RQ |
|------|-------------|--|--------|
| 12 | User → HCUT | Trigger both the host controller and the host simulator to be powered up. | |
| 13 | HCUT | Powered up. | |
| 14 | HCUT → HS | Power up the host simulator. | |
| 15 | HS → HCUT | Send ANY_GET_PARAMETER (SESSION_IDENTITY) on PIPE1. | |
| 16 | HCUT → HS | Send ANY_OK, with parameter value equal to the parameter value before the terminal was powered down. | RQ7.2 |
| 17 | HS → HCUT | Send ANY_CLOSE_PIPE on PIPE1. | |
| 18 | HCUT → HS | Send ANY_OK. | RQ4.13 |
| 19 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on PIPE_ID_MAN. | |
| 20 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ4.13 |
| 21 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_ID_MAN. | |
| 22 | HCUT → HS | Send ANY_OK. | RQ4.13 |
| 23 | HS → HCUT | Send EVT_POST_DATA on PIPE_LOOP_BACK. | |
| 24 | HCUT → HS | Send EVT_POST_DATA on PIPE_LOOP_BACK. | RQ4.13 |

5.1.5 Registries

5.1.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 4.5.

| | |
|---------|---|
| RQ4.21 | For all gates defined in ETSI TS 102 622 [1], parameter identifiers in the range of '00' to 'EF' are reserved for use in ETSI TS 102 622 [1]. |
| RQ4.22 | A new instance of the registry is created for every pipe that connects to the gate. |
| RQ4.23 | Upon pipe creation all registry parameters with access rights Read-write (RW) or Write-only (WO) shall be set to their default values. |
| RQ4.24 | Upon pipe creation all read-only (RO) parameters shall be set by the entity managing the registry to an appropriate value which may differ from the default values. |
| RQ4.25 | When a pipe is deleted its registry instance is also deleted. |
| RQ4.26 | Registry parameters which are in the range of '00' to 'EF' but which are not allocated in ETSI TS 102 622 [1] shall not be present in the registry. |
| NOTE 1: | As the specification of registry parameters is specific to each individual registry, RQ4.21, RQ4.23 and RQ4.24 are not tested in this clause, but are tested in other clauses of the present document for each individual registry. |
| NOTE 2: | RQ4.22 is not currently tested as ETSI TS 102 622 [1] does not specify any gates with the required properties to exercise this functionality. |
| NOTE 3: | Development of test cases for RQ4.26 is FFS. |

5.1.5.2 Test case 1: registry deletion

5.1.5.2.1 Test execution

Assignment of terms to entities referenced in SR1: G_{ID} of gate = GATE_X, registry parameter identifier = REG_PARAM.

There are no test case-specific parameters for this test case.

5.1.5.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.

5.1.5.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|--------|
| 1 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = 'EE' and destination G _{ID} = GATE_X. | |
| 2 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPEa. | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_SET_PARAMETER(REG_PARAM) on PIPEa, with a value different from the default value. | |
| 6 | HCUT → HS | Send ANY_OK (parameters are not checked). | |
| 7 | HS → HCUT | Send ADM_DELETE_PIPE(PIPEa) on PIPE1. | |
| 8 | HCUT → HS | Send ANY_OK (parameters are not checked). | |
| 9 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with G _{ID} = GATE_X. | |
| 10 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPEb. (The P _{ID} used for PIPEb may be the same as or may be different from the P _{ID} used for PIPEa.) | |
| 11 | HS → HCUT | Send ANY_OPEN_PIPE on PIPEb. | |
| 12 | HCUT → HS | Send ANY_OK. | |
| 13 | HS → HCUT | Send ANY_GET_PARAMETER(REG_PARAM) on PIPEb. | |
| 14 | HCUT → HS | Send ANY_OK with parameter value equal to the default value of REG_PARAM. | RQ4.25 |

5.2 HCP

5.2.1 HCP packets

5.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 5.1.

| | |
|---------|---|
| RQ5.1 | The host controller shall use the correct structure for transmitted HCP packets. |
| RQ5.2 | The host controller shall recognize correctly structured received HCP packets. |
| RQ5.3 | When receiving a packet, the host controller as destination host forwards the packet to the destination gate. |
| RQ5.4 | When it receives a packet from a host, the host controller uses the value of P _{ID} to forward a packet to the destination host. |
| RQ5.5 | When it receives a packet from a host, the host controller shall verify that the pipe identifier is used by a host involved in the creation of the pipe. |
| NOTE 1: | RQ5.1 and RQ5.2 are implicitly tested by the testing of higher layers in other clauses of the present document. |
| NOTE 2: | RQ5.3 is internal to the host controller and is not tested in this clause. It will be implicitly tested in many other test cases within the present document. |
| NOTE 3: | RQ5.4 and RQ5.5 are tested in clause 5.5.1.1.2 of ETSI TS 102 695-3 [10]. |

5.2.2 HCP message structure

5.2.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 5.2.

| | |
|---------|--|
| RQ5.6 | The host controller shall use the correct structure for transmitted HCP messages. |
| RQ5.7 | Type value 3 shall not be used. |
| RQ5.8 | The host controller shall recognize correctly structured received HCP messages. |
| RQ5.9 | A gate shall only accept a command or an event on a pipe when the state of that pipe is open unless otherwise stated. |
| RQ5.10 | A gate shall not send a command or event on a pipe when it is waiting for a response to a previous command on that pipe unless otherwise stated. |
| NOTE 1: | RQ5.6 and RQ5.8 are implicitly tested by the testing of higher layers in other clauses of the present document. |
| NOTE 2: | RQ5.7 and RQ5.10 are not tested, as they are non-occurrence RQs. |

5.2.2.2 Test case 1: commands/events on pipe which is not open

5.2.2.2.1 Test execution

There are no test case-specific parameters for this test case.

5.2.2.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.

5.2.2.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|-------|
| 1 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of identity management gate. | |
| 2 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPE_ID_MAN. | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_ID_MAN. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on PIPE_ID_MAN. | |
| 6 | HCUT → HS | Send ANY_OK (parameters are not checked). | RQ5.9 |
| 7 | HS → HCUT | Send ANY_CLOSE_PIPE on PIPE_ID_MAN. | |
| 8 | HCUT → HS | Send ANY_OK (parameters are not checked). | |
| 9 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on PIPE_ID_MAN. | |
| 10 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ5.9 |
| 11 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = 'EE' and destination G _{ID} = G _{ID} of the loop back gate. | |
| 12 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPE_LOOP_BACK. | |
| 13 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_LOOP_BACK. | |
| 14 | HCUT → HS | Send ANY_OK. | |
| 15 | HS → HCUT | Send EVT_POST_DATA containing '01 02 03 04' on PIPE_LOOP_BACK. | |
| 16 | HCUT → HS | Send EVT_POST_DATA containing '01 02 03 04' on PIPE_LOOP_BACK. | RQ5.9 |
| 17 | HS → HCUT | Send ANY_CLOSE_PIPE on PIPE_LOOP_BACK. | |
| 18 | HCUT → HS | Send ANY_OK (parameters are not checked). | |
| 19 | HS → HCUT | Send EVT_POST_DATA containing '01 02 03 04' on PIPE_LOOP_BACK. | |
| 20 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_LOOP_BACK. | |
| 21 | HCUT → HS | Send ANY_OK. | RQ5.9 |

5.2.3 Message fragmentation

5.2.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 5.3.

| | |
|--------|---|
| RQ5.11 | Message fragmentation shall be used when the size of the message is larger than supported by the underlying data link layer. |
| RQ5.12 | Messages shall be fragmented according to the rules specified in ETSI TS 102 622 [1]. |
| RQ5.13 | The destination gate is responsible for rebuilding the message from the fragmented messages. |
| RQ5.14 | If a reset of the underlying data link layer occurs, fragments of a partially received message shall be discarded and a partially sent message shall be re-sent from the beginning. |
| NOTE: | Development of test cases for RQ5.11, RQ5.12, RQ5.13 and RQ5.14 is FFS. |

5.3 Instructions

5.3.1 Commands

5.3.1.1 Overview

5.3.1.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.1.

| | |
|-------|--|
| RQ6.1 | For all gates, the host controller shall not use RFU instruction values ('05' to '0F') in commands. |
| RQ6.2 | For administration gates, the host controller shall not use RFU instruction values ('16' to '3F') in commands. |
| RQ6.3 | For gates defined in ETSI TS 102 622 [1], the host controller shall not use instruction values between '10' and '3F' which are not allocated in ETSI TS 102 622 [1]. |
| NOTE: | RQ6.1, RQ6.2 and RQ6.3 are not tested, as they are non-occurrence RQs. |

5.3.1.2 Generic commands

5.3.1.2.1 ANY_SET_PARAMETER

5.3.1.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.2.1.

| | |
|---------|---|
| RQ6.4 | The host controller shall reject an incorrectly formatted ANY_SET_PARAMETER command with an allowed error response code. |
| RQ6.5 | The host controller shall reject an ANY_SET_PARAMETER command if the access right for the parameter does not allow writing (i.e. is not RW or WO). |
| RQ6.6 | The host controller shall not send an ANY_SET_PARAMETER command if the access right for the parameter does not allow writing (i.e. is not RW or WO). |
| RQ6.7 | When the host controller receives a valid ANY_SET_PARAMETER command, it shall write the parameter value into the registry and respond with ANY_OK without any parameters. |
| RQ6.8 | Whenever the host controller sends an ANY_SET_PARAMETER command, it shall do so correctly: <ul style="list-style-type: none"> • It shall only be sent to a gate which supports the command. • It shall always have at least one byte in the command parameters. • The parameter identifier shall match one of those defined for the specific gate. • The parameter value shall be a valid value as defined for the specific gate. |
| NOTE 1: | RQ6.6 is not tested, as it is a non-occurrence RQ. |
| NOTE 2: | RQ6.7 and RQ6.8 are not tested in this clause, as they are effectively tested in other clauses of the present document for each individual registry parameter. |
| NOTE 3: | Test cases for RQ6.5 and RQ6.4 are presented in ETSI TS 102 695-3 [10]. |

5.3.1.2.2 ANY_GET_PARAMETER

5.3.1.2.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.2.2.

| | |
|---|--|
| RQ6.9 | The host controller shall reject an incorrectly formatted ANY_GET_PARAMETER command with an allowed error response code. |
| RQ6.10 | The host controller shall reject an ANY_GET_PARAMETER command if the access right for the parameter does not allowed reading (i.e. is not RW or RO). |
| RQ6.11 | The host controller shall not send an ANY_GET_PARAMETER command if the access right for the parameter does not allowed reading (i.e. is not RW or RO). |
| RQ6.12 | When the host controller receives a valid ANY_GET_PARAMETER command, it shall respond with ANY_OK with the value of the parameter. |
| RQ6.13 | Whenever the host controller sends an ANY_GET_PARAMETER command, it shall do so correctly: <ul style="list-style-type: none"> • It shall only be sent to a gate which supports the command. • It shall always have exactly one byte in the command parameters. • The parameter identifier shall match one of those defined for the specific gate. |
| NOTE 1: RQ6.11 is not tested, as it is a non-occurrence RQ. | |
| NOTE 2: RQ6.12 and RQ6.13 are not tested, as they are effectively tested in other clauses of the present document for each individual registry parameter. | |
| NOTE 3: Test cases for RQ6.10 and RQ6.9 are presented in ETSI TS 102 695-3 [10]. | |

5.3.1.2.3 ANY_OPEN_PIPE

5.3.1.2.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.2.3.

| | |
|--|---|
| RQ6.14 | The host controller shall reject an incorrectly formatted ANY_OPEN_PIPE command. |
| RQ6.15 | When the host controller receives a valid ANY_OPEN_PIPE command on a closed pipe, it shall open the pipe and return ANY_OK without any parameter. |
| RQ6.16 | When the host controller sends an ANY_OPEN_PIPE command, it shall contain no command parameters. |
| RQ6.17 | When the host controller receives ANY_OK in response to an ANY_OPEN_PIPE command, it shall open the pipe. |
| NOTE 1: In ETSI TS 102 622 [1], it is not specified whether ANY_OPEN_PIPE is valid over a pipe which is already open. This is therefore not listed as a conformance requirement. | |
| NOTE 2: Test cases for RQ6.16 and RQ6.17 are presented in ETSI TS 102 695-3 [10]. | |

5.3.1.2.3.2 Test case 1: ANY_OPEN_PIPE reception

5.3.1.2.3.2.1 Test execution

There are no test case-specific parameters for this test case.

5.3.1.2.3.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.

5.3.1.2.3.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|--------|
| 1 | HS → HCUT | Send ANY_CLOSE_PIPE on PIPE1. | |
| 2 | HCUT → HS | Send ANY_OK. | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE with parameter '00' on PIPE1. | |
| 4 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ6.14 |
| 5 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with no parameters. | RQ6.15 |
| 7 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of identity management gate. | |
| 8 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPE_ID_MAN. | |
| 9 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_ID_MAN. | |
| 10 | HCUT → HS | Send ANY_OK with no parameters. | RQ6.15 |

5.3.1.2.4 ANY_CLOSE_PIPE

5.3.1.2.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.2.4.

| | |
|--------|--|
| RQ6.18 | The host controller shall reject an incorrectly formatted ANY_CLOSE_PIPE command. |
| RQ6.19 | When the host controller receives a valid ANY_CLOSE_PIPE on an open pipe, it shall close the pipe and respond with ANY_OK and no parameters. |
| RQ6.20 | When the host controller sends an ANY_CLOSE_PIPE command, it shall contain no command parameters. |
| RQ6.21 | When the host controller receives ANY_OK in response to an ANY_CLOSE_PIPE command, it shall close the pipe. |
| NOTE: | Test cases for RQ6.20 and RQ6.21 are presented in ETSI TS 102 695-3 [10]. |

5.3.1.2.4.2 Test case 1: ANY_CLOSE_PIPE reception

5.3.1.2.4.2.1 Test execution

There are no test case-specific parameters for this test case.

5.3.1.2.4.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.

5.3.1.2.4.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|--------|
| 1 | HS → HCUT | Send ANY_CLOSE_PIPE with parameter '00' on PIPE1. | |
| 2 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ6.18 |
| 3 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of identity management gate. | |
| 4 | HCUT → HS | Send ANY_OK (parameters are not checked); designate the created pipe PIPE_ID_MAN. | |
| 5 | HS → HCUT | Send ANY_CLOSE_PIPE on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with no parameters. | RQ6.19 |
| 7 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of identity management gate. | |
| 8 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ6.19 |

5.3.1.3 Administration commands

5.3.1.3.1 ADM_CREATE_PIPE

5.3.1.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.3.1.

| | | |
|---|----------------|--|
| RQ6.22 | | When the host controller receives an ADM_CREATE_PIPE command, it shall use the WHITELIST defined by the destination host in order to verify that the source host is authorized to create a pipe. |
| RQ6.23 | | When the pipe was successfully created, the host controller shall send the response ANY_OK in response to the ADM_CREATE_PIPE command, with parameters as specified in ETSI TS 102 622 [1]. |
| RQ6.42 | | When receiving ADM_CREATE_PIPE, the host controller shall accept any gate identifier being used as source gate. |
| RQ6.43 | Rel-11 upwards | Only one pipe is allowed to be created for each combination of source host/source gate and destination host/destination gate. |
| NOTE 1: All conformance requirements for the referenced clause are included in clauses 5.5.1.1 and 5.1.4.3 of the present document. | | |
| NOTE 2: Development of test cases for RQ6.42 and RQ6.43 is FFS. | | |

5.3.1.3.2 ADM_NOTIFY_PIPE_CREATED

5.3.1.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.3.2.

| | | |
|--|--|---|
| RQ6.24 | | When the host controller sends an ADM_NOTIFY_PIPE_CREATED command, the command parameters shall be 5 bytes long. |
| RQ6.25 | | When the host controller sends an ADM_NOTIFY_PIPE_CREATED command as a result of an ADM_CREATE_PIPE command being received from a host, the source H _{ID} in the command parameters shall be the H _{ID} of that host. |
| NOTE: All conformance requirements for the referenced clause are included in clause 5.5.1.1 of the present document. | | |

5.3.1.3.3 ADM_DELETE_PIPE

5.3.1.3.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.3.3.

| | | |
|--|--|---|
| RQ6.26 | | The host that requested the deletion of the pipe can only be the source host or destination host. |
| RQ6.27 | | When the pipe is successfully deleted, the host controller shall send the response ANY_OK without parameters. |
| NOTE: All conformance requirements for the referenced clause are included in clause 5.5.1.2 of the present document. | | |

5.3.1.3.4 ADM_NOTIFY_PIPE_DELETED

5.3.1.3.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.3.4.

| | | |
|--|--|---|
| RQ6.28 | | When the host controller sends an ADM_NOTIFY_PIPE_DELETED command, the command parameters shall be 1 byte long. |
| NOTE: All conformance requirements for the referenced clause are included in clause 5.5.1.2 of the present document. | | |

5.3.1.3.5 ADM_CLEAR_ALL_PIPE

5.3.1.3.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.3.5.

| | |
|--------|---|
| RQ6.29 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command and the data link layer specified in ETSI TS 102 613 [2] is used, it shall interpret the two bytes in the command parameters as the identity reference data, and shall use the identity reference data to initialize the reference data used by the host controller to check the UICC host identity. |
| RQ6.30 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command, it shall delete all the dynamic pipes connected to the requesting host, close all static pipes connected to the requesting host and set all registry values related to static pipes connected to the requesting host to their default values. |
| RQ6.31 | When ADM_CLEAR_ALL_PIPE is successful the host controller shall respond with an ANY_OK without parameters. |
| NOTE: | All conformance requirements for the referenced clause are included in clause 5.5.1.3 of the present document. |

5.3.1.3.6 ADM_NOTIFY_ALL_PIPE_CLEARED

5.3.1.3.6.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.1.3.6.

| | |
|--------|--|
| RQ6.32 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command from a requesting host, it shall send ADM_NOTIFY_ALL_PIPE_CLEARED to every host with at least one pipe to the requesting host. |
| RQ6.33 | When the host controller sends an ADM_NOTIFY_ALL_PIPE_CLEARED command with the host controller as the requesting host, it shall delete all dynamic pipes between the host controller and the host and shall close all static pipes between the host and the host controller. |
| RQ6.34 | When the host controller sends an ADM_NOTIFY_ALL_PIPE_CLEARED command, the command parameters shall be one byte long and shall contain the H _{ID} of the requesting host. |
| NOTE: | All conformance requirements for the referenced clause are included in clause 5.5.1.3 of the present document. |

5.3.2 Responses

5.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.2.

| | |
|---------|---|
| RQ6.35 | A response shall be sent to all commands received even to those unknown to the receiving gate. |
| RQ6.36 | Responses received out of order (i.e. if no command was sent previously) shall be discarded. |
| RQ6.37 | For a received command which is defined in table 16 in ETSI TS 102 622 [1], the host controller shall only return a response code which is specified for that command in table 16 in ETSI TS 102 622 [1]. |
| NOTE 1: | Development of test cases for RQ6.37 is FFS. |
| NOTE 2: | Test cases for RQ6.36 are presented in ETSI TS 102 695-3 [10]. |

5.3.2.2 Test case 1: response to unknown command

5.3.2.2.1 Test execution

There are no test case-specific parameters for this test case.

5.3.2.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.

5.3.2.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|--------|
| 1 | HS → HCUT | Send command with an RFU instruction value on PIPE1. | |
| 2 | HCUT → HS | Send response (contents are not checked). | RQ6.35 |

5.3.3 Events

5.3.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 6.3.

| | | |
|---|-----------------|--|
| RQ6.38 | | Unknown events received shall be discarded. |
| RQ6.39 | | EVT_HOT_PLUG shall be sent by the host controller to any other connected host to notify the connection or disconnection of a host to the host controller. |
| RQ6.40 | Rel-7 to Rel-12 | When the host controller send EVT_HOT_PLUG, it shall contain no parameters. |
| RQ6.44 | Rel-13 upwards | EVT_HOT_PLUG sent by the host controller shall not have parameters when sent to hosts with HCI_VERSION '01'. |
| RQ6.45 | Rel-13 upwards | If EVT_HOT_PLUG is sent by the host controller to a host with HCI_VERSION '02' the inclusion of parameters is optional. |
| RQ6.46 | Rel-13 upwards | When the host controller send EVT_HOT_PLUG, it might contain two parameters: <ul style="list-style-type: none"> • H_{ID} identifies the host generating the event; and • STATUS. |
| RQ6.47 | Rel-13 upwards | The host controller shall set STATUS to '00' if the host has been removed from the HCI network. |
| RQ6.48 | Rel-13 upwards | The host controller shall set STATUS to '01' if the host has been inserted in the HCI network and lower layer identity check has been successful. |
| RQ6.49 | Rel-13 upwards | The host controller shall set STATUS to '02' if the host has been inserted in the HCI network and lower layer identity check has failed. |
| RQ6.50 | Rel-13 upwards | the host controller shall send EVT_TERMINAL_HOST_INFORMATION to a host to provide information related to an interaction previously requested by this host. |
| RQ6.51 | Rel-13 upwards | When the host controller send EVT_TERMINAL_HOST_INFORMATION , it shall contain two parameters: REQUEST_ID and INFORMATION. |
| RQ6.52 | Rel-13 upwards | The host controller shall set REQUEST_ID field as defined in table 17b in ETSI TS 102 622 [1]. |
| RQ6.53 | Rel-13 upwards | For REQUEST_ID '00', the host controller shall set INFORMATION to '00' if the terminal host has been woken up and is in 'ACTIVE' state. |
| RQ6.54 | Rel-13 upwards | For REQUEST_ID '00', the host controller shall set INFORMATION to '01' if the terminal temporarily cannot be woken up and remains in 'SLEEP' state. |
| RQ6.55 | Rel-13 upwards | For REQUEST_ID '00', the host controller shall set INFORMATION to '02' if the terminal cannot be woken up as it is in 'DISCONNECTED' state. |
| RQ6.41 | | For gates defined in ETSI TS 102 622 [1], the host controller shall not use event values which are not allocated in ETSI TS 102 622 [1]. |
| NOTE 1: RQ6.41 is not tested, as it is a non-occurrence RQ. | | |
| NOTE 2: RQ6.39 and RQ6.40 are tested in clause 5.4.2.1.1. | | |
| NOTE 3: Development of test cases for RQ6.44, RQ6.45, RQ6.46, RQ6.47, RQ6.48, RQ6.49, RQ6.50, RQ6.51, RQ6.52, RQ6.53, RQ6.54 and RQ6.55 is FFS. | | |

5.3.3.2 Test case 1: reception of unknown events

5.3.3.2.1 Test execution

There are no test case-specific parameters for this test case.

5.3.3.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- A pipe (PIPE_ID_MAN) has been created to the host controller's identity management gate, and is open.

5.3.3.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|--------|
| 1 | HS → HCUT | Send event with an RFU instruction value on PIPE_ID_MAN. | |
| 2 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on PIPE_ID_MAN. | |
| 3 | HCUT → HS | Send response with ANY_OK and value of GATES_LIST. | RQ6.38 |

5.4 GATES and subclauses

5.4.1 GATES

5.4.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 7.

| | |
|---------|--|
| RQ7.1 | Gates shall support the commands and events specified for them in tables 18 and 19 of ETSI TS 102 622 [1]. |
| NOTE 1: | RQ1 is not tested in this clause, as it is effectively tested in other clauses of the present document. |
| NOTE 2: | ANY_GET_PARAMETER and ANY_SET_PARAMETER are not tested in this clause, as they are tested in the specific clauses for each gate for testing registry parameters. |
| NOTE 3: | ADM_CREATE_PIPE, ADM_DELETE_PIPE and ADM_CLEAR_ALL_PIPE are not tested for the host controller administration gate, as they are tested in the specific clauses for each command. |
| NOTE 4: | EVT_POST_DATA is not tested for the loop back gate, as it is tested in the clause 5.5.5. |
| NOTE 5: | EVT_HCI_END_OF_OPERATION is not tested for the host controller link management gate, as the reaction of the host controller is not specified in ETSI TS 102 622 [1]. |

5.4.2 Management gates

5.4.2.1 Administration gates

5.4.2.1.1 Host controller administration gate

5.4.2.1.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 7.1.1.1 and 4.5.

| | |
|--------|---|
| RQ4.26 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ6.32 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command from a requesting host, it shall send ADM_NOTIFY_ALL_PIPE_CLEARED to every host with at least one pipe to the requesting host. |
| RQ7.2 | The registry of the host controller administration gate shall be persistent. |
| RQ7.3 | The host controller shall use a default value for SESSION_IDENTITY of 'FFFFFFFFFFFFFFFF'. |
| RQ7.4 | The host controller shall apply the access condition of RW to SESSION_IDENTITY. |
| RQ7.5 | The host controller shall only accept values of SESSION_IDENTITY of length 8 bytes. |
| RQ7.6 | The host controller shall use a default value for MAX_PIPE of between '10' and '7D' inclusive. |
| RQ7.7 | The host controller shall apply the access condition of RO to MAX_PIPE. |
| RQ7.8 | The host controller shall allow MAX_PIPE created dynamic pipes for the host. |
| RQ7.9 | The host controller shall use a default value for WHITELIST of an empty array. |
| RQ7.10 | The host controller shall apply the access condition of RW to WHITELIST. |
| RQ7.11 | The host controller shall use a default value for HOST_LIST containing the list of the hosts that are accessible from this host controller including the host controller itself, as a list of host identifiers. |
| RQ7.12 | The host controller shall apply the access condition of RO to HOST_LIST. |

| | | |
|--|----------------|---|
| RQ7.13 | | The HOST_LIST shall contain the list of the hosts that are accessible from this host controller including the host controller itself. |
| RQ7.14 | | The host controller shall reject create pipe requests if the source host is not listed in the WHITELIST of the destination host. |
| RQ7.45 | Rel-12 upwards | The host controller shall apply the access condition of RO to HOST_ID of length 1 byte. |
| RQ7.46 | Rel-12 upwards | The host controller shall use a default value for HOST_TYPE of 'FFFF'. |
| RQ7.47 | Rel-12 upwards | The host controller shall apply the access condition of RW to HOST_TYPE. |
| RQ7.48 | Rel-12 upwards | The host controller shall only accept values of HOST_TYPE of length 2 bytes. |
| RQ7.49 | Rel-12 upwards | The host controller shall use a default value for HOST_TYPE_LIST of '0000'. |
| RQ7.50 | Rel-12 upwards | The host controller shall apply the access condition of RO to HOST_TYPE_LIST of length 2*N ₁ bytes, where N ₁ the list of the hosts that are accessible from this host controller including the host controller itself. |
| RQ7.56 | Rel-13 upwards | The host controller shall apply the access condition of RO to MANAGING_HOST_ID. |
| RQ7.57 | Rel-13 upwards | The host controller shall apply the access condition of WO to MH_CAPABILITY. |
| RQ7.58 | Rel-13 upwards | If the host controller changes the MH, it is in charge of reinitializing the HCI network and all the hosts attached. |
| RQ7.59 | Rel-13 upwards | The host controller shall apply the access condition of RO to MH_AVAILABILITY_STATE. |
| RQ7.51 | Rel-12 upwards | The host controller shall notify all connected hosts with a EVT_HOT_PLUG sent to each host administration gate at initial power-up of the system, when all hosts in the system have completed the session initialization as described in clause 8.4 in ETSI TS 102 622 [1]. |
| RQ7.52 | Rel-12 upwards | The host controller shall notify all connected hosts with a EVT_HOT_PLUG sent to each host administration gate when a host is connected to the HCI network and has completed the session initialization as described in clause 8.4 in ETSI TS 102 622 [1]. |
| RQ7.53 | Rel-12 upwards | The host controller shall notify all connected hosts with a EVT_HOT_PLUG sent to each host administration gate when a host is disconnected from the HCI network. |
| NOTE 1: Development of test cases for RQ4.26, RQ7.8, RQ7.45, RQ7.49, RQ7.50, RQ7.56, RQ7.57, RQ7.58 and RQ7.59 is FFS. | | |
| NOTE 2: RQ7.13 is only tested in the context of RQ7.11 (i.e. default value). | | |
| NOTE 3: RQ7.14 is also covered in clause 8.1.1 of ETSI TS 102 622 [1], covered by clause 5.5.1.1 of the present document. This RQ is therefore not tested within this clause, as it is effectively tested in clause 5.5.1.1. | | |
| NOTE 4: RQ7.2 is tested in clause 5.1.4.3 of the present document. | | |

Reference: ETSI TS 102 622 [1], clause 6.3.

| | |
|--------|---|
| RQ6.39 | EVT_HOT_PLUG shall be sent by the host controller to any other connected host to notify the connection or disconnection of a host to the host controller. |
| RQ6.40 | When the host controller send EVT_HOT_PLUG, it shall contain no parameters. |

5.4.2.1.1.2 Test case 1: SESSION_IDENTITY

5.4.2.1.1.2.1 Test execution

There are no test case-specific parameters for this test case.

5.4.2.1.1.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.

5.4.2.1.1.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|-----------------|
| 1 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with appropriate parameter as required by the lower layer. | |
| 2 | HCUT → HS | Send ANY_OK. | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 4 | HCUT → HS | Send ANY_OK (parameters are not checked). | |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with parameter value 'FFFFFFFFFFFFFFF'. | RQ7.3, RQ7.4 |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07 08') on PIPE1. | |
| 8 | HCUT → HS | Send ANY_OK. | RQ7.4 |
| 9 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 10 | HCUT → HS | Send ANY_OK with parameter value '01 02 03 04 05 06 07 08'. | RQ7.4 |
| 11 | HS → HCUT | Send ANY_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07') on PIPE1. | |
| 12 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ7.5 |

5.4.2.1.1.3 Test case 2: MAX_PIPE

5.4.2.1.1.3.1 Test execution

There are no test case-specific parameters for this test case.

5.4.2.1.1.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.

5.4.2.1.1.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|-----------------|
| 1 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with appropriate parameter as required by the lower layer. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ6.32 |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER(MAX_PIPE) on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with parameter value V_MAX_PIPE. | RQ7.6, RQ7.7 |
| 7 | HS → HCUT | If V_MAX_PIPE = '10', send ANY_SET_PARAMETER(MAX_PIPE, '11') on PIPE1. Otherwise send ANY_SET_PARAMETER(MAX_PIPE, '10') on PIPE1. | |
| 8 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ7.7 |

5.4.2.1.1.4 Test case 3: WHITELIST

5.4.2.1.1.4.1 Test execution

There are no test case-specific parameters for this test case.

5.4.2.1.1.4.2 Initial conditions

The last value of WHITELIST in the host controller's registry is not an empty array:

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.

5.4.2.1.1.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|------------------|
| 1 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with appropriate parameter as required by the lower layer. | |
| 2 | HCUT → HS | Send ANY_OK. | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER(WHITELIST) on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with a parameter of length zero. | RQ7.9, RQ7.10 |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER(WHITELIST, '01') on PIPE1. | |
| 8 | HCUT → HS | Send ANY_OK. | RQ7.10 |
| 9 | HS → HCUT | Send ANY_GET_PARAMETER(WHITELIST) on PIPE1. | |
| 10 | HCUT → HS | Send ANY_OK with parameter value '01'. | RQ7.10 |

5.4.2.1.1.5 Test case 4: HOST_LIST

5.4.2.1.1.5.1 Test execution

There are no test case-specific parameters for this test case.

5.4.2.1.1.5.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.

5.4.2.1.1.5.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|------------------------------|
| 1 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with appropriate parameter as required by the lower layer. | |
| 2 | HCUT → HS | Send ANY_OK. | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER(HOST_LIST) on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with parameter value V_HOST_LIST. | RQ7.11, RQ7.12, RQ7.13 |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER(HOST_LIST, '00') on PIPE1. | |
| 8 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ7.12 |

5.4.2.1.1.6 Test case 5: EVT_HOT_PLUG - initial power-up

5.4.2.1.1.6.1 Test execution

There are no test case-specific parameters for this test case.

5.4.2.1.1.6.2 Initial conditions

- The host simulator is currently powered down.

5.4.2.1.1.6.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|---|-------------------|
| 1 | HS | Change the host configuration such that the lower layer identity check mechanism will fail. | |
| 2 | User → HCUT | Trigger the host controller to power up and to activate the lower layer. | |
| 3 | HCUT → HS | Power up and activate the lower layer. | |
| 4 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 5 | HCUT → HS | Send response (contents are not checked). | |
| 6 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with appropriate parameter as required by the lower layer. | |
| 7 | HCUT → HS | Send ANY_OK. | |
| 8 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 9 | HCUT → HS | Send ANY_OK (parameters are not checked). | |
| 10 | HS → HCUT | Send ANY_GET_PARAMETER(HOST_TYPE) on PIPE1. | |
| 11 | HCUT → HS | Send ANY_OK with parameter value 'FFFF'. | RQ7.46, RQ7.47 |
| 12 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 13 | HCUT → HS | Send ANY_OK with parameter value 'FFFFFFFFFFFFFFFF'. | |
| 14 | HS → HCUT | Send ANY_SET_PARAMETER(HOST_TYPE, '02 00') on PIPE1 | |
| 15 | HCUT → HS | Send ANY_OK. | RQ7.47, RQ7.48 |
| 16 | HS → HCUT | Send ANY_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07 08') on PIPE1. | |
| 17 | HCUT → HS | Send ANY_OK. | |
| 18 | HCUT → HS | Send EVT_HOT_PLUG on PIPE1. | RQ7.51 RQ6.40 |

5.4.2.1.1.7 Test case 6: EVT_HOT_PLUG - connected/disconnect host from HCI network

5.4.2.1.1.7.1 Test execution

There are no test case-specific parameters for this test case.

5.4.2.1.1.7.2 Initial conditions

- Host_a is connected to HCUT.
- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.

5.4.2.1.1.7.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|---|----------------------------|
| 1 | User → HCUT | Disconnect Host_a from terminal. | |
| 2 | HCUT → HS | Send EVT_HOT_PLUG on PIPE1. | RQ7.53 RQ6.39 RQ6.40 |
| 3 | | If the terminal requires power down, the steps 4 - 11 will be performed, otherwise continue from step 12. | |
| 4 | HCUT → HS | Power down the host simulator. | |
| 5 | HS | Change the host configuration such that the lower layer identity check mechanism will pass. | |
| 6 | User → HCUT | Trigger the host simulator to be powered up. | |
| 7 | HCUT → HS | Power up the host simulator. | |
| 8 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 9 | HCUT → HS | Send response (contents are not checked). | |
| 10 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 11 | HCUT → HS | Send ANY_OK with parameter value containing the same value as previously set. | |
| 12 | HCUT → HS | Connect Host_a to terminal. | |
| 13 | HCUT → HS | Send EVT_HOT_PLUG on PIPE1. | RQ7.52 RQ6.39 RQ6.40 |

5.4.2.1.2 Host administration gate

5.4.2.1.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 7.1.1.2.

There are no conformance requirements for the terminal for the referenced clause.

5.4.2.2 Link management gate

5.4.2.2.1 Host controller link management gate

5.4.2.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 7.1.2.1 and 4.5.

| | |
|---|---|
| RQ4.26 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ7.15 | The host controller shall use a default value for REC_ERROR of '0000'. |
| RQ7.16 | The host controller shall apply the access condition of RW to REC_ERROR. |
| RQ7.17 | The host controller shall only accept values of REC_ERROR of length 2 bytes. |
| NOTE 1: Development of test cases for RQ4.26 is FFS. | |
| NOTE 2: Test cases for RQ7.15, RQ7.16 and RQ7.17 are presented in ETSI TS 102 695-3 [10]. | |

5.4.2.2.2 Host link management gate

5.4.2.2.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 7.1.2.2.

| | |
|--|---|
| RQ7.18 | The host controller shall only set values of REC_ERROR with length 2 bytes. |
| NOTE: Test cases for RQ7.18 are presented in ETSI TS 102 695-3 [10]. | |

5.4.2.3 Identity management gate

5.4.2.3.1 Local registry

5.4.2.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 7.1.3 and 4.5.

NOTE: This clause covers the conformance requirements contained within ETSI TS 102 622 [1], clause 7.1.3 for the local registry. The requirements for the remote registry are contained in clause 5.4.2.3.2.

| | | |
|---------|--|--|
| RQ4.26 | | Registry parameters which are in the range of '00' to 'EF' but which are not allocated in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ7.19 | | The registry of the identity management gate shall be persistent. |
| RQ7.20 | | This gate shall be provided by all hosts and the host controller. |
| RQ7.41 | Rel-11 upwards | As destination gate, the identity management gate in the host controller shall accept at least one pipe from each host in its WHITELIST. |
| RQ7.21 | | If present in the host controller, the host controller shall use a value for VERSION_SW of length 3 bytes. |
| RQ7.22 | | If present in the host controller, the host controller shall apply the access condition of RO to VERSION_SW. |
| RQ7.23 | | If present in the host controller, the host controller shall use a value for VERSION_HARD of length 3 bytes. |
| RQ7.24 | | If present in the host controller, the host controller shall apply the access condition of RO to VERSION_HARD. |
| RQ7.25 | | If present in the host controller, the host controller shall use a value for VENDOR_NAME of maximum length 20 bytes with UTF8 coding. |
| RQ7.26 | | If present in the host controller, the host controller shall apply the access condition of RO to VENDOR_NAME. |
| RQ7.27 | | If present in the host controller, the host controller shall use a value for MODEL_ID of length 1 byte. |
| RQ7.28 | | If present in the host controller, the host controller shall apply the access condition of RO to MODEL_ID. |
| RQ7.29 | Rel-7 to Rel-11 | If present in the host controller, the host controller shall apply the access condition of RO to HCI_VERSION. |
| RQ7.54 | Rel-12 upwards | The HCI_VERSION shall be provided by the host controller identity management gate and shall apply the access condition RO for it. |
| RQ7.30 | | The host controller shall use a value for GATES_LIST containing the list of all gates that accept dynamic pipes as an array of gate identifiers. |
| RQ7.31 | | The host controller shall apply the access condition of RO to GATES_LIST. |
| RQ7.32 | Rel-7 to Rel-11 | A host controller according to the present document shall set the HCI_VERSION parameter if provided to '01'. |
| RQ7.55 | Rel-12 upwards | A host controller according to the present document shall set the HCI_VERSION parameter to '02'. |
| RQ7.42 | Rel-11 upwards | If present in the host controller, the MAX_CURRENT parameter shall represent the maximum current that it is able to provide to a host during operation as defined for the different contactless mode of operation. |
| RQ7.43 | Rel-11 upwards | If present in the host controller, the host controller shall use a value for MAX_CURRENT of length 1 byte. |
| RQ7.44 | Rel-11 upwards | If present in the host controller, the host controller shall apply the access condition of RO to MAX_CURRENT. |
| NOTE 1: | Development of test cases for RQ4.26, RQ7.41, RQ7.42, RQ7.43 and RQ7.44 is FFS. | |
| NOTE 2: | RQ7.19 is not tested within this clause, as the registry contains no writeable parameters which can be used to test the persistence of the registry. | |
| NOTE 3: | RQ7.20 is also covered in clause 4.3 of ETSI TS 102 622 [1], covered by clause 5.1.3 of the present document. This RQ is therefore not tested within this clause, as it is effectively tested in clause 5.1.3. | |
| NOTE 4: | Test cases for RQ7.21, RQ7.22, RQ7.23, RQ7.24, RQ7.25, RQ7.26, RQ7.27 and RQ7.28 are presented in ETSI TS 102 695-3 [10]. | |

5.4.2.3.1.2 Test case 1: registry parameters

5.4.2.3.1.2.1 Test execution

The test procedure shall be executed for each of the parameters in table 5.1.

Table 5.1

| Registry parameter (designated REG_PARAM) | Presence | Expected value (designated VALUE) | RQ to be checked in step 2 | RQ to be checked in step 4 |
|--|----------|--------------------------------------|-------------------------------|-------------------------------|
| HCI_VERSION | O | '01' | RQ7.32 | RQ7.29 |
| GATES_LIST | M | V_GATES_LIST | RQ7.30 | RQ7.31 |

5.4.2.3.1.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- A pipe (PIPE_ID_MAN) has been created to the host controller's identity management gate, and is open.

5.4.2.3.1.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|---------------------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER(REG_PARAM) on PIPE_ID_MAN. | |
| 2 | HCUT → HS | If REG_PARAM is supported by the device under test as indicated in table 4.3, send ANY_OK with parameter value equal to VALUE. If REG_PARAM is not supported by the device under test as indicated in table 4.3, send response containing an allowed error response code for the command. | See test execution clause |
| 3 | HS → HCUT | Send ANY_SET_PARAMETER(REG_PARAM, VALUE_SET) on PIPE_ID_MAN, where VALUE_SET is equal to the existing value of REG_PARAM in the host controller's registry. | |
| 4 | HCUT → HS | Send response containing an allowed error response code for the command. | See test execution clause |

5.4.2.3.1.3 Test case 2: registry parameters

5.4.2.3.1.3.1 Test execution

The test procedure shall be executed for each of the parameters in table 5.2.

Table 5.2

| Registry parameter (designated REG_PARAM) | Expected value (designated VALUE) | RQ to be checked in step 2 | RQ to be checked in step 4 |
|--|--------------------------------------|-------------------------------|-------------------------------|
| HCI_VERSION | '02' | RQ7.55 | RQ7.54 |
| GATES_LIST | V_GATES_LIST | RQ7.30 | RQ7.31 |

5.4.2.3.1.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- A pipe (PIPE_ID_MAN) has been created to the host controller's identity management gate, and is open.

5.4.2.3.1.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|---------------------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER(REG_PARAM) on PIPE_ID_MAN. | |
| 2 | HCUT → HS | Send ANY_OK with parameter value equal to the REG_PARAM value as indicated in table 4.3. | See test execution clause |
| 3 | HS → HCUT | Send ANY_SET_PARAMETER(REG_PARAM, VALUE_SET) on PIPE_ID_MAN, where VALUE_SET is equal to the existing value of REG_PARAM in the host controller's registry. | |
| 4 | HCUT → HS | Send response containing an allowed error response code for the command. | See test execution clause |

5.4.2.3.2 Remote registry

5.4.2.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 7.1.3.

NOTE: This clause covers the conformance requirements contained within ETSI TS 102 622 [1], clause 7.1.3 for the remote registry. The requirements for the local registry are contained in clause 5.4.2.3.1.

| | |
|---------|--|
| RQ7.33 | The host controller shall adhere to the access condition of RO for VERSION_SW in the host. |
| RQ7.34 | The host controller shall adhere to the access condition of RO for VERSION_HARD in the host. |
| RQ7.35 | The host controller shall adhere to the access condition of RO for VENDOR_NAME in the host. |
| RQ7.36 | The host controller shall adhere to the access condition of RO for MODEL_ID in the host. |
| RQ7.37 | The host controller shall adhere to the access condition of RO for HCI_VERSION in the host. |
| RQ7.38 | The host controller shall adhere to the access condition of RO for GATES_LIST in the host. |
| RQ7.39 | The host controller shall manage backward compatibility with previous HCI versions and use only commands and parameters defined in the specification having the lower HCI version number between of the 2 hosts involved in a transaction. |
| RQ7.40 | A host controller connected to a host with higher HCI version number shall operate according to its own version. |
| NOTE 1: | RQ7.33, RQ7.34, RQ7.35, RQ7.36, RQ7.37 and RQ7.38 are not tested, as they are non-occurrence RQs. |
| NOTE 2: | In the current version of the present document, there are no previous HCI versions. RQ7.39 is therefore not tested in the current version of the present document. |
| NOTE 3: | Development of test cases for RQ7.40 is FFS. |

5.4.2.4 Loop back gate

5.4.2.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 7.1.4 and 4.5.

| | | |
|--------|---|---|
| RQ4.26 | | Registry parameters which are in the range of '00' to 'EF' but which are not allocated in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ4.27 | Rel-11 upwards | As destination gate, the loop back gate in the host controller shall accept at least one pipe from each host in its WHITELIST. |
| NOTE: | Development of test cases for RQ4.26 and RQ4.27 is FFS. | |

5.4.3 Generic gates

Reference: ETSI TS 102 622 [1], clause 7.2.

There are no conformance requirements for the terminal for the referenced clause.

5.5 HCI procedures

5.5.1 Pipe management

5.5.1.1 Pipe creation

5.5.1.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 8.1.1, 5.1,6.1.3.1 and 6.1.3.2.

| | |
|---------|--|
| RQ6.22 | When the host controller receives an ADM_CREATE_PIPE command, it shall use the WHITELIST defined by the destination host in order to verify that the source host is authorized to create a pipe. |
| RQ8.1 | The host controller shall verify that the destination host's administration gate WHITELIST contains the host identifier of the source host. If the host identifier of the source host is not part of the WHITELIST of the destination host, the host controller shall send ANY_E_PIPE_ACCESS_DENIED response to the source host and stop any further processing of this command. |
| RQ8.2 | If the source host's host identifier is part of the WHITELIST of the destination host, the host controller shall continue with the procedure. |
| RQ8.3 | The host controller assigns an unused pipe identifier. |
| RQ8.4 | The host controller notifies the destination host that the source host requested the creation of PIPE _x . |
| RQ6.24 | When the host controller sends an ADM_NOTIFY_PIPE_CREATED command, the command parameters shall be 5 bytes long. |
| RQ6.25 | When the host controller sends an ADM_NOTIFY_PIPE_CREATED command as a result of an ADM_CREATE_PIPE command being received from a host, the source H _{ID} in the command parameters shall be the H _{ID} of that host. |
| RQ6.23 | When the pipe was successfully created, the host controller shall send the response ANY_OK in response to the ADM_CREATE_PIPE command, with parameters as specified in ETSI TS 102 622 [1]. |
| RQ8.5 | The host controller responds to ADM_CREATE_PIPE that PIPE _x has been created. |
| RQ8.6 | When the host controller wants to create a pipe then the pipe identifier is assigned and only steps 2 and 3 in figure 6 of ETSI TS 102 622 [1] are needed. |
| RQ8.7 | When a pipe is created towards the host controller then only steps 1 and 4 in figure 6 of ETSI TS 102 622 [1] are needed. |
| RQ8.8 | If the host controller does not accept the creation of the pipe, it shall respond to ADM_CREATE_PIPE with an appropriate response code. |
| NOTE 1: | RQ6.22 is contained with RQ8.1 and RQ8.3; it is therefore not explicitly tested within this clause. |
| NOTE 2: | RQ8.4 and RQ6.25 are not currently tested, as they require access to the interfaces between two hosts and the host controller. |
| NOTE 3: | RQ8.5 is a duplicate of RQ6.23; it is therefore not explicitly tested within this clause. |
| NOTE 4: | Test cases for RQ8.1, RQ8.2, RQ8.3, RQ8.6, RQ8.7, RQ8.8, RQ6.24 and RQ6.23 is presented in ETSI TS 102 695-3 [10]. |

5.5.1.2 Pipe deletion

5.5.1.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 8.1.2, 6.1.3.3 and 6.1.3.4.

| | |
|---------|--|
| RQ8.9 | After receiving a valid ADM_DELETE_PIPE command from a host, the host controller notifies the destination host (with an ADM_NOTIFY_PIPE_DELETED command). |
| RQ6.28 | When the host controller sends an ADM_NOTIFY_PIPE_DELETED command, the command parameters shall be 1 byte long. |
| RQ6.26 | The host that requested the deletion of the pipe can only be the source host or destination host. |
| RQ6.27 | When the pipe is successfully deleted, the host controller shall send the response ANY_OK without parameters. |
| RQ8.10 | When PIPE _x connects to a gate at the host controller and the connecting host requests the deletion, then only steps 1 and 4 in figure 8 of ETSI TS 102 622 [1] are needed. |
| RQ8.11 | When PIPE _x connects to a gate at the host controller and the host controller requests the deletion, then only steps 2 and 3 in figure 8 of ETSI TS 102 622 [1] are needed. |
| NOTE 1: | Further test cases for RQ6.26 are presented in ETSI TS 102 695-3 [10]. |
| NOTE 2: | Development of test cases for RQ8.9, RQ8.10, RQ8.11 and RQ6.28 is FFS. |

5.5.1.2.2 Test case 1: valid pipe deletion from host to host controller

5.5.1.2.2.1 Test execution

There are no test case-specific parameters for this test case.

5.5.1.2.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.
- A dynamic pipe (PIPE_X) has been created from a gate on the host simulator to a gate on the host controller, and is currently open.

5.5.1.2.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|----------------|
| 1 | HS → HCUT | Send ADM_DELETE_PIPE(PIPE_X) on PIPE1. | |
| 2 | HCUT → HS | Send ANY_OK with no parameters. | RQ6.27, RQ6.26 |

5.5.1.3 Clear all Pipes

5.5.1.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 8.1.3, 6.1.3.5 and 6.1.3.6.

| | |
|--------|---|
| RQ6.29 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command and the data link layer specified in ETSI TS 102 613 [2] is used, it shall interpret the two bytes in the command parameters as the identity reference data, and shall use the identity reference data to initialize the reference data used by the host controller to check the UICC host identity. |
| RQ6.30 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command, it shall delete all the dynamic pipes connected to the requesting host, close all static pipes connected to the requesting host and set all registry values related to static pipes connected to the requesting host to their default values. |
| RQ6.31 | When ADM_CLEAR_ALL_PIPE is successful the host controller shall respond with an ANY_OK without parameters. |
| RQ6.32 | When the host controller receives a valid ADM_CLEAR_ALL_PIPE command from a requesting host, it shall send ADM_NOTIFY_ALL_PIPE_CLEARED to every host with at least one pipe to the requesting host. |
| RQ6.33 | When the host controller sends an ADM_NOTIFY_ALL_PIPE_CLEARED command with the host controller as the requesting host, it shall delete all dynamic pipes between the host controller and the host and shall close all static pipes between the host and the host controller. |
| RQ6.34 | When the host controller sends an ADM_NOTIFY_ALL_PIPE_CLEARED command, the command parameters shall be one byte long and shall contain the H _{ID} of the requesting host. |

5.5.1.3.2 Test case 1: identity reference data when ETSI TS 102 613 is used

5.5.1.3.2.1 Test execution

There are no test case-specific parameters for this test case.

5.5.1.3.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- SYNC ID needs to match.

5.5.1.3.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|--|--------|
| 1 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE with value IDENTITY_REFERENCE_DATA. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ6.29 |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07 08') on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK. | |
| 7 | User → HCUT | Trigger the host controller to deactivate the SWP interface and then reactivate the SWP interface. | |
| 8 | HCUT → HS | Deactivate the SWP interface. | |
| 9 | HCUT → HS | Activate the SWP interface. | |
| 10 | HS ↔ HCUT | Perform SWP interface activation using IDENTITY_REFERENCE_DATA as SYNC_ID, and SHDLC link establishment. | |
| 11 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 12 | HCUT → HS | Send ANY_OK. | RQ6.29 |

5.5.1.3.3 Test case 2: reception of ADM_CLEAR_ALL_PIPE - static pipes, dynamic pipes to host

5.5.1.3.3.1 Test execution

There are no test case-specific parameters for this test case.

5.5.1.3.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is open.
- A pipe (PIPE_LOOP_BACK) has been created to the host controller's loop back gate.

5.5.1.3.3.3 Test procedure

| Step | Direction | Description | RQ |
|--|-----------|---|--------|
| 1 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ6.31 |
| 3 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of identity management gate. | |
| 4 | HCUT → HS | Send response. If the host controller has sent ANY_OPEN_PIPE on PIPE1 since step 2, do not check the content of the response. Otherwise, check that the response contains an allowed error response code for the command. | |
| 5 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 6 | HCUT → HS | Send response. If the host controller has sent ANY_OPEN_PIPE on PIPE1 since step 2, do not check the content of the response. Otherwise, check that the response is ANY_OK. | RQ6.30 |
| 7 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_LOOP_BACK. | |
| 8 | HCUT → HS | Send no response (see note) or send response containing an allowed error response code for the command. | RQ6.30 |
| NOTE: If the terminal deactivates the underlying data link layer, this shall be treated as if no response has been sent. | | | |

5.5.2 Registry access

Reference: ETSI TS 102 622 [1], clause 8.2.

There are no new conformance requirements for the terminal for the referenced clause.

5.5.3 Host and Gate discovery

Reference: ETSI TS 102 622 [1], clause 8.3.

There are no conformance requirements for the terminal for the referenced clause.

5.5.4 Session initialization

5.5.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 6.2 and 8.4.

| | | |
|--------|-----|---|
| RQ8.12 | 8.4 | In case the lower layer identity check fails, the host controller shall execute only the following commands: ANY_OPEN_PIPE, ADM_CLEAR_ALL_PIPE, ANY_GET_PARAMETER, and only if these are sent on PIPE1. |
| RQ8.13 | 8.4 | In case the lower layer identity check fails, the host controller shall return ANY_E_INHIBITED to all commands, except for ANY_OPEN_PIPE, ADM_CLEAR_ALL_PIPE, ANY_GET_PARAMETER on PIPE1. |
| RQ8.14 | 8.4 | In case the lower layer identity check fails, the host controller shall ignore all events on all pipes. |
| RQ8.15 | 8.4 | In case the lower layer identity check fails, the host controller shall return the default value of the SESSION_IDENTITY. However the value of the SESSION_IDENTITY in the registry remains unchanged. |
| RQ8.16 | 8.4 | The inhibited state shall be terminated after processing a valid ADM_CLEAR_ALL_PIPE command. |
| RQ8.17 | 8.4 | In case the lower layer identity check passes, the host controller shall not enter the inhibited state. |
| RQ6.35 | 6.2 | A response shall be sent to all commands received even to those unknown to the receiving gate. |
| RQ6.37 | 6.2 | For a received command which is defined in table 16 in ETSI TS 102 622 [1], the host controller shall only return a response code which is specified for that command in table 16 in ETSI TS 102 622 [1]. |

5.5.4.2 Test case 1: inhibited state

5.5.4.2.1 Test execution

There are no test case-specific parameters for this test case.

5.5.4.2.2 Initial conditions

- The last value of SESSION_IDENTITY in the host controller's registry is not 'FFFFFFFFFFFFFFFF'.
- A pipe (PIPE_ID_MAN) has previously been created to the host controller's identity management gate.
- The host simulator is currently powered down.
- PIPE1 needs to be open.

5.5.4.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|---|--------|
| 1 | HS | Change the host configuration such that the lower layer identity check mechanism will fail. | |
| 2 | User → HCUT | Trigger the host controller to power up and to activate the lower layer. | |
| 3 | HCUT → HS | Power up and activate the lower layer. | |
| 4 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE0. | |
| 5 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 6 | HS → HCUT | Send ANY_GET_PARAMETER(REC_ERROR) on PIPE0. | |
| 7 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |

| Step | Direction | Description | RQ |
|---|-----------|--|--------|
| 8 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_ID_MAN. | |
| 9 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 10 | HS → HCUT | Send ANY_GET_PARAMETER(GATES_LIST) on PIPE_ID_MAN. | |
| 11 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 12 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 13 | HCUT → HS | Send response (contents are not checked). | RQ8.12 |
| 14 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 15 | HCUT → HS | Send ANY_OK with parameter value 'FF FF FF FF FF FF FF FF'. | RQ8.15 |
| 16 | HS → HCUT | Send ADM_CREATE_PIPE with source G _{ID} = 'EE' and destination G _{ID} = G _{ID} of identity management gate. | |
| 17 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 18 | HS → HCUT | Send ANY_CLOSE_PIPE on PIPE1. | |
| 19 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 20 | HS → HCUT | Send ADM_DELETE_PIPE(PIPE_ID_MAN) on PIPE1. | |
| 21 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 22 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1. | |
| 23 | HCUT → HS | Send ANY_OK. | |
| 24 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 25 | HCUT → HS | Send ANY_OK. | |
| 26 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE0. | |
| 27 | HCUT → HS | Send ANY_OK. | RQ8.16 |
| 28 | HS → HCUT | Send ADM_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07 08') on PIPE1. | |
| 29 | HCUT → HS | Send ANY_OK. | RQ8.16 |
| NOTE: After step 3 if the host controller sends comments the host simulator shall respond according to its initial state. | | | |

5.5.4.3 Test case 2: inhibited state, followed by subsequent successful identity check

5.5.4.3.1 Test execution

There are no test case-specific parameters for this test case.

5.5.4.3.2 Initial conditions

- The last value of SESSION_IDENTITY in the host controller's registry is not 'FFFFFFFFFFFFFFFF'.
- A pipe (PIPE_LOOP_BACK) has previously been created to the host controller's loop back gate.
- The host simulator is currently powered down.

5.5.4.3.3 Test procedure

| Step | Direction | Description | RQ |
|---|-------------|--|--------|
| 1 | HS | Change the host configuration such that the lower layer identity check mechanism will fail. | |
| 2 | User → HCUT | Trigger the host controller to power up and to activate the lower layer. | |
| 3 | HCUT → HS | Power up and activate the lower layer (see note 1). | |
| 4 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE0. | |
| 5 | HCUT → HS | Send ANY_E_INHIBITED. | |
| 6 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_LOOP_BACK. | |
| 7 | HCUT → HS | Send ANY_E_INHIBITED. | RQ8.13 |
| 8 | HS → HCUT | Send EVT_POST_DATA containing '01 02 03 04' on PIPE_LOOP_BACK. | |
| 9 | HCUT → HS | No messages on PIPE_LOOP_BACK (see note 2). | RQ8.14 |
| 10 | User → HCUT | Trigger the host simulator to be powered down. | |
| 11 | HCUT → HS | Power down the host simulator. | |
| 12 | HS | Change the host configuration such that the lower layer identity check mechanism will pass. | |
| 13 | User → HCUT | Trigger the host simulator to be powered up. | |
| 14 | HCUT → HS | Power up the host simulator. | |
| 15 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 16 | HCUT → HS | Send response (contents are not checked). | |
| 17 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 18 | HCUT → HS | Send ANY_OK with parameter value containing the same value as previously set (see initial conditions). | RQ8.15 |
| 19 | HS → HCUT | Send ADM_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07 08') on PIPE1. | |
| 20 | HCUT → HS | Send ANY_OK. | RQ8.17 |
| NOTE 1: After step 3 if the host controller sends comments the host simulator shall respond according to its initial state. | | | |
| NOTE 2: If the terminal deactivates the underlying data link layer, this shall be treated as if no message has been sent. | | | |

5.5.4.4 Test case 3: initialization using all defined gates

5.5.4.4.1 Test execution

There are no test case-specific parameters for this test case.

5.5.4.4.2 Initial conditions

- The host controller is powered down.

5.5.4.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|---|------------------|
| 1 | User → HCUT | Trigger the host controller to power up and to activate the lower layer. | |
| 2 | | Power up and activate the lower layer (see note). | |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 4 | HCUT → HS | Send response (contents are not checked). | |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER(SESSION_IDENTITY) on PIPE1. | |
| 6 | HCUT → HS | Send ANY_OK with parameter value. | |
| 7 | HS → HCUT | Send ADM_CLEAR_ALL_PIPE on PIPE1 with appropriate parameter as required by the lower layer. | |
| 8 | HCUT → HS | Send ANY_OK. | |
| 9 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE1. | |
| 10 | HCUT → HS | Send ANY_OK. | |
| 11 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source and destination G _{ID} = G _{ID} of the identity management gate. | |
| 12 | HCUT → HS | Send ANY_OK (parameters are not checked). Designate the created pipe PIPE_ID. | RQ6.35 RQ6.37 |
| 13 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_ID. | |
| 14 | HCUT → HS | Send ANY_OK. | RQ6.35 RQ6.37 |

| Step | Direction | Description | RQ |
|------|-----------|--|------------------|
| 15 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = 'EE' and destination G _{ID} = G _{ID} of the loop back gate. | |
| 16 | HCUT → HS | Send ANY_OK (parameters are not checked). Designate the created pipe PIPE_LOOP_BACK. | RQ6.35 RQ6.37 |
| 17 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_LOOP_BACK. | |
| 18 | HCUT → HS | Send ANY_OK. | RQ6.35 RQ6.37 |
| 19 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '23' and destination G _{ID} = G _{ID} of type A card RF gate. | |
| 20 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_CARD_A and proceed to step 21. If an allowed error response code for the command is received, skip to step 25. If any other response is received, this is a fail of the terminal. Skip to step 25. | RQ6.35 RQ6.37 |
| 21 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_CARD_A. | |
| 22 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, proceed to step 23. If an allowed error response code for the command is received, skip to step 25. If any other response is received, this is a fail of the terminal. Skip to step 25. | RQ6.35 RQ6.37 |
| 23 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPE_CARD_A. | |
| 24 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |
| 25 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '21' and destination G _{ID} = G _{ID} of type B card RF gate. | |
| 26 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_CARD_B and proceed to step 27. If an allowed error response code for the command is received, skip to step 31. If any other response is received, this is a fail of the terminal. Skip to step 31. | RQ6.35 RQ6.37 |
| 27 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_CARD_B. | |
| 28 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, proceed to step 29. If an allowed error response code for the command is received, skip to step 31. If any other response is received, this is a fail of the terminal. Skip to step 31. | RQ6.35 RQ6.37 |
| 29 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPE_CARD_B. | |
| 30 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |
| 31 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '22' and destination G _{ID} = G _{ID} of type B' card RF gate. | |
| 32 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_CARD_BP and proceed to step 33. If an allowed error response code for the command is received, skip to step 37. If any other response is received, this is a fail of the terminal. Skip to step 37. | RQ6.35 RQ6.37 |
| 33 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_CARD_BP. | |
| 34 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, proceed to step 35. If an allowed error response code for the command is received, skip to step 37. If any other response is received, this is a fail of the terminal. Skip to step 37. | RQ6.35 RQ6.37 |
| 35 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPE_CARD_BP. | |
| 36 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |

| Step | Direction | Description | RQ |
|---|-----------|---|------------------|
| 37 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '24' and destination G _{ID} = G _{ID} of type F card RF gate. | |
| 38 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_CARD_F and proceed to step 39. If an allowed error response code for the command is received, skip to step 43. If any other response is received, this is a fail of the terminal. Skip to step 43. | RQ6.35 RQ6.37 |
| 39 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_CARD_F. | |
| 40 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, proceed to step 41. If an allowed error response code for the command is received, skip to step 43. If any other response is received, this is a fail of the terminal. Skip to step 43. | RQ6.35 RQ6.37 |
| 41 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPE_CARD_F. | |
| 42 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |
| 43 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '13' and destination G _{ID} = G _{ID} of type A reader RF gate. | |
| 44 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_READER_A and proceed to step 45. If an allowed error response code for the command is received, skip to step 47. If any other response is received, this is a fail of the terminal. Skip to step 47. | RQ6.35 RQ6.37 |
| 45 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_READER_A. | |
| 46 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |
| 47 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '11' and destination G _{ID} = G _{ID} of type B reader RF gate. | |
| 48 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_READER_B and proceed to step 49. If an allowed error response code for the command is received, skip to step 51. If any other response is received, this is a fail of the terminal. Skip to step 51. | RQ6.35 RQ6.37 |
| 49 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_READER_B. | |
| 50 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |
| 51 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '41', destination host = '01' and destination G _{ID} = G _{ID} of connectivity gate. | |
| 52 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If ANY_OK is received, then designate the created pipe PIPE_CONN and proceed to step 53. If an allowed error response code for the command is received, skip to step 55. If any other response is received, this is a fail of the terminal. Skip to step 55. | RQ6.35 RQ6.37 |
| 53 | HS → HCUT | Send ANY_OPEN_PIPE on PIPE_CONN. | |
| 54 | HCUT → HS | Send response. If no response is received, this is a fail of the terminal. Terminate the test procedure. If a response other than ANY_OK or an allowed error response code for the command is received, this is a fail of the terminal. | RQ6.35 RQ6.37 |
| 55 | HS → HCUT | Send ADM_SET_PARAMETER(SESSION_IDENTITY, '01 02 03 04 05 06 07 08') on PIPE1. | |
| 56 | HCUT → HS | Send ANY_OK. | RQ6.35 RQ6.37 |
| NOTE: After step 2 if the host controller sends commands the host simulator shall respond according to its initial state. | | | |

5.5.5 Loop back testing

5.5.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 8.5.

| | |
|--------|---|
| RQ8.18 | The host controller shall accept the creation of a pipe to its loop back gate from any gate in another host. |
| RQ8.19 | When the host controller receives the event EVT_POST_DATA on a pipe connected to its loop back gate, it shall send back the event EVT_POST_DATA with same data as received in the received EVT_POST_DATA. |
| RQ8.20 | The loopback gate shall support at least all messages with size up to 250 bytes. |

5.5.5.2 Test case 1: processing of EVT_POST_DATA

5.5.5.2.1 Test execution

The test procedure shall be executed once for each of following parameters:

- EVT_POST_DATA data sizes of: 250 bytes.

5.5.5.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- A pipe (PIPE_LOOP_BACK) has been created to the host controller's loop back gate using source G_{ID}: "11", and is open.

5.5.5.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|----------------|
| 1 | HS → HCUT | Send EVT_POST_DATA on PIPE_LOOP_BACK containing data of the specified size. | |
| 2 | HCUT → HS | Send EVT_POST_DATA on PIPE_LOOP_BACK containing the same data as in step 1. | RQ8.19, RQ8.20 |

5.6 Contactless card emulation

5.6.1 Overview

5.6.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.1.

| | | |
|---|----------------|---|
| RQ9.1 | | The CLF shall handle the RF communication layers to the external contactless reader. |
| RQ9.2 | | The host controller has one card RF gate for each RF technology it supports. |
| RQ9.3 | | For the contactless platform for card emulation mode the pipes to card RF gates shall be created, opened, closed and deleted by the host. |
| RQ9.4 | | The RF technology of a card RF gate is active when there is an open pipe connected to it. |
| RQ9.5 | | The host controller shall activate one or more RF technologies as requested by the host to the external reader. |
| RQ9.114 | Rel-11 upwards | If MAX_CURRENT present in the host controller, the host is allowed to consume a current up to the maximum defined by the host controller in its identity management gate registry between the appearance and the disappearance of the RF unless restricted by the underlying layers e.g. ETSI TS 102 613 [2] where the restrictions for low-power mode and power saving mode still apply. |
| NOTE: Development of test cases for RQ9.3 and RQ9.114 is FFS. | | |

5.6.1.2 Test case 1: RF gate of type A

5.6.1.2.1 Test execution

There is no test case specific parameters for this test case.

5.6.1.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.1.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|--|---------------------------|
| 0 | User | Enable the RF technology Type A in the terminal for the UICC prior to executing step 9. | |
| 1 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source $G_{ID} = '23'$ and destination $G_{ID} = G_{ID}$ of type A card RF gate; designate the created pipe PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ9.2 |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_SET_PARAMETER (ATQA, '0100') on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK. | |
| 7 | HS → HCUT | Send ANY_GET_PARAMETER (MODE) on PIPEa. | |
| 8 | HCUT → HS | Send ANY_OK with a parameter value of 'FF'. | |
| 9 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPEa. | |
| 10 | HCUT → HS | Send ANY_OK. | |
| 11 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 12 | User | Power on the PCD. | |
| 13 | PCD → HCUT HCUT → PCD | Perform anti-collision as described in ISO/IEC 14443-3 [6] Type A. Check only bit b3 in the SAK. | RQ9.1, RQ9.4, RQ9.5 |

5.6.1.3 Test case 2: RF gate of type B

5.6.1.3.1 Test execution

There is no test case specific parameters for this test case.

5.6.1.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.1.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|-------|
| 0 | User | Enable the RF technology Type A in the terminal for the UICC prior to executing step 9. | |
| 1 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source $G_{ID} = '21'$ and destination $G_{ID} = G_{ID}$ of type B card RF gate; designate the created pipe PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ9.2 |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | |

| Step | Direction | Description | RQ |
|------|--------------------------|--|---------------------------|
| 5 | HS → HCUT | Send ANY_GET_PARAMETER (MODE) on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK with a parameter value of 'FF'. | |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPEa. | |
| 8 | HCUT → HS | Send ANY_OK. | |
| 9 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 10 | User | Power on the PCD. | |
| 11 | PCD → HCUT HCUT → PCD | Perform anti-collision as described in ISO/IEC 14443-3 [6] Type B. | RQ9.1, RQ9.4, RQ9.5 |

5.6.1.4 Test case 3: RF gate of type F

5.6.1.4.1 Test execution

There is no test case specific parameters for this test case.

5.6.1.4.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- PIPE1 is currently open.
- The HCUT is configured to forward incoming POLLING REQUEST commands to the HS for processing, using SWP as defined in ETSI TS 102 613 [2] as a data link layer.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.1.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------------------|--|---------------------------|
| 0 | User | Enable the RF technology Type F in the terminal for the UICC prior to executing step 7. | |
| 1 | HS → HCUT | Send ADM_CREATE_PIPE on PIPE1, with source G _{ID} = '24' and destination G _{ID} = G _{ID} of type F card RF gate; designate the created pipe PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ9.2 |
| 3 | HS → HCUT | Send ANY_OPEN_PIPE on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | |
| 5 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK. | |
| 7 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 8 | User | Power on the PCD. | |
| 9 | PCD ↔ HCUT HCUT ↔ HS | <p>Perform initialization of RF ISO/IEC 18092 [4] 212 kbps passive mode:</p> <p>The PCD sends a POLLING REQUEST as defined in ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode, where the Length is set to '06', 1st byte to '00', 2nd and 3rd bytes to '8EFC', 4th byte to '00', 5th byte to '00', and bytes 6 and 7 represent the correct CRC at 212 kbps.</p> <p>The HS provides the necessary response in time to the HCUT for a POLLING RESPONSE in the first time slot according to the initialization procedure as defined in ISO/IEC 18092 [4] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1st byte to '01', 2nd to 9th bytes to '02FE000000000000', 10th to 17th bytes to 'FFFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps.</p> | RQ9.1, RQ9.4, RQ9.5 |

5.6.2 Void

Reference: ETSI TS 102 622 [1], clause 9.2.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3 Gates

5.6.3.1 Void

Reference: ETSI TS 102 622 [1], clause 9.3.1.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3.2 Identity management gate

5.6.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.2.

| | |
|-------|--|
| RQ9.6 | If low power mode is supported, the parameter LOW_POWER_SUPPORT of identity management gate shall be '01'. |
| RQ9.7 | If low power mode is not supported, the parameter LOW_POWER_SUPPORT of identity management gate shall be '00'. |
| RQ9.8 | The host controller shall apply the access condition of RO to LOW_POWER_SUPPORT. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.6.3.3 Card RF gates

5.6.3.3.1 Overview

Reference: ETSI TS 102 622 [1], clause 9.3.3.1.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3.3.2 Commands

5.6.3.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.2.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3.3.3 Events and subclauses

5.6.3.3.3.1 Events

5.6.3.3.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.3.

| | |
|--------|--|
| RQ9.10 | The Card RF gates shall support the EVT_SEND_DATA event. |
| NOTE: | RQ9.10 is tested in clause 5.6.4. |

5.6.3.3.3.2 EVT_SEND_DATA

Reference: ETSI TS 102 622 [1], clause 9.3.3.3.1.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3.3.4 Registry and subclauses

5.6.3.3.4.1 Registry

5.6.3.3.4.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.4.

| | |
|--------|--|
| RQ9.11 | All registries shall be persistent. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.6.3.3.4.2 RF technology type A

5.6.3.3.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.4.1.

| | |
|---------|---|
| RQ9.12 | The CLF shall only accept values of MODE of 'FF' and '02'. |
| RQ9.13 | The CLF shall set a default value for MODE of 'FF'. |
| RQ9.14 | The CLF shall apply the access condition of RW for MODE. |
| RQ9.15 | The CLF shall use a default value for UID_REG of length zero bytes. |
| RQ9.16 | If Length of UID_REG equals 0 then the CLF generates a single size UID with uid0 ='08'and uid1 to uid3 as random numbers. |
| RQ9.17 | The random numbers shall be generate only on state transitions POWER_OFF to IDLE state (state definitions according to ISO/IEC 14443-3 [6]) The CLF shall interpret the absence of an RF-field as POWER-OFF state. |
| RQ9.18 | If Length equals 4, 7 or 10 then the CLF shall use UID_REG as UID. |
| RQ9.19 | The CLF shall apply the access condition of WO for UID_REG. |
| RQ9.20 | The CLF shall set a default value for SAK registry parameter of '00'. |
| RQ9.21 | The CLF shall apply the access condition of RW for SAK registry parameter. |
| RQ9.22 | The CLF shall set a default value for ATQA of '0000'. |
| RQ9.23 | The CLF shall apply the access condition of RW for ATQA. |
| RQ9.24 | The CLF shall set a default value for APPLICATION_DATA of 'N1=0'. |
| RQ9.25 | The CLF shall apply the access condition of RW for APPLICATION_DATA. |
| RQ9.26 | The CLF shall set a default value for FWI, SFGI of 'EE'. |
| RQ9.27 | The CLF shall apply the access condition of RW for FWI, SFGI. |
| RQ9.28 | If CID_SUPPORT ='01' the CLF shall set CID support in the ATS. |
| RQ9.29 | Void. |
| RQ9.30 | The CLF shall set a default value for CID_SUPPORT of '00'. |
| RQ9.31 | The CLF shall apply the access condition of RW for CID_SUPPORT. |
| RQ9.32 | If the CLF contains a tunneling mode capability for type A ISO/IEC 14443-4 [7] non compliant protocol support then the value of CLT_SUPPORT shall be '01'. |
| RQ9.33 | If the CLF does not contain a tunneling mode capability for type A ISO/IEC 14443-4 [7] non compliant protocol support then the value of CLT_SUPPORT shall be '00'. |
| RQ9.34 | The CLF shall apply the access condition of RO to CLT_SUPPORT. |
| RQ9.35 | The host controller shall support DATARATE_MAX which codes maximum divisor supported with coding as defined in ETSI TS 102 622 [1] where: <ul style="list-style-type: none"> • Byte 1 defines the maximum divisor supported in direction PCD to PICC. • Byte 3 defines the limitation to support different divisors for each direction. |
| RQ9.36 | The CLF shall set a default value for DATARATE_MAX of '030300'. |
| RQ9.37 | The CLF shall apply the access condition of RW for DATARATE_MAX. |
| RQ9.38 | The CLF shall use the minimum of the value indicated in the registry and the maximum divisor implemented in the CLF as the maximum support divisor indicated in TA (1) as defined in ISO/IEC 14443-4 [7]. |
| RQ9.39 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| NOTE 1: | Test cases for RQ9.12, RQ9.13, RQ9.14, RQ9.18, RQ9.19 and RQ9.27 are presented in ETSI TS 102 695-3 [10]. |
| NOTE 2: | Further test cases for RQ9.21, RQ9.23 and RQ9.26 are presented in ETSI TS 102 695-3 [10]. |
| NOTE 3: | Development of test cases for RQ9.30, RQ9.32, RQ9.33, RQ9.34 and RQ9.39 is FFS. |

5.6.3.3.4.2.2 Test case 1: UID_REG - default

5.6.3.3.4.2.2.1 Test execution

The test procedure shall be executed once for each of following parameters:

- This test case is assumed that only one HCUT (PICC) is presented in the RF field.

5.6.3.3.4.2.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source $G_{ID} = '23'$ to the card RF gate of type A.
- The Proximity Coupling Device (PCD) supports ISO/IEC 14443-3 [6] Type A.
- ATQA registry parameter is set to '0100', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.3.3.4.2.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|--|------------------------------|
| 1 | User → HCUT | The terminal is placed in PCD field. | |
| 2 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 3 | PCD → HCUT | Send REQA. | |
| 4 | HCUT → PCD | Send ATQA and enter the READY state. | |
| 5 | PCD → HCUT | Send AC command. | |
| 6 | HCUT → PCD | Send the complete UID, with UID0 = '08', UID1-UID3 randomly generated by the CLF. | RQ9.15, RQ9.16, RQ9.17 |
| 7 | PCD → HCUT | Return to the IDLE state by sending REQA twice. | |
| 8 | HCUT → PCD | Send ATQA and enter the READY state. | |
| 9 | PCD → HCUT | Send AC command. | |
| 10 | HCUT → PCD | Send UID as it given in step 6. | RQ9.16, RQ9.17 |
| 11 | PCD → HCUT | Send SELECT command with received UID. | |
| 12 | HCUT → PCD | Send SAK (UID is complete). Only check bit b3. | |
| 13 | PCD → HCUT | Send HLTA command to enter the HALT state. | |
| 14 | PCD → HCUT | Send WUPA. | |
| 15 | HCUT → PCD | Send ATQA. | |
| 16 | PCD → HCUT | Send SELECT command with received UID step 6. | |
| 17 | HCUT → PCD | Send SAK (UID is complete). Only check bit b3. | RQ9.16, RQ9.17 |
| 18 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 17. | |

5.6.3.3.4.2.3 Test case 2: SAK

5.6.3.3.4.2.3.1 Test execution

The test procedure shall be executed once for each of following parameters:

- This test case is assumed that only one HCUT (PICC) is presented in the RF field:
 - Single UID of length 4.

5.6.3.3.4.2.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type A protocol is powered off.
- MODE is set to 'FF'.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.3.3.4.2.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|--|-------------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER (ATQA) on PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK with value '0000'. | RQ9.22, RQ9.23 |
| 3 | HS → HCUT | Send ANY_SET_PARAMETER (ATQA, '0100') on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | RQ9.23 |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER (SAK) on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK with parameter '00'. | RQ9.20, RQ9.21 |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, '02') on PIPEa. | |
| 8 | HCUT → HS | Send ANY_OK. | |
| 9 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 10 | User → HCUT | The terminal is placed in PCD field. | |
| 11 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 12 | PCD → HCUT | Send REQA. | |
| 13 | HCUT → PCD | Send ATQA and enter READY state. | |
| 14 | PCD → HCUT | Send AC command. | |
| 15 | HCUT → PCD | Send UID. | |
| 16 | PCD → HCUT | Send SELECT command with received UID. | |
| 17 | HCUT → PCD | Send SAK (UID is complete). Only check bit b3. | RQ9.21 |
| 18 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 9 to 16. | |

5.6.3.3.4.2.4 Test case 3: ATS - default parameters

5.6.3.3.4.2.4.1 Test execution

The test procedure shall be executed once for each of following parameters:

- ATS with default value for all parameters.

5.6.3.3.4.2.4.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A.
- SAK registry parameter is set to '20', ATQA registry parameter is set to '0100', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.3.3.4.2.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------------|---|-------------------|
| 1 | User → HCUT | The terminal is placed in PCD field. | |
| 2 | PCD ← → HCUT | Ensure that ISO/IEC 14443-3 [6] Type A is in ACTIVE state. Only bits b3 and b6 in the SAK sent on RF shall be used to check that the ACTIVE state has been reached. | |
| 3 | PCD → HCUT | Send RATS. | |
| 4 | HCUT → PCD | Send ATS. Only TB(1) and Historical Bytes are checked. | RQ9.24, RQ9.26 |
| 5 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 4. | |

5.6.3.3.4.2.5 Test case 4: APPLICATION_DATA

5.6.3.3.4.2.5.1 Test execution

Run this TC for the following parameters:

- CIDa = 01.
- ISO/IEC 7816-4 [8] historical bytes (T1 - Tk) is defined as:
 - Category indicator: '80'.
 - Card service data: '31', 'E0'.
 - Card capabilities: '73', '66', '21', '15'.

5.6.3.3.4.2.5.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A.
- MODE is set to 'FF' and SAK registry parameter is set to '20' and ATQA registry parameter is set to '0100'.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.3.3.4.2.5.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|---|------------------|
| 1 | HS → HCUT | Send ANY_SET_PARAMETER (CID_SUPPORT, 'CID') on PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK. | RQ9.31 |
| 3 | HS → HCUT | Send ANY_GET_PARAMETER (CID_SUPPORT) on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK with value given in step 1. | RQ9.31 |
| 5 | HS → HCUT | Send ANY_SET_PARAMETER (APPLICATION_DATA, T1-Tk) on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK. | RQ9.25 |
| 7 | HS → HCUT | Send ANY_GET_PARAMETER (APPLICATION_DATA) on PIPEa. | |
| 8 | HCUT → HS | Send ANY_OK with value (T1-Tk) given in step 1. | RQ9.25 |
| 9 | HS → HCUT HCUT → HS | Set the MODE parameter to '02.' | |
| 10 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 11 | User → HCUT | The terminal is placed in PCD field. | |
| 12 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3 and b6 in the SAK sent on RF. | |
| 13 | PCD → HCUT | Send RATS. | |
| 14 | HCUT → PCD | Send ATS with historical bytes (APPLICATION_DATA) equal to T1-Tk. | RQ9.25 RQ9.28 |
| 15 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 10 to 13. | |

5.6.3.3.4.2.6 Test case 5: DATARATE_MAX

5.6.3.3.4.2.6.1 Test execution

The test procedure shall be executed once for each of following parameters:

- DATARATE_MAX = '000001'. In this case, in step 8, the terminal may transmit TA(1) in the ATS. If present, TA(1) shall be: TA(1) = x0000000b.
- DATARATE_MAX = '030300'. In this case, table 5.3 gives the TA(1) byte the terminal shall transmit in the ATS in step 8, depending on its capabilities (as documented in V_DRATE_MAX_CEA).

Table 5.3

| V_DRATE_MAX_CEA (kb/s) | TA(1) (Binary format) |
|------------------------|------------------------------------|
| 106 | Optional, if present: x0000000b |
| 212 | x0010001b |
| 424 | x01x001xb |
| 848 | x1xx01xxb |

5.6.3.3.4.2.6.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A.
- MODE is set to 'FF' and SAK registry parameter is set to '20' and ATQA registry parameter is set to '0100'.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.3.3.4.2.6.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|---|------------------------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER (DATARATE_MAX) on PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK with default value. | RQ9.35, RQ9.36, RQ9.37 |
| 3 | HS → HCUT | Send ANY_SET_PARAMETER (DATARATE_MAX, 'Byte1 Byte2 Byte3') on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | RQ9.35, RQ9.37 |
| 5 | HS → HCUT HCUT → HS | Set the MODE parameter to '02'. | |
| 6 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 7 | User → HCUT | The terminal is placed in PCD field. | |
| 8 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3 and b6 in the SAK sent on RF. | |
| 9 | PCD → HCUT | Send RATS. | |
| 10 | HCUT → PCD | Send ATS with TA(1) value as given in test execution clause. | RQ9.38 |
| 11 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 6 to 9. | |

5.6.3.3.4.3 RF technology type B

5.6.3.3.4.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.4.2.

| | |
|---|---|
| RQ9.40 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ9.41 | The CLF shall only accept values of MODE of 'FF' and '02'. |
| RQ9.42 | The CLF shall set a default value for MODE of 'FF'. |
| RQ9.43 | The CLF shall apply the access condition of RW for MODE. |
| RQ9.44 | The CLF shall only accept values of PUPI of length 0 or 4 bytes. |
| RQ9.45 | If N=0 then the CLF shall generate the PUPI as dynamically generated number. |
| RQ9.46 | The PUPI shall only be generated by a state transition from the POWER-OFF to the IDLE state(state definitions according to ISO/IEC 14443-3 [6]). |
| RQ9.47 | The CLF shall interpret the absence of an RF-field as POWER-OFF state. |
| RQ9.48 | If N is not equal to 0, the CLF shall use the PUPI_REG as PUPI. |
| RQ9.49 | The CLF shall apply the access condition of WO for PUPI_REG. |
| RQ9.50 | The CLF shall use the AFI registry parameter as AFI according to ISO/IEC 14443-3 [6]. |
| RQ9.51 | The CLF shall set a default value for AFI of '00'. |
| RQ9.52 | The CLF shall apply the access condition of RW to AFI. |
| RQ9.53 | The CLF shall set a default value for ATQB of '00 00 00 E4'. |
| RQ9.54 | The CLF shall only accept values of ATQB of length 4 bytes. |
| RQ9.55 | The CLF shall set additional data for ATQB as defined in the registry table 31 of ETSI TS 102 622 [1]. |
| RQ9.56 | The CLF shall apply the access condition of RW to ATQB. |
| RQ9.57 | The CLF shall set higher layer response in answer to ATTRIB command as defined registry. |
| RQ9.58 | The CLF shall set a default value for HIGHER_LAYER_RESPONSE of 'N2=0'. |
| RQ9.59 | The CLF shall apply the access condition of RW for HIGHER_LAYER_RESPONSE. |
| RQ9.60 | The host controller shall support DATARATE_MAX which codes maximum bit rates supported with coding as defined in ETSI TS 102 622 [1] where: <ul style="list-style-type: none"> • Byte 1 defines the maximum bit rates supported in direction PCD to PICC. • Byte 3 defines the limitation of having the bit rate in both direction. |
| RQ9.61 | The CLF shall set a default value for DATARATE_MAX of '030300'. |
| RQ9.62 | The CLF shall apply the access condition of RW for DATARATE_MAX. |
| RQ9.63 | The CLF shall set a default value for ATQB of length 0. |
| RQ9.64 | The CLF shall use the minimum of the value indicated in the registry and the maximum bit rate supported implemented in the CLF as the maximum bit rate indicated in the first byte of the protocol information as defined in ISO/IEC 14443-3 [6]. |
| NOTE 1: Development of test cases for RQ9.40 and RQ9.64 is FFS. | |
| NOTE 2: Test cases for RQ9.41, RQ9.42 and RQ9.43 are presented in ETSI TS 102 695-3 [10]. | |

5.6.3.3.4.3.2 Test case 1: PUPI_REG - default

5.6.3.3.4.3.2.1 Test execution

The test procedure shall be executed once for each of following parameters:

- default PUPI_REG parameter.
- REQB with AFI = 00 and PARAM = 00, so all PICCs shall process this REQB/WUPB.

5.6.3.3.4.3.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type B is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source GID = '21' to the card RF gate of type B.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type B protocol is powered off.
- MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.3.3.4.3.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|------------|--|------------------------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER (PUPI_REG) on PIPEa. | |
| 2 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ9.49 |
| 3 | User → PCD | The terminal is placed in PCD field. | |
| 4 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 5 | PCD → HCUT | Send REQB. | |
| 6 | HCUT → PCD | Send ATQB with PUPI dynamically generated number. | RQ9.45, RQ9.46, RQ9.47 |
| 7 | PCD → HCUT | Return to the IDLE state by sending REQB. | |
| 8 | HCUT → PCD | Send ATQB with PUPI value given in step 6. | RQ9.46 |
| 9 | PCD → HCUT | Send ATTRIB request with a non-matching PUPI with the one given in step 8. | |
| 10 | HCUT → PCD | Send no response. | |
| 11 | PCD → HCUT | Send HLTB to enter the HALT state. | |
| 12 | HCUT → PCD | Answer to HLTB. | |
| 13 | PCD → HCUT | Send WUPB. | |
| 14 | HCUT → PCD | Send ATQB with PUPI value given in step 6. | RQ9.46, RQ9.47 |
| 15 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 3 to 14. | |

5.6.3.3.4.3.3 Test case 2: ATQB - verify the different parameter

5.6.3.3.4.3.3.1 Test execution

The test procedure shall be executed once for each of following parameters:

- PUPIa = '01 02 03 04', AFIa = '40' and ATQB is coded for the following values:
 - Protocol information is coded PROTO_INFO = '70'.
 - Numbers of Applications byte is coded for, NUMBER_APLI = 0 -15.
- PUPIa = '12 34 56 78', AFIa = '20' and ATQB is coded for the following values:
 - Protocol information is coded PROTO_INFO = '85'.
 - Numbers of Applications byte is coded for, NUMBER_APLI = 0 -15.

5.6.3.3.4.3.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type B is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B.
- The Proximity Coupling Device (PCD) supports ISO/IEC 14443-3 [6] Type B.
- MODE is set to 'FF'.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.3.3.4.3.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|------------------------|---|---|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER (PUPI_REG) on PIPEa. | |
| 2 | HCUT → HS | Send response containing an allowed error response code for the command. | RQ9.49 |
| 3 | HS → HCUT | Send ANY_SET_PARAMETER (PUPI_REG, 'PUPIa') on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | RQ9.44, RQ9.49 |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER (AFI) on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK with value '00'. | RQ9.51, RQ9.52 |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER (AFI, 'AFI') on PIPEa. | |
| 8 | HCUT → HS | Send ANY_OK. | RQ9.50, RQ9.52 |
| 9 | HS → HCUT | Send ANY_GET_PARAMETER (ATQB) on PIPEa. | |
| 10 | HCUT → HS | Send ANY_OK with value '00 00 00 E4'. | RQ9.53, RQ9.54 RQ9.55, RQ9.56, RQ9.63 |
| 11 | HS → HCUT | Send ANY_SET_PARAMETER (ATQB, 'PROTO_INFO, NUMBER_APLI') on PIPEa. | |
| 12 | HCUT → HS | Send ANY_OK. | RQ9.54 RQ9.55, RQ9.56 |
| 13 | HS → HCUT | Send ANY_GET_PARAMETER (ATQB) on PIPEa. | |
| 14 | HCUT → HS | Send ANY_OK with value 'PROTO_INFO, NUMBER_APLI'. | RQ9.54 RQ9.55, RQ9.56 |
| 15 | HS → HCUT HCUT → HS | Set the MODE parameter to '02' | |
| 16 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 17 | User → HCUT | The terminal is placed in PCD field. | |
| 18 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 19 | PCD → HCUT | Send REQb to enter the READY state. | |
| 20 | HCUT → PCD | Send ATQB with parameters as defined for: <ul style="list-style-type: none"> • PUPI: 'PUPIa'. • AFI: 'AFI'. • ATQB other parameters with the values 'PROTO_INFO' and 'NUMBER_APLI': <ul style="list-style-type: none"> ○ If b1 of PROTO_INFO is set to 1b (see Test execution clause), check that b1 of the third byte of the Protocol Info field is set to 1b. ○ If b1 of PROTO_INFO is set to 0b (see Test execution clause), do not check b1 of the third byte of the Protocol Info field. | RQ9.54, RQ9.55, RQ9.56, RQ9.47, RQ9.48, RQ9.50 |
| 21 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 16 to 19. | |

5.6.3.3.4.3.4 Test case 3: HIGHER_LAYER_RESPONSE

5.6.3.3.4.3.4.1 Test execution

HIGHER_LAYER is coded for the following value.

Table 5.4

| HIGHER_LAYER_RESPONSE registry value | Higher layer - INF to be included in ATTRIB command sent by PCD | Expected Higher layer Response to be included in answer to ATTRIB command sent by CLF |
|--------------------------------------|---|---|
| '01 02 03 04 05 06 07 08 09 0A' | '11 12 13 14 15' | '01 02 03 04 05 06 07 08 09 0A' |

The test procedure shall be executed once for each of following parameters:

- DATARATE_MAXa = '000001'. In this case, the 1st byte of the "protocol info" field in the ATQB answer sent by the terminal in step 13 shall be x0000000b.
- DATARATE_MAXa = '030300'. In this case, table 5.5 gives the content of the 1st byte of the "protocol info" field in the ATQB answer that the terminal shall transmit in step 13, depending on its capabilities (as documented in V_DRATE_MAX_CEB).

Table 5.5

| V_DRATE_MAX_CEB (kb/s) | 1 st Byte of Protocol info (Binary format) |
|------------------------|---|
| 106 | x0000000b |
| 212 | x0010001b |
| 424 | x01x001xb |
| 848 | x1xx01xxb |

5.6.3.3.4.3.4.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type B is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B.
- The Proximity Coupling Device (PCD) supports ISO/IEC 14443-3 [6] Type B.
- MODE parameter is set to 'FF'.
- HCI session initialization is ongoing (to be completed during the test procedure).

5.6.3.3.4.3.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|------------------------------|
| 1 | HS → HCUT | Send ANY_GET_PARAMETER (DATARATE_MAX) on PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK with value '030300'. | RQ9.60, RQ9.61, RQ9.62 |
| 3 | HS → HCUT | Send ANY_SET_PARAMETER (DATARATE_MAX, 'DATARATE_MAXa') on PIPEa. | |
| 4 | HCUT → HS | Send ANY_OK. | RQ9.60, RQ9.62 |
| 5 | HS → HCUT | Send ANY_GET_PARAMETER (HIGHER_LAYER_RESPONSE) on PIPEa. | |
| 6 | HCUT → HS | Send ANY_OK with parameter value of length zero. | RQ9.58, RQ9.59 |
| 7 | HS → HCUT | Send ANY_SET_PARAMETER (HIGHER_LAYER_RESPONSE, 'HIGHER_LAYERa') on PIPEa. | |
| 8 | HCUT → HS | Send ANY_OK. | RQ9.58, |

| Step | Direction | Description | RQ |
|------|------------------------|---|-------------------|
| | | | RQ9.59 |
| 9 | HS → HCUT | Send ANY_GET_PARAMETER (HIGHER_LAYER_RESPONSE) on PIPEa. | |
| 10 | HCUT → HS | Send ANY_OK with value 'HIGHER_LAYERa' as given in step 7. | RQ9.58, RQ9.59 |
| 11 | HS → HCUT HCUT → HS | Set the MODE parameter to '02'. | |
| 12 | HS → HCUT | Set SESSION_IDENTITY to a random value on PIPE1. | |
| 13 | User → HCUT | The terminal is placed in PCD field. | |
| 14 | PCD → HCUT | Send REQb. | |
| 15 | HCUT → PCD | Send ATQB with value of first Byte in "protocol info" field as given in test execution clause. The remaining part of ATQB is not checked. | RQ9.60 RQ9.61 |
| 16 | PCD → HCUT | Send ATTRIB. | |
| 17 | HCUT → PCD | Send Answer to ATTRIB. | RQ9.57, RQ9.60 |
| 18 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 12 to 16. | |

5.6.3.3.4.4 RF technology type B'

5.6.3.3.4.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.4.3.

NOTE: Defining conformance requirements is out of scope of the present document.

5.6.3.3.4.5 RF technology Type F (ISO/IEC 18092 212 kbps/424 kbps card emulation only)

5.6.3.3.4.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.3.4.4.

| | |
|--------|---|
| RQ9.65 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ9.66 | The CLF shall only accept values of MODE of 'FF' and '02'. |
| RQ9.67 | The CLF shall set a default value for MODE of 'FF'. |
| RQ9.68 | The CLF shall apply the access condition of RW for MODE. |
| RQ9.69 | The CLF shall support the capabilities indicated in the SPEED_CAP parameter as specified in ETSI TS 102 622 [1]. |
| RQ9.70 | The CLF shall apply the access condition of RO to SPEED_CAP. |
| RQ9.71 | The CLF shall contain a tunneling mode capability for type F card emulation anti-collision support if CLT_SUPPORT='01'. |
| RQ9.72 | The CLF shall not contain a tunneling mode capability for type F card emulation anti-collision support if CLT_SUPPORT='00'. |
| RQ9.73 | The CLF shall apply the access condition of RO to CLT_SUPPORT. |
| NOTE: | Development of test cases for RQ9.65 is FFS. |

5.6.3.4 Card application gates

5.6.3.4.1 Overview

Reference: ETSI TS 102 622 [1], clause 9.3.4.1.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3.4.2 Commands

5.6.3.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.2.

There are no conformance requirements for the terminal for the referenced clause.

5.6.3.4.3 Events and subclauses

5.6.3.4.3.1 Events

5.6.3.4.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.3.

| | |
|--------|---|
| RQ9.74 | When sending to a card application gate, the CLF shall respect the values and events as listed. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.6.3.4.3.2 EVT_FIELD_ON

5.6.3.4.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.3.1.

| | |
|--------|--|
| RQ9.75 | When EVT_FIELD_ON is sent by the host controller, it shall be sent within 2 ms after the detection of an RF field. |
| RQ9.76 | In case of an underlying data link layer according to ETSI TS 102 613 [2], if SWP is in DEACTIVATED state, the CLF shall activate the interface instead of sending the EVT_FIELD_ON. |
| RQ9.77 | When the host controller sends EVT_FIELD_ON, it shall not contain parameters. |
| NOTE: | All conformance requirements for the referenced clause are included in the subclauses of clause 5.6.4 of the present document. |

5.6.3.4.3.3 EVT_CARD_DEACTIVATED

5.6.3.4.3.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.3.2.

| | |
|--------|---|
| RQ9.78 | When the host controller sends EVT_CARD_DEACTIVATED, it shall not contain parameters. |
| NOTE: | RQ9.78 tested in clause 5.6.4.1 of the present document. |

5.6.3.4.3.4 EVT_CARD_ACTIVATED

5.6.3.4.3.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.3.3.

| | |
|--------|---|
| RQ9.79 | When the host controller sends EVT_CARD_ACTIVATED, it shall not contain parameters. |
| NOTE: | RQ9.79 tested in clause 5.6.4.1 of the present document. |

5.6.3.4.3.5 EVT_FIELD_OFF

5.6.3.4.3.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.3.4.

| | |
|--------|--|
| RQ9.80 | When the host controller sends EVT_FIELD_OFF, it shall not contain parameters. |
| NOTE: | RQ9.80 tested in clause 5.6.4.1, 5.6.4.2 and 5.6.4.4 of the present document. |

5.6.3.4.3.6 EVT_SEND_DATA

5.6.3.4.3.6.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.3.5.

| | |
|--------|---|
| RQ9.81 | On sending EVT_SEND_DATA the CLF shall set the last parameter byte as RF error indicator. |
| NOTE: | RQ9.81 tested in clauses 5.6.4.1 and 5.6.4.4 of the present document. |

5.6.3.4.4 Registry

5.6.3.4.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.3.4.4.

There are no conformance requirements for the terminal for the referenced clause.

5.6.4 Procedures

5.6.4.1 Use of contactless card application

5.6.4.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 9.4, 9.4.1 and 9.3.4.3.1.

NOTE: These requirements apply for usage of ISO/IEC 14443-4 [7].

| | | | |
|---------|-----------|----------------|---|
| RQ9.82 | 9.4.1 | | In full power mode, when the CLF detects a RF field, the card RF gate shall send the event EVT_FIELD_ON to the card application gate unless otherwise as specified in clause 9.3.4.3.1. |
| RQ9.83 | 9.4.1 | | When there are multiple open card RF gates the CLF shall send the EVT_FIELD_ON to the open card application gate with the lowest G_{ID} . |
| RQ9.84 | 9.4.1 | | When the CLF detects a RF field, and after sending EVT_FIELD_ON (if sent), the CLF shall start the initialization and anti-collision process as defined in ISO/IEC 14443-3 [6] using the parameters from the appropriate card RF gate registry for the present RF technology. |
| RQ9.85 | 9.4.1 | Rel-7 to Rel-9 | If The card RF gate sends EVT_CARD_ACTIVATED to the card application gate, it shall send it at the end of the activation sequence as defined ISO/IEC 14443-4 [7]. |
| RQ9.112 | 9.4.1 | Rel-10 upwards | The card RF gate shall send EVT_CARD_ACTIVATED to the card application gate at the end of the activation sequence as defined ISO/IEC 14443-4 [7]. |
| RQ9.86 | 9.4.1 | | The card RF gate shall forward the C-APDUs from the external contactless reader to the card application gate using the EVT_SEND_DATA. |
| RQ9.113 | 9.4.1 | | The CLF may forward an empty C-APDU to the UICC. |
| RQ9.87 | 9.4.1 | | If the CLF detects the end of the PICC deactivation sequence by the external contactless reader, the card RF gate shall send an EVT_CARD_DEACTIVATED. |
| RQ9.88 | 9.4.1 | | In full power mode, when the CLF detects at any time during the sequence that the RF field is off, the card RF gate shall send EVT_FIELD_OFF to the card application gate. |
| RQ9.89 | 9.4.1 | | When there are multiple open cards RF gates the CLF shall send the EVT_FIELD_OFF to the card application gate used during the transaction or to the open card application gate with the lowest G_{ID} . |
| RQ9.90 | 9.4.1 | | In low power mode, when the CLF detects at any time during the sequence that the RF field is off, the card RF gate shall either send EVT_FIELD_OFF to the card application gate or power down the host. |
| RQ9.75 | 9.3.4.3.1 | | When EVT_FIELD_ON is sent by the host controller, it shall be sent within 2 ms after the detection of an RF field. |
| RQ9.76 | 9.3.4.3.1 | | In case of an underlying data link layer according to ETSI TS 102 613 [2], if SWP is in DEACTIVATED state, the CLF shall activate the interface instead of sending the EVT_FIELD_ON. |
| RQ9.77 | 9.3.4.3.1 | | When the host controller sends EVT_FIELD_ON, it shall not contain parameters. |
| RQ9.111 | 9.4.1 | | If the CLF forwards an empty C-APDU to the UICC, it shall accept an empty R-APDU or an R-APDU containing an error code in response, and forward the R-APDU to the external contactless reader as specified in ISO/IEC 14443-4 [7]. |

| | | | |
|---|-----------|----------------|--|
| RQ9.115 | 9.4 | Rel-11 upwards | The CLF shall only send events defined in table 35 in ETSI TS 102 622 [1] to the Card application gate or open a CLT session as defined in ETSI TS 102 613 [2] for the corresponding RF technology if the MODE parameter in the associated Card RF gate registry is set to '02' (enabled). |
| RQ9.78 | 9.3.4.3.2 | | When the host controller sends EVT_CARD_DEACTIVATED, it shall not contain parameters. |
| RQ9.79 | 9.3.4.3.3 | | When the host controller sends EVT_CARD_ACTIVATED, it shall not contain parameters. |
| RQ9.80 | 9.3.4.3.4 | | When the host controller sends EVT_FIELD_OFF, it shall not contain parameters. |
| RQ9.81 | 9.3.4.3.5 | | On sending EVT_SEND_DATA the CLF shall set the last parameter byte as RF error indicator. |
| NOTE 1: Development of test cases for RQ9.75, RQ9.111 and RQ9.113 is FFS. | | | |
| NOTE 2: Development of further test cases for RQ9.115 including CLT is FFS. | | | |

5.6.4.1.2 Test case 1: ISO/IEC 14443-3 Type A

5.6.4.1.2.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.2.2 Initial conditions

- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A of HCUT.
- Registries entries of card RF gate for RF technology type A shall be modified to execute the test.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type A protocol is powered off.
- SAK registry parameter is set to '20', ATQA registry parameter is set to '0100', FWI registry parameter is set to '8', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.4.1.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|---|-------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.82, RQ9.76 |
| 5 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3 and b6 in the SAK. | RQ9.84 |
| 6 | PCD → HCUT | Send (RATS). | |
| 7 | HCUT → PCD | Response (ATS). | |
| 8 | PCD → HCUT HCUT → PCD | PPS procedure. | |
| 9 | HCUT → HS | The Terminal may send EVT_CARD_ACTIVATED. | RQ9.85, RQ9.79 |
| 10 | PCD → HCUT | Send C-APDU. | |
| 11 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |
| 12 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 13 | HCUT → PCD | Send R-APDU. | |
| 14 | PCD → HCUT | Send C-APDU within a single I-block with an error in the CRC field. | |
| 15 | HCUT → HS | The terminal may send EVT_SEND_DATA on PIPEa with RF error indicator set to '01'. The EVT_SEND_DATA content is not checked. | RQ9.81 |
| 16 | PCD → HCUT | Resend C-APDU (step 14, without any error) after timeout resulting from FWI. | |
| 17 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86 RQ9.81 |

| Step | Direction | Description | RQ |
|------|-------------|--|------------------------------|
| 18 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 19 | HCUT → PCD | Send R-APDU. | |
| 20 | | If there is more data to exchange than repeat steps 10 to 13. | |
| 21 | User → PCD | Run the deactivation sequence. | |
| 22 | PCD → HCUT | Send DESELECT command. | |
| 23 | HCUT → HS | Send EVT_CARD_DEACTIVATED. | RQ9.87, RQ9.78 |
| 24 | User → HCUT | The terminal is removed from the PCD field. | |
| 25 | HCUT → HS | For full power mode execution: send EVT_FIELD_OFF. For low power mode execution: send EVT_FIELD_OFF or power down the host. | RQ9.88, RQ9.90, RQ9.80 |
| 26 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 25. | |

5.6.4.1.3 Test case 2: ISO/IEC 14443-3 Type B

5.6.4.1.3.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.3.2 Initial conditions

- The user has to ensure that the RF technology type B is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B of HCUT.
- Registries entries of card RF gate for RF technology type B shall be modified to execute the test.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type B protocol is powered off.
- The FWI value in the ATQB registry parameter is set to '8', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.4.1.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|---|-------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.82, RQ9.76 |
| 5 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type B (with anti-collision and selection). | RQ9.84 |
| 6 | HCUT → HS | The Terminal may send EVT_CARD_ACTIVATED. | RQ9.85, RQ9.79 |
| 7 | PCD → HCUT | Send C-APDU. | |
| 8 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |
| 9 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 10 | HCUT → PCD | Send R-APDU. | |
| 11 | PCD → HCUT | Send C-APDU within a single I-block with an error in the CRC field. | |
| 12 | HCUT → HS | The terminal may send EVT_SEND_DATA on PIPEa with RF error indicator set to '01'. The EVT_SEND_DATA content is not checked. | RQ9.81 |
| 13 | PCD → HCUT | Resend C-APDU (step 11, without any error) after timeout resulting from FWI. | |
| 14 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |

| Step | Direction | Description | RQ |
|------|-------------|--|------------------------------|
| 15 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 16 | HCUT → PCD | Send R-APDU. | |
| 17 | | If there is more data to exchange than repeat steps 9 to 12. | |
| 18 | User → PCD | Run the deactivation sequence. | |
| 19 | PCD → HCUT | Send DESELECT command. | |
| 20 | HCUT → HS | Send EVT_CARD_DEACTIVATED. | RQ9.87, RQ9.78 |
| 21 | User → HCUT | The terminal is removed from the PCD field. | |
| 22 | HCUT → HS | For full power mode execution: send EVT_FIELD_OFF. For low power mode execution: send EVT_FIELD_OFF or power down the host. | RQ9.88, RQ9.90, RQ9.80 |
| 23 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 22. | |

5.6.4.1.4 Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G_{ID}

5.6.4.1.4.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.4.2 Initial conditions

- The user has to ensure that the RF technology type A and Type B are enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A of the HCUT.
- A PIPEb is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B of the HCUT.
- ATQA registry parameter is set to '01 00', SAK is set to '20', MODE for card RF gate type A is set to '02'.
- MODE for card RF gate type B is set to '02'.
- SESSION_IDENTITY is set to a random value.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type A protocol is powered off.

5.6.4.1.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|--|------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON to G _{ID} = '21' on PIPEb. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.83, RQ9.76, RQ9.77 |
| 5 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3 and b6 in the SAK. | RQ9.83 RQ9.84 |
| 6 | PCD → HCUT | Send (RATS). | |
| 7 | HCUT → PCD | Response (ATS). | |
| 8 | PCD → HCUT HCUT → PCD | PPS procedure. | |
| 9 | HCUT → HS | The Terminal may send EVT_CARD_ACTIVATED. | RQ9.85, RQ9.79 |
| 10 | PCD → HCUT | Send C-APDU. | |
| 11 | HCUT → HS | Send EVT_SEND_DATA contains the received C-APDU on PIPEa. | RQ9.86 |
| 12 | HS → HCUT | Send EVT_SEND_DATA contains the response on PIPEa. | |
| 13 | HCUT → PCD | Send R-APDU. | |
| 14 | PCD → HCUT | Send DESELECT command. | |
| 15 | HCUT → HS | Send EVT_CARD_DEACTIVATED. | RQ9.87, RQ9.78 |
| 16 | User → HCUT | The terminal is removed from the PCD field. | |
| 17 | HCUT → HS | Send EVT_FIELD_OFF either to G _{ID} = '21' on PIPEb or to G _{ID} = '23' on PIPEa. | RQ9.89, RQ9.88, RQ9.80 |

5.6.4.1.5 Test case 4: ISO/IEC 14443-3 Type A

5.6.4.1.5.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.5.2 Initial conditions

- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A of HCUT.
- Registries entries of card RF gate for RF technology type A shall be modified to execute the test.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type A protocol is powered off.
- SAK registry parameter is set to '20', ATQA registry parameter is set to '01 00', FWI registry parameter is set to '8', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.4.1.5.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|---|-------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.82, RQ9.76 |
| 5 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3 and b6 in the SAK. | RQ9.84 |

| Step | Direction | Description | RQ |
|------|--------------------------|--|------------------------------|
| 6 | PCD → HCUT | Send (RATS). | |
| 7 | HCUT → PCD | Response (ATS). | |
| 8 | PCD → HCUT HCUT → PCD | PPS procedure. | |
| 9 | HCUT → HS | Send EVT_CARD_ACTIVATED. | RQ9.112, RQ9.79 |
| 10 | PCD → HCUT | Send C-APDU. Step 9 might be performed by the HCUT during or after this step. This is also a valid behaviour of HCUT. | |
| 11 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |
| 12 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 13 | HCUT → PCD | Send R-APDU. | |
| 14 | PCD → HCUT | Send C-APDU within a single I-block with an error in the CRC field. | |
| 15 | HCUT → HS | The terminal may send EVT_SEND_DATA on PIPEa with RF error indicator set to '01'. The EVT_SEND_DATA content is not checked. | RQ9.81 |
| 16 | PCD → HCUT | Resend C-APDU (step 14, without any error) after timeout resulting from FWI. | |
| 17 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |
| 18 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 19 | HCUT → PCD | Send R-APDU. | |
| 20 | | If there is more data to exchange than repeat steps 10 to 13. | |
| 21 | User → PCD | Run the deactivation sequence. | |
| 22 | PCD → HCUT | Send DESELECT command. | |
| 23 | HCUT → HS | Send EVT_CARD_DEACTIVATED. | RQ9.87, RQ9.78 |
| 24 | User → HCUT | The terminal is removed from the PCD field. | |
| 25 | HCUT → HS | For full power mode execution: send EVT_FIELD_OFF. For low power mode execution: send EVT_FIELD_OFF or power down the host. | RQ9.88, RQ9.90, RQ9.80 |
| 26 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 25. | |

5.6.4.1.6 Test case 5: ISO/IEC 14443-3 Type B

5.6.4.1.6.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.6.2 Initial conditions

- The user has to ensure that the RF technology type B is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B of HCUT.
- Registries entries of card RF gate for RF technology type B shall be modified to execute the test.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type B protocol is powered off.
- The FWI value in the ATQB registry parameter is set to '8', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.4.1.6.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|---|------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.82, RQ9.76 |
| 5 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type B (with anti-collision and selection). | RQ9.84 |
| 6 | HCUT → HS | Send EVT_CARD_ACTIVATED. | RQ9.112, RQ9.79 |
| 7 | PCD → HCUT | Send C-APDU. Step 6 might be performed by the HCUT during or after this step. This is also a valid behaviour of HCUT. | |
| 8 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |
| 9 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 10 | HCUT → PCD | Send R-APDU. | |
| 11 | PCD → HCUT | Send C-APDU within a single I-block with an error in the CRC field. | |
| 12 | HCUT → HS | The terminal may send EVT_SEND_DATA on PIPEa with RF error indicator set to '01'. The EVT_SEND_DATA content is not checked. | RQ9.81 |
| 13 | PCD → HCUT | Resend C-APDU (step 11, without any error) after timeout resulting from FWI. | |
| 14 | HCUT → HS | Send EVT_SEND_DATA containing the received C-APDU on PIPEa with RF error indicator set to '00'. | RQ9.86, RQ9.81 |
| 15 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEa. | |
| 16 | HCUT → PCD | Send R-APDU. | |
| 17 | | If there is more data to exchange than repeat steps 9 to 12. | |
| 18 | User → PCD | Run the deactivation sequence. | |
| 19 | PCD → HCUT | Send DESELECT command. | |
| 20 | HCUT → HS | Send EVT_CARD_DEACTIVATED. | RQ9.87, RQ9.78 |
| 21 | User → HCUT | The terminal is removed from the PCD field. | |
| 22 | HCUT → HS | For full power mode execution: send EVT_FIELD_OFF. For low power mode execution: send EVT_FIELD_OFF or power down the host. | RQ9.88, RQ9.90, RQ9.80 |
| 23 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 22. | |

5.6.4.1.7 Test case 6: Routing HCI events to RF Gate with MODE parameter enabled only - single card RF Gate

5.6.4.1.7.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.7.2 Initial conditions

- The user has to ensure that the RF technology type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A of the HCUT.
- ATQA registry parameter is set to '01 00', SAK is set to '20', MODE for card RF gate type A is set to '02'.
- SESSION_IDENTITY is set to a random value.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type A protocol is powered off.

5.6.4.1.7.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|--|---------|
| 1 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, 'FF') on PIPEa. | |
| 2 | HCUT → HS | Send ANY_OK. | |
| 3 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 4 | PCD → HCUT | Power on the field. | |
| 5 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 6 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, no event shall be sent on PIPEa. | RQ9.115 |
| 7 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3 and b6 in the SAK. If the HCUT does not perform the initialization, skip to step 14. | |
| 8 | PCD → HCUT | Send (RATS). | |
| 9 | HCUT → PCD | Response (ATS). | |
| 10 | PCD → HCUT HCUT → PCD | PPS procedure. | |
| 11 | HCUT → HS | No events shall be sent on PIPEa. | RQ9.115 |
| 12 | PCD → HCUT | Send C-APDU. | |
| 13 | HCUT → HS | No events shall be sent on PIPEa. | RQ9.115 |
| 14 | User → HCUT | The terminal is removed from the PCD field. | |
| 15 | HCUT → HS | No events shall be sent on PIPEa. | RQ9.115 |

5.6.4.1.8 Test case 7: Routing HCI events to RF Gate with MODE parameter enabled only - multiple card RF Gates

5.6.4.1.8.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.1.8.2 Initial conditions

- The user has to ensure that the RF technology type A and Type B are enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A of the HCUT.
- A PIPEb is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B of the HCUT.
- ATQA registry parameter is set to '01 00', SAK is set to '20', MODE for card RF gate type A is set to '02'.
- MODE for card RF gate type B is set to '02'.
- SESSION_IDENTITY is set to a random value.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 14443-3 [6] Type B protocol is powered off.

5.6.4.1.8.3 Test procedure

| Step | Direction | Description | RQ |
|------|--------------------------|--|---------|
| 1 | HS → HCUT | Send ANY_SET_PARAMETER (MODE, 'FF') on PIPEb. | |
| 2 | HCUT → HS | Send ANY_OK. | |
| 3 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 4 | PCD → HCUT | Power on the field. | |
| 5 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 6 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON to G _{ID} = '23' on PIPEa, If SWP was in DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.115 |
| 7 | PCD → HCUT HCUT → PCD | Perform initialization of RF ISO/IEC 14443-3 [6] Type B (with anti-collision and selection). If the HCUT does not perform the initialization, skip to step 11. | |
| 8 | HCUT → HS | No events shall be sent on PIPEb. | RQ9.115 |
| 9 | PCD → HCUT | Send C-APDU. | |
| 10 | HCUT → HS | No event EVT_SEND_DATA shall be sent on PIPEb. | RQ9.115 |
| 11 | User → HCUT | The terminal is removed from the PCD field. | |
| 12 | HCUT → HS | Send EVT_FIELD_OFF to G _{ID} = '23' on PIPEa. | RQ9.115 |

5.6.4.2 Non ISO/IEC 14443-4 type A applications

5.6.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 9.4.2 and 9.3.4.3.1.

| | | |
|--|-----------|--|
| RQ9.91 | 9.4.2 | In full power mode, and if SWP is not in DEACTIVATED_state, when the CLF detects a RF field, the card RF gate shall send the event EVT_FIELD_ON to the card application gate. |
| RQ9.92 | 9.4.2 | When there are multiple open card RF gates the CLF shall send the EVT_FIELD_ON to the open card application gate with the lowest G _{ID} . |
| RQ9.93 | 9.4.2 | When the CLF detects a RF field, and after sending EVT_FIELD_ON (if sent), the CLF shall start the initialization and anti-collision process as defined in ISO/IEC 14443-3 [6] using the parameters from the card RF gate registry for the RF technology type A. |
| RQ9.94 | 9.4.2 | Any other communications are done using the CLT mode as defined in ETSI TS 102 613 [2]. |
| RQ9.95 | 9.4.2 | In full power mode, when the CLF detects at any time during the sequence that the RF field is off, the card RF gate shall send EVT_FIELD_OFF to the card application gate. |
| RQ9.96 | 9.4.2 | When there are multiple open cards RF gates the CLF shall send the EVT_FIELD_OFF to the card application gate used during the transaction or to the open card application gate with the lowest G _{ID} . |
| RQ9.97 | 9.4.2 | In low power mode, when the CLF detects at any time during the sequence that the RF field is off, the card RF gate shall either send EVT_FIELD_OFF to the card application gate or power down the host. |
| RQ9.75 | 9.3.4.3.1 | When EVT_FIELD_ON is sent by the host controller, it shall be sent within 2 ms after the detection of an RF field. |
| RQ9.76 | 9.3.4.3.1 | In case of an underlying data link layer according to ETSI TS 102 613 [2], if SWP is in DEACTIVATED state, the CLF shall activate the interface instead of sending the EVT_FIELD_ON. |
| RQ9.77 | 9.3.4.3.1 | When the host controller sends EVT_FIELD_ON, it shall not contain parameters. |
| RQ9.80 | 9.3.4.3.4 | When the host controller sends EVT_FIELD_OFF, it shall not contain parameters. |
| NOTE: Development of test cases for RQ9.75 is FFS. | | |

5.6.4.2.2 Test case 1: Non ISO/IEC 14443-4 type A

5.6.4.2.2.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.2.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology Non ISO/IEC 14443-4 [7] type A is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source $G_{ID} = '23'$ to the card RF gate of type A.
- The Proximity Coupling Device (PCD) supports ISO/IEC 14443-3 [6] Type A.
- ATQA registry parameter is set to '04 00', SAK is set to '28', MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.4.2.2.3 Test procedure

| Step | Direction | Description | RQ |
|--|-------------------------|---|------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.91, RQ9.76, RQ9.77 |
| 5 | PCD ↔ HCUT | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3, b4 and b6 in the SAK (see note). | RQ9.93 |
| 6 | PCD ↔ HCUT HCUT ↔ HS | Open CLT session as defined in ETSI TS 102 613 [2] and exchange at least one further RF frame command/response within the CLT session. | RQ9.94 |
| 7 | User → HCUT | The terminal is removed from the PCD field. | |
| 8 | HCUT → HS | For full power mode execution: send EVT_FIELD_OFF. For low power mode execution: send EVT_FIELD_OFF or power down the host. | RQ9.95, RQ9.97, RQ9.80 |
| 9 | | If the terminal supports O_Low_Power_Mode, remove the terminal from the PCD field, power off the terminal and perform steps 1 to 8. | |
| NOTE: As the CLF may be used in a multi host environment it may modify other bits of the SAK. This is not a failure of the terminal. | | | |

5.6.4.2.3 Test case 2: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G_{ID}

5.6.4.2.3.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.2.3.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- The user has to ensure that the RF technology type B and Non ISO/IEC 14443-4 [7] type A are enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEa is created and opened by the host with source $G_{ID} = '23'$ to the card RF gate of type A.
- A PIPEb is created and opened by the host with source $G_{ID} = '21'$ to the card RF gate of type B of HCUT.
- The Proximity Coupling Device (PCD) supports ISO/IEC 14443-3 [6] Type A and is powered off.
- ATQA registry parameter is set to '04 00', SAK is set to '28' and MODE for type A is set to '02'.
- MODE for type B is set to '02'.
- SESSION_IDENTITY is set to a random value.

5.6.4.2.3.3 Test procedure

| Step | Direction | Description | RQ |
|--|-------------------------|--|------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | PCD → HCUT | Transitions from POWER_OFF to IDLE state. | |
| 4 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON to G _{ID} = '21' on PIPEb. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.92, RQ9.76, RQ9.77 |
| 5 | PCD ↔ HCUT HCUT ↔ HS | Perform initialization of RF ISO/IEC 14443-3 [6] Type A (with anti-collision and selection). Check only bits b3, b4 and b6 in the SAK (see note). | RQ9.93, RQ9.94 |
| 6 | PCD ↔ HCUT HCUT ↔ HS | Open CLT session as defined in ETSI TS 102 613 [2] and exchange at least one further RF frame command/response within the CLT session. | RQ9.94 |
| 7 | User → HCUT | The terminal is removed from the PCD field. | |
| 8 | HCUT → HS | Send EVT_FIELD_OFF to G _{ID} = '21' on PIPEb or to G _{ID} = '23' on PIPEa. | RQ9.96, RQ9.80 |
| NOTE: As the CLF may be used in a multi host environment it may modify other bits of the SAK. This is not a failure of the terminal. | | | |

5.6.4.3 Type B' RF technology

5.6.4.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.4.3.

NOTE: Defining conformance requirements is out of scope of the present document.

5.6.4.4 Type F RF technology

5.6.4.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 9.4.4 and 9.3.4.3.1.

| | | | |
|---------|-------|-----------------|--|
| RQ9.98 | 9.4.4 | | In full power mode, and if SWP is not in DEACTIVATED state, when the CLF detects a RF field, the card RF gate shall send the event EVT_FIELD_ON to the card application gate. |
| RQ9.99 | 9.4.4 | | When there are multiple open cards RF gates the CLF shall send the EVT_FIELD_ON to the open card application gate with the lowest G _{ID} . |
| RQ9.100 | 9.4.4 | Rel-7 to Rel-11 | In case SWP as defined in ETSI TS 102 613 [2] is used as a data link layer, the initialization data exchange is performed using CLT as defined in ETSI TS 102 613 [2] The host provides information for the initialization. |
| RQ9.109 | 9.4.4 | Rel-12 upwards | In case SWP as defined in ETSI TS 102 613 [2] is used as a data link layer, if an initialization command is received, then the initialization data exchange is performed using CLT as defined in ETSI TS 102 613 [2] The host provides information for the initialization. |
| RQ9.102 | 9.4.4 | | The card RF gate shall forward the ISO/IEC 18092 [4] 212 kbps/424 kbps frames from the external reader to the card application gate using the EVT_SEND_DATA with the structure specified in ETSI TS 102 622 [1]. |
| RQ9.110 | 9.4.4 | Rel-12 upwards | The host controller shall be able to receive the ISO/IEC 18092 [4] 212 kbps/424 kbps frames without a previous initialization in the RQ9.109 before. |
| RQ9.111 | 9.4.4 | Rel-12 upwards | The CLF shall not forward RF frames to the host if a response from the host is pending. If an RF frame was received but the response from the host is still pending the received RF frame shall be discarded. |
| RQ9.103 | 9.4.4 | | The host sending a response shall encapsulate the ISO/IEC 18092 [4] 212 kbps/424 kbps frames in an EVT_SEND_DATA event and shall send it to the card RF gate. |
| RQ9.104 | 9.4.4 | | In full power mode, when the CLF detects at any time during the sequence that the RF field is off, the card RF gate shall send EVT_FIELD_OFF to the card application gate. |
| RQ9.105 | 9.4.4 | | When there are multiple open cards RF gates the CLF shall send the EVT_FIELD_OFF to the card application gate used during the transaction or to the open card application gate with the lowest G _{ID} . |

| | | | |
|---|-----------|----------------|--|
| RQ9.106 | 9.4.4 | | In low power mode, when the CLF detects at any time during the sequence that the RF field is off, the card RF gate shall either send EVT_FIELD_OFF to the card application gate or power down the host. |
| RQ9.107 | 9.4.4 | | ISO/IEC 18092 [4] 212 kbps/424 kbps frames, except initialization command and response (command code '00' and '01'), shall be exchanged using the appropriate gate depending on the command code of the frame as described in ETSI TS 102 622 [1]. |
| RQ9.108 | 9.4.4 | | The command codes reserved for the NFCIP-1 protocol shall not be forwarded. |
| RQ9.75 | 9.3.4.3.1 | | When EVT_FIELD_ON is sent by the host controller, it shall be sent within 2 ms after the detection of an RF field. |
| RQ9.76 | 9.3.4.3.1 | | In case of an underlying data link layer according to ETSI TS 102 613 [2], if SWP is in DEACTIVATED state, the CLF shall activate the interface instead of sending the EVT_FIELD_ON. |
| RQ9.77 | 9.3.4.3.1 | | When the host controller sends EVT_FIELD_ON, it shall not contain parameters. |
| RQ9.112 | 9.4.4 | Rel-12 upwards | After receiving an empty EVT_SEND_DATA from the host the CLF shall not send anything to RF but shall be able to receive RF frames. |
| RQ9.80 | 9.3.4.3.4 | | When the host controller sends EVT_FIELD_OFF, it shall not contain parameters. |
| RQ9.81 | 9.3.4.3.5 | | On sending EVT_SEND_DATA the CLF shall set the last parameter byte as RF error indicator. |
| NOTE: Development of test cases for RQ9.100 is FFS. | | | |

5.6.4.4.2 Test case 1: ISO/IEC 18092 Type F

5.6.4.4.2.1 Test execution

Run this test with the following parameters:

- Full power mode.
- ISO/IEC 18092 [4] Type F command parameters in step 5 are following:
 - LEN = all values from '03' to 'FF'
 - CMD0 = 'D8'
 - CMD1 = '00'
 - Byte 0 ~ Byte n = any value
- ISO/IEC 18092 [4] Type F response parameters in step 8 are following:
 - LEN = all values from '03' to 'FF'
 - CMD0 = 'D9'
 - CMD1 = '01'
 - Byte 0 ~ Byte n = same values as Byte 0 ~ Byte n in the command

5.6.4.4.2.2 Initial conditions

- The user has to ensure that the RF technology type F is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEf is created and opened by the host with source G_{ID} = '24' to the card RF gate of type F of HCUT.
- MODE is set to '02' and SESSION_IDENTITY is set to a random value.
- The HCUT is configured to forward incoming POLLING REQUEST commands to the HS for processing, using SWP as defined in ETSI TS 102 613 [2] as a data link layer.

5.6.4.4.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------------------|--|--------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.98, RQ9.76 |
| 4 | PCD ↔ HCUT HCUT ↔ HS | Perform initialization of RF ISO/IEC 18092 [4] 212 kbps: The PCD sends a POLLING REQUEST as defined in ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode, where the Length is set to '06', 1 st byte to '00', 2 nd and 3 rd bytes to '8EFC', 4 th byte to '00', 5 th byte to '00', and bytes 6 and 7 represent the correct CRC at 212 kbps. The HS provides the necessary response in time to the HCUT for a POLLING RESPONSE in the first time slot according to the initialization procedure as defined in ISO/IEC 18092 [4] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1 st byte to '01', 2 nd to 9 th bytes to '02FE000000000000', 10 th to 17 th bytes to 'FFFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps. | |
| 5 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame. | |
| 6 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame on PIPEf with RF error indicator set to '00'. | RQ9.102 RQ9.107 RQ9.81 |
| 7 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEf. | |
| 8 | HCUT → PCD | Send the ISO/IEC 18092 [4] 212 kbps frame. | RQ9.103 RQ9.107 |
| 9 | | If the payload size in the Command/Response defined in the initial condition has not yet reached 255 bytes, then increases the size of the payload by 1 byte and come back to step 5, else move to step 10. | |
| 10 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame as defined below data with an error in the CRC field: <ul style="list-style-type: none"> • LEN = '37'. • CMD0 = 'D8'. • CMD1 = '00'. • Byte 0 ~ Byte 51 = any value. | |
| 11 | HCUT → HS | The terminal may send EVT_SEND_DATA on PIPEf; if sent, the RF error indicator shall be set to '01'. The EVT_SEND_DATA content is not checked. | RQ9.81 |
| 12 | PCD → HCUT | Resend the ISO/IEC 18092 [4] 212 kbps frame (step 10, without any error) after 10 ms from the end of the frame in step 10. | |
| 13 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame on PIPEf with RF error indicator set to '00'. | RQ9.81 |
| 14 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEf. | |
| 15 | HCUT → PCD | Send the ISO/IEC 18092 [4] 212 kbps frame: <ul style="list-style-type: none"> • LEN = '37'. • CMD0 = 'D9'. • CMD1 = '00'. • Byte 0 ~ Byte 51 = same values as Byte 0 ~ Byte 51 in step 10. | |
| 16 | User → HCUT | The terminal is removed from the PCD field. | |
| 17 | HCUT → HS | Send EVT_FIELD_OFF. | RQ9.104, RQ9.106, RQ9.80 |

5.6.4.4.3 Test case 2: RF off during ISO/IEC 18092 Type F commands handling

5.6.4.4.3.1 Test execution

Run this test with the following parameters:

- Full power mode.

- The timings of RF off in step 8 are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 ms after the beginning of sending the ISO/IEC 18092 [4] 212 kbps frames in step 5.

NOTE: As specified in ISO/IEC 18092 [4], the start of the frame is defined as the start of the Preamble.

5.6.4.4.3.2 Initial conditions

- The user has to ensure that the RF technology type F is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEf is created and opened by the host with source G_{ID} = '24' to the card RF gate of type F of HCUT.
- MODE is set to '02'.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 18092 [4] Type F protocol is powered off.
- The HCUT is configured to forward incoming POLLING REQUEST commands to the HS for processing, using SWP as defined in ETSI TS 102 613 [2] as a data link layer.

5.6.4.4.3.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------------------|--|-------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.98, RQ9.76 |
| 4 | PCD ↔ HCUT HCUT ↔ HS | Perform initialization of RF ISO/IEC 18092 [4] 212 kbps: The PCD sends a POLLING REQUEST as defined in ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode, where the Length is set to '06', 1 st byte to '00', 2 nd and 3 rd bytes to '8EFC', 4 th byte to '00', 5 th byte to '00', and bytes 6 and 7 represent the correct CRC at 212 kbps. The HS provides the necessary response in time to the HCUT for a POLLING RESPONSE in the first time slot according to the initialization procedure as defined in ISO/IEC 18092 [4] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1 st byte to '01', 2 nd to 9 th bytes to '02FE000000000000', 10 th to 17 th bytes to 'FFFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps. | |
| 5 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frames, where LEN is set to 'FF', CMD0 to 'D8', CMD1 to '00', Byte 0 to Byte 251 to any value, and the last 2 bytes represent the correct CRC at 212 kbps (see note). | |
| 6 | Conditional | Depending on the timing for the RF field off as defined in the test execution, step 6 may happen. EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame in step 5 may be sent by the terminal to the HS. If the HS receives this EVT_SEND_DATA it shall respond EVT_SEND_DATA containing the response on PIPEf with a HS processing time of 3 ms. The EVT_SEND_DATA from the HS has the LEN of 'FF', CMD0 to 'D9', CMD1 to '01', Byte 0 to Byte 251 to same values as Byte 0 to Byte 251 in the command in step 5. | |
| 7 | Conditional | If the terminal has the time to receive the EVT_SEND_DATA described above it may start the ISO/IEC 18092 [4] 212 kbps frame response to the PCD, where the LEN is set to 'FF', CMD0 to 'D9', CMD1 to '01', Byte 0 to Byte 251 to same values as Byte 0 to Byte 251 in the command in step 5, and the last 2 bytes represent the correct CRC at 212 kbps. | |
| 8 | PCD → HCUT | Power off the field after the time as defined in the test execution. | |
| 9 | HCUT → HS | Terminal may send EVT_FIELD_OFF. | |
| 10 | PCD → HCUT | Wait 5ms and power on field. | |
| 11 | HCUT → HS | Terminal may send EVT_FIELD_ON. | |

| Step | Direction | Description | RQ |
|---|---|--|--------------------|
| 12 | PCD \leftrightarrow HCUT HCUT \leftrightarrow HS | 20,4 ms after step 10, perform initialization of RF ISO/IEC 18092 [4] 212 kbps: The PCD sends a POLLING REQUEST as defined in ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode, where the Length is set to '06', 1 st byte to '00', 2 nd and 3 rd bytes to '8EFC', 4 th byte to '00', 5 th byte to '00', and bytes 6 and 7 represent the correct CRC at 212 kbps. The HS provides the necessary response in time to the HCUT for a POLLING RESPONSE in the first time slot according to the initialization procedure as defined in ISO/IEC 18092 [4] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1 st byte to '01', 2 nd to 9 th bytes to '02FE000000000000', 10 th to 17 th bytes to 'FFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps. | |
| 13 | PCD \rightarrow HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame, where LEN is set to 'FF', CMD0 to 'D8', CMD1 to '00', Byte 0 to Byte 251 to any value, and the last 2 bytes represent the correct CRC at 212 kbps. | |
| 14 | HCUT \rightarrow HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame on PIPEf. | RQ9.102 RQ9.107 |
| 15 | HS \rightarrow HCUT | 3ms after receiving the EVT_SEND_DATA from previous step, send EVT_SEND_DATA containing the response on PIPEf. | |
| 16 | HCUT \rightarrow PCD | Send the ISO/IEC 18092 [4] 212 kbps frame, where the LEN is set to 'FF', CMD0 to 'D9', CMD1 to '01', Byte 0 to Byte 251 to same values as Byte 0 to Byte 251 in the command in step 13, and the last 2 bytes represent the correct CRC at 212 kbps. | RQ9.103 RQ9.107 |
| 17 | | If the RF off timing is equal to 29 ms in step 8, then move to step 18, else increases the time by 1 ms and come back to step 5. | |
| 18 | User \rightarrow HCUT | The terminal is removed from the PCD field. | |
| 19 | HCUT \rightarrow HS | Send EVT_FIELD_OFF. | RQ9.104, RQ9.80 |
| NOTE: Depending on the timing of RF field off (as specified in the test execution clause), the frame might be only partially sent before the RF field is powered off. | | | |

5.6.4.4.4 Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G_{ID}

5.6.4.4.4.1 Test execution

There are no test case-specific parameters for this test case.

5.6.4.4.4.2 Initial conditions

- The user has to ensure that the all supported RF technologies are enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- If terminal supports O_CE_TypeA:
 - A PIPEa is created and opened by the host with source G_{ID} = '23' to the card RF gate of type A.
 - MODE is set to '02'.
- If terminal supports O_CE_TypeB:
 - A PIPEb is created and opened by the host with source G_{ID} = '21' to the card RF gate of type B.
 - MODE is set to '02'.
- A PIPEf is created and opened by the host with source G_{ID} = '24' to the card RF gate of type F of the HCUT.
- MODE for type F is set to '02'.
- SESSION_IDENTITY is set to a random value.
- The Proximity Coupling Device (PCD) supporting ISO/IEC 18092 [4] Type F protocol is powered off.

5.6.4.4.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------------------|--|-------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON to one of the following: <ul style="list-style-type: none"> • G_{ID} = '21' on PIPEb if type B is supported; or • G_{ID} = '23' on PIPEa if type B is not supported. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.99 RQ9.98, RQ9.76 |
| 4 | PCD ↔ HCUT HCUT ↔ HS | Perform initialization of RF ISO/IEC 18092 [4] 212 kbps. In case SWP as defined in ETSI TS 102 613 [2] is used as a data link layer, the initialization data exchange is performed using CLT as defined in ETSI TS 102 613 [2]. The UICC provides information for the initialization. | |
| 5 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frames with LEN = '0B', CMD0 = 'D8', CMD1 = '00' and Byte 0 to Byte 7 = '02FE000000000000'. | |
| 6 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frames on PIPEf. | RQ9.102 RQ9.107 |
| 7 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEf. | |
| 8 | HCUT → PCD | Send the ISO/IEC 18092 [4] 212 kbps frames with LEN = '0B', CMD0 = 'D9', CMD1 = '01' and Byte 0 to Byte 7 = '02FE000000000000'. | RQ9.103 RQ9.107 |
| 9 | User → HCUT | The terminal is removed from the PCD field. | |
| 10 | HCUT → HS | Send EVT_FIELD_OFF to one of the following: <ul style="list-style-type: none"> • G_{ID} = '24' on PIPEf; or • G_{ID} = '21' on PIPEb if type B is supported; or • G_{ID} = '23' on PIPEa if type B is not supported. | RQ9.105 RQ9.104, RQ9.80 |

5.6.4.4.5 Test case 4: ISO/IEC 18092 Type F commands handling without a previous initialization

5.6.4.4.5.1 Test execution

Run this test with the following parameters:

- Full power mode.

5.6.4.4.5.2 Initial conditions

- The user has to ensure that the RF technology type F is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEf is created and opened by the host with source G ID = '24' to the card RF gate of type F of HCUT.
- MODE is set to '02' and SESSION_IDENTITY is set to a random value.

5.6.4.4.5.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------|---|-------------------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.98, RQ9.76 |
| 4 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D8', CMD1 = '00' and Byte 0 to Byte 7 = '02FE000000000000'. | |
| 5 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frames on PIPEf. | RQ9.110 RQ9.102 RQ9.107 |
| 6 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEf. | |
| 7 | HCUT → PCD | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D9', CMD1 = '01' and Byte 0 to Byte 7 = '02FE000000000000'. | RQ9.103 RQ9.107 |
| 8 | User → HCUT | The terminal is removed from the PCD field. | |
| 9 | HCUT → HS | Send EVT_FIELD_OFF. | RQ9.104, RQ9.80 |

5.6.4.4.6 Test case 5: Receiving the RF frame during ISO/IEC 18092 Type F commands handling.

5.6.4.4.6.1 Test execution

Run this test with the following parameters:

- Full power mode.

5.6.4.4.6.2 Initial conditions

- The user has to ensure that the RF technology type F is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEf is created and opened by the host with source G ID = '24' to the card RF gate of type F of HCUT.
- MODE is set to '02' and SESSION_IDENTITY is set to a random value.
- The HCUT is configured to forward incoming POLLING REQUEST commands to the HS for processing, using SWP as defined in ETSI TS 102 613 [2] as a data link layer.

5.6.4.4.6.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------------------|--|--------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.98, RQ9.76 |
| 4 | PCD ↔ HCUT HCUT ↔ HS | Perform initialization of RF ISO/IEC 18092 [4] 212 kbps: The PCD sends a POLLING REQUEST as defined in ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode, where the Length is set to '06', 1 st byte to '00', 2 nd and 3 rd bytes to '8EFC', 4 th byte to '00', 5 th byte to '00', and bytes 6 and 7 represent the correct CRC at 212 kbps. The HS provides the necessary response in time to the HCUT for a POLLING RESPONSE in the first time slot according to the initialization procedure as defined in ISO/IEC 18092 [4] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1 st byte to '01', 2 nd to 9 th bytes to '02FE000000000000', 10 th to 17 th bytes to 'FFFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps. | RQ9.109 |
| 5 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D8', CMD1 = '00' and Byte 0 to Byte 7 = '02FE000000000000'. | |
| 6 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame on PIPEf. | RQ9.102 RQ9.107 |
| 7 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0C', CMD0 = 'D8', CMD1 = '00' and Byte 0 to Byte 7 = '02FE000000000000'. Byte 8 = '01' after 1 ms from the end of the frame in step 5. | |
| 8 | HCUT → HS | The HCUT shall not send any EVT_SEND_DATA. | RQ9.111 |
| 9 | HS → HCUT | Send EVT_SEND_DATA containing the response of step 5 on PIPEf. | |
| 10 | HCUT → PCD | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D9', CMD1 = '01' and Byte 0 to Byte 7 = '02FE000000000000'. | |
| 11 | User → HCUT | The terminal is removed from the PCD field. | |
| 12 | HCUT → HS | Send EVT_FIELD_OFF. | RQ9.104 RQ9.80 |

5.6.4.4.7 Test case 6: ISO/IEC 18092 Type F commands handling for empty EVT_SEND_DATA.

5.6.4.4.7.1 Test execution

Run this test with the following parameters:

- Full power mode.

5.6.4.4.7.2 Initial conditions

- The user has to ensure that the RF technology type F is enabled in the terminal for the UICC prior to placing the terminal in the PCD field.
- A PIPEf is created and opened by the host with source G ID = '24' to the card RF gate of type F of HCUT.
- MODE is set to '02' and SESSION_IDENTITY is set to a random value.
- The HCUT is configured to forward incoming POLLING REQUEST commands to the HS for processing, using SWP as defined in ETSI TS 102 613 [2] as a data link layer.

5.6.4.4.7.3 Test procedure

| Step | Direction | Description | RQ |
|------|-------------------------|--|--------------------|
| 1 | User → HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. | |
| 2 | PCD → HCUT | Power on the field. | |
| 3 | HCUT → HS | If SWP was not in DEACTIVATED state when the field was powered on, the HCUT shall send EVT_FIELD_ON. If SWP was in the DEACTIVATED state when the field was powered on, the HCUT shall activate the interface instead of sending EVT_FIELD_ON. | RQ9.98, RQ9.76 |
| 4 | PCD ↔ HCUT HCUT ↔ HS | Perform initialization of RF ISO/IEC 18092 [4] 212 kbps: The PCD sends a POLLING REQUEST as defined in ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode, where the Length is set to '06', 1 st byte to '00', 2 nd and 3 rd bytes to '8EFC', 4 th byte to '00', 5 th byte to '00', and bytes 6 and 7 represent the correct CRC at 212 kbps. The HS provides the necessary response in time to the HCUT for a POLLING RESPONSE in the first time slot according to the initialization procedure as defined in ISO/IEC 18092 [4] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1 st byte to '01', 2 nd to 9 th bytes to '02FE000000000000', 10 th to 17 th bytes to 'FFFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps. | RQ9.109 |
| 5 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D9', CMD1 = '01' and Byte 0 to Byte 7 = '02FE000000000000'. | |
| 6 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame on PIPEf. | RQ9.102 RQ9.107 |
| 7 | HS → HCUT | Send empty EVT_SEND_DATA on PIPEf. | |
| 8 | HCUT → PCD | The HCUT shall not send anything to PCD. | RQ9.112 |
| 9 | PCD → HCUT | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D8', CMD1 = '00' and Byte 0 to Byte 7 = '02FE000000000000'. after 20 ms from the end of the frame in step 5. | |
| 10 | HCUT → HS | Send EVT_SEND_DATA containing the received ISO/IEC 18092 [4] 212 kbps frame on PIPEf. | RQ9.112 |
| 11 | HS → HCUT | Send EVT_SEND_DATA containing the response on PIPEf. | |
| 12 | HCUT → PCD | Send the ISO/IEC 18092 [4] 212 kbps frame with LEN = '0B', CMD0 = 'D9', CMD1 = '01' and Byte 0 to Byte 7 = '02FE000000000000'. | |
| 13 | User → HCUT | The terminal is removed from the PCD field. | |
| 14 | HCUT → HS | Send EVT_FIELD_OFF. | RQ9.104 RQ9.80 |

5.6.4.5 Update RF technology settings

5.6.4.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.4.5.

There are no conformance requirements for the terminal for the referenced clause.

5.6.4.6 Identity check

5.6.4.6.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 9.4.6.

| | |
|---------|---|
| RQ9.110 | If the lower identity check fails, the host controller shall not respond to the external contactless reader with any parameter from the card emulation registries related to the UICC host. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.7 Contactless reader

5.7.1 Overview

5.7.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.1.

| | | |
|---|----------------|---|
| RQ10.1 | | The host controller has one reader RF gate for each RF technology it supports. |
| RQ10.2 | | The CLF shall handle the RF layers of the communications as defined in ISO/IEC 14443-2 [5]. |
| RQ10.3 | | The anti-collision and activation as defined in ISO/IEC 14443-3 [6] shall be handled by the CLF under the control of the host. |
| RQ10.4 | | The RF protocol as defined in ISO/IEC 14443-4 [7] shall be handled by the CLF. |
| RQ10.5 | | The reader RF gate and reader application gate shall exchange APDUs defined in ISO/IEC 7816-4 [8] over their pipe. |
| RQ10.59 | Rel-11 upwards | If MAX_CURRENT present in the host controller, the host is allowed to consume a current up to the maximum defined by the host controller in its identity management gate registry between the appearance and the disappearance of the RF unless restricted by the underlying layers e.g. ETSI TS 102 613 [2] where the restrictions for low-power mode and power saving mode still apply. |
| NOTE 1: RQ10.3 and 10.4 are tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. | | |
| NOTE 2: RQ10.2 and RQ10.5 are partly tested in clause 5.7.2.3.1 and 5.7.2.3.2. These test cases are functional tests only; RF parameters are not measured and a limited set of APDUs is used. Development of further test cases for RQ10.2 and RQ10.5 is out of scope of the present document. | | |
| NOTE 3: RQ10.1 is implicitly tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. | | |
| NOTE 4: Development of test cases for RQ10.59 is FFS. | | |

5.7.2 Reader RF gates

5.7.2.1 Overview

Reference: ETSI TS 102 622 [1], clause 10.2.1.

There are no conformance requirements for the terminal for the referenced clause.

5.7.2.2 Command

5.7.2.2.1 WR_XCHG_DATA

5.7.2.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.2.2.1.

| | | |
|---------|-----------------|---|
| RQ10.6 | | If b5 of the CTR field of WR_XCHG_DATA is set to zero, application level time-out is deactivated. |
| RQ10.7 | | If b5 of the CTR field of WR_XCHG_DATA is set to one, then b4 to b1 is a time-out value which shall use to calculate the application level time-out with the formula specified in ETSI TS 102 622 [1]. |
| RQ10.60 | Rel-11 upwards | If b5 of the CTR field is set to one and no response is received by the CLF from a target within the time-out period commencing after the error free transmission of this command by the CLF to the target, the CLF shall respond to the host with ANY_E_TIMEOUT with no parameters and shall discard data received from the target thereafter. |
| RQ10.8 | | When command WR_XCHG_DATA is successful, the host controller shall respond with ANY_OK with parameter which contains the data received and the RF error indicator. |
| RQ10.9 | | When command WR_XCHG_DATA is successful, the RF error indicator shall be '00' if no error. |
| RQ10.10 | Rel-7 to Rel-10 | When command WR_XCHG_DATA is successful, the RF error indicator shall be '01' if error. |
| RQ10.61 | Rel-11 upwards | When command WR_XCHG_DATA is successful, the RF error indicator shall be '01' if non-recoverable error occurs. |

| | | |
|---|----------------|---|
| RQ10.62 | Rel-11 upwards | If the CLF detects an RF transmission error and the error detection and recovery procedure defined by ISO/IEC 14443-4 [7] does not succeed then the CLF shall respond to the host with ANY_OK with the error indicator set to '01'. |
| NOTE 1: RQ10.8 and RQ.9 are tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. | | |
| NOTE 2: Development of test cases for RQ10.6, RQ10.7, RQ10.10, RQ10.60, RQ10.61 and RQ10.62 is FFS. | | |

5.7.2.3 Registries

5.7.2.3.1 Type A reader RF gate

5.7.2.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 10.1, 10.2.2.1, 10.2.3.1, 10.2.4, 10.2.4.1, 10.2.4.2, 10.2.5, 10.3.4.1 and 10.4.1.

| | | | |
|---------|----------|-----------------|---|
| RQ10.11 | 10.2.3.1 | | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ10.12 | 10.2.3.1 | | The registry is not persistent. |
| RQ10.13 | 10.2.3.1 | Rel-7 to Rel-10 | The values are updated after each target activation. |
| RQ10.63 | 10.2.3.1 | Rel-11 upwards | The values '02' to '06' (from table 42 in ETSI TS 102 622 [1]) are updated after each target activation. |
| RQ10.64 | 10.2.3.1 | Rel-11 upwards | The value '07' (from table 42 in ETSI TS 102 622 [1]) is updated when the operating status changes. |
| RQ10.14 | 10.2.3.1 | | The CLF shall set a default value for UID_REG of '08000000'. |
| RQ10.15 | 10.2.3.1 | | The CLF shall apply the access condition of RO for UID. |
| RQ10.16 | 10.2.3.1 | | The CLF shall use a default value for ATQA of '0000'. |
| RQ10.17 | 10.2.3.1 | | The CLF shall apply the access condition of RO for ATQA. |
| RQ10.18 | 10.2.3.1 | | The CLF shall use a default value for APPLICATION_DATA of an empty array. |
| RQ10.19 | 10.2.3.1 | | The CLF shall apply the access condition of RO for APPLICATION_DATA. |
| RQ10.20 | 10.2.3.1 | | The CLF shall use a default value for SAK of '00'. |
| RQ10.21 | 10.2.3.1 | | The CLF shall apply the access condition of RO for SAK. |
| RQ10.22 | 10.2.3.1 | | The CLF shall use a default value for FWI, SFGT of 'EE'. |
| RQ10.23 | 10.2.3.1 | | The CLF shall apply the access condition of RO for FWI, SFGT. |
| RQ10.24 | 10.2.3.1 | | The CLF shall set a default value for DATARATE_MAX of '00'. |
| RQ10.25 | 10.2.3.1 | | The CLF shall apply to the access condition of RW to DATARATE_MAX. |
| RQ10.26 | 10.2.3.1 | | The CLF shall accept valid values of DATARATE_MAX as defined in ETSI TS 102 622 [1]. |
| RQ10.27 | 10.2.3.1 | | The maximum supported divisor used over the RF interface shall be the minimum of the value as indicated in the registry and the maximum divisor implemented in the CLF. |
| RQ10.65 | 10.2.3.1 | Rel-11 upwards | The CLF shall set b1 to 0 of OPERATING_STATUS when the Type A reader mode is not available for the host (e.g. the CLF is exclusively active for another host). |
| RQ10.66 | 10.2.3.1 | Rel-11 upwards | The CLF shall set b1 to 1 of OPERATING_STATUS when the Type A reader mode is available for the host. |
| RQ10.67 | 10.2.3.1 | Rel-11 upwards | The CLF shall apply to the access condition of RO to OPERATING_STATUS. |
| RQ10.68 | 10.2.3.1 | Rel-11 upwards | The CLF shall set a default value for STATUS_EVENT_EN of '00'. |
| RQ10.69 | 10.2.3.1 | Rel-11 upwards | The CLF shall accept valid values of STATUS_EVENT_EN as defined in ETSI TS 102 622 [1]. |
| RQ10.70 | 10.2.3.1 | Rel-11 upwards | The CLF shall apply to the access condition of RW to STATUS_EVENT_EN. |
| RQ10.8 | 10.2.2.1 | | When command WR_XCHG_DATA is successful, the host controller shall respond with ANY_OK with parameter which contains the data received and the RF error indicator. |
| RQ10.9 | 10.2.2.1 | | When command WR_XCHG_DATA is successful, the RF error indicator shall be '00' if no error. |
| RQ10.3 | 10.1 | | The anti-collision and activation as defined in ISO/IEC 14443-3 [6] shall be handled by the CLF under the control of the host. |
| RQ10.4 | 10.1 | | The RF protocol as defined in ISO/IEC 14443-4 [7] shall be handled by the CLF. |
| RQ10.5 | 10.1 | | The reader RF gate and reader application gate shall exchange APDUs defined in ISO/IEC 7816-4 [8] over their pipe. |

| | | | |
|---|----------|--|---|
| RQ10.41 | 10.2.4 | | The reader RF gates shall support the EVT_READER_REQUESTED and EVT_END_OPERATION events. |
| RQ10.42 | 10.2.4.1 | | On receiving the EVT_READER_REQUESTED event, the CLF shall activate the RF polling (turn on the RF carrier). |
| RQ10.43 | 10.2.4.1 | | The CLF shall accept EVT_READER_REQUESTED event on any open pipe of any reader RF gate. |
| RQ10.43a | 10.2.4.2 | | Upon reception of the event EVT_END_OPERATION from a host the CLF controller shall turn the RF field OFF if the EVT_TARGET_DISCOVERED has been previously sent to that specific host. |
| RQ10.44 | 10.2.5 | | If command WR_XCHG_DATA is successful, response shall be ANY_OK. |
| RQ10.48 | 10.3.4.1 | | The existence of an RF target in the field of the activated RF technology shall be signalled to the reader application gate by EVT_TARGET_DISCOVERED event. |
| RQ10.49 | 10.3.4.1 | | If there is a single target in the reader field and the activation of the target is completed then the value of STATUS parameter of EVT_TARGET_DISCOVERED event shall be equal to '00'. |
| RQ10.51 | 10.4.1 | | On receiving the EVT_READER_REQUESTED event, the CLF shall enable the RF polling. |
| RQ10.52 | 10.4.1 | | Once RF polling is enabled, the CLF shall start the detecting of a target according to all reader RF gates of the host that have an open pipe. |
| RQ10.53 | 10.4.1 | | When a target has been detected and activated, the CLF shall notify the host via the event EVT_TARGET_DISCOVERED. |
| RQ10.55 | 10.4.1 | | When the CLF receives a response from the target to a forwarded C-APDU, the reader RF gate shall reply in sending back an R-APDU to the reader application gate. |
| NOTE 1: RQ10.44 is redundant with RQ10.8, RQ10.48 is redundant with RQ10.53, RQ10.51 is redundant with RQ10.42, so only RQ10.8, RQ10.53 and RQ10.42 are listed in clause 5.7.2.3.1.2. | | | |
| NOTE 2: RQ10.43 is only partially tested in clause 5.7.2.3.1.2: it is currently only tested in the context of a single reader pipe being created and open; it is not currently tested in the context of more than one reader pipe being created and open. | | | |
| NOTE 3: Development of test cases for RQ10.11, RQ10.12, RQ10.63, RQ10.64, RQ10.65, RQ10.66, RQ10.67, RQ10.68, RQ10.69 and RQ10.70 is FFS. | | | |

5.7.2.3.1.2 Test case 1: ISO/IEC 14443-4 compliant type A

5.7.2.3.1.2.1 Test execution

The test procedure shall be executed four times, based on 4 different scenarios (numbered from S1 to S4). Each scenario will use a different set of values for:

- ATQA, UID, SAK, APPLICATION_DATA and ATS parameters of the emulated PICC.
- DATARATE_MAX registry value.
- The APDUs exchanged.

As defined in tables 5.6 to 5.9 (excluding CRC-A).

Table 5.6

| Scenario number | UID type | PICC ATQA value (ATQA_PICC) (binary format) | PICC UID value (UID_PICC) | PICC SAK value (SAK_PICC) |
|-----------------|----------|---|---------------------------|---------------------------|
| S1 | Single | '00000000 00000001'b | '01020304' | '20' |
| S2 | Single | '00000000 00000001'b | '01020304' | '28' |
| S3 | Double | '00000000 01000001'b | '01020304050607' | '38' |
| S4 | Triple | '00000000 10000001'b | '0102030405060708090A' | '60' |

Table 5.7

| Scenario number | PICC APPLICATION_DATA value (AppData_PICC) | PICC ATS value (ATS_PICC) |
|---|--|---|
| S1, S2 | " (no Application data) | '0575778102' (see note 2) |
| S3, S4 | '112233445566778899' (see note 1) | '0E75778102112233445566778899' (see note 2) |
| NOTE 1: Value chosen as maximum number of historical bytes to fill the minimum Frame Size: FSD = 16 Bytes. | | |
| NOTE 2: ATS_PICC is built with: T0 = 75 (FSC = 64Bytes); TA(1) = 77 (All baud rates supported => PPS possible); TB(1) = 81 (SFGT = 604 µs & FWT = 77,33 ms); TC(1) = 02 (CID supported, NAD not supported); [T1-TK]a = AppData_PICC. | | |

Table 5.8

| Scenario number | DATARATE_MAX registry values (DRM_Val) | Acceptable PPS request behavior in step 23 | Effective RF data rate in steps 31 and 32 (kb/s) |
|-----------------|--|--|--|
| S1 | '00' | No PPS request | 106 |
| | | PPS request with PPS1 absent | 106 |
| | | PPS1 = '00' | 106 |
| S2 | '01' | No PPS request | 106 |
| | | PPS request with PPS1 absent | 106 |
| | | PPS1 = '00' | 106 |
| S3 | '02' | PPS1 = '05' | 212 |
| | | No PPS request | 106 |
| | | PPS request with PPS1 absent | 106 |
| S4 | '03' | PPS1 = '00' | 106 |
| | | PPS1 = '05' | 212 |
| | | PPS1 = '0A' | 424 |
| | | No PPS request | 106 |
| S4 | '03' | PPS request with PPS1 absent | 106 |
| | | PPS1 = '00' | 106 |
| | | PPS1 = '05' | 212 |
| | | PPS1 = '0A' | 424 |
| | | PPS1 = '0F' | 848 |

Table 5.9

| APDUs to be used in steps 30 to 33: Scenario number | C-APDU | R-APDU |
|---|--|-----------------------------------|
| S1 | 4 bytes: '00 A4 00 0C' | 2 bytes: '90 00' |
| S2 | 5 bytes: '00 B0 00 00 00' | 258 bytes: '00 01 .. FE FF 90 00' |
| S3 | 260 bytes: '00 20 00 01 FF 00 01 .. FD FE' | 2 bytes: '63 C2' |
| S4 | 8 bytes: '00 A4 00 04 02 3F 00 02' | 4 bytes: '62 00 90 00' |

5.7.2.3.1.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- A PIPEa is created and opened by the host with source gate 'I3' to the reader RF gate of type A.

5.7.2.3.1.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|---|------------------|
| 1 | HS → HCUT | HS sets [UID registry] = '11111111' | |
| 2 | HCUT → HS | Send response with an allowed error code for the command | RQ10.15 |
| 3 | HS ↔ HCUT | HS gets UID registry value and checks it is default: '08000000' | RQ10.14, RQ10.15 |
| 4 | HS → HCUT | HS sets [ATQA registry]= '1111' | |
| 5 | HCUT → HS | Send response with an allowed error code for the command | RQ10.17 |
| 6 | HS ↔ HCUT | HS gets ATQA registry value and checks it is default: '0000' | RQ10.16, RQ10.17 |

| Step | Direction | Description | RQ |
|-------|--|---|---------------------------------|
| 7 | HS → HCUT | HS sets [APPLICATION_DATA registry]= '11' | |
| 8 | HCUT → HS | Send response with an allowed error code for the command | RQ10.19 |
| 9 | HS → HCUT HCUT ← HS | HS gets APPLICATION_DATA registry value and checks it is default: " (N=0) | RQ10.18, RQ10.19 |
| 10 | HS → HCUT | HS sets [SAK registry]= '11' | |
| 11 | HCUT → HS | Send response with an allowed error code for the command | RQ10.21 |
| 12 | HS ↔ HCUT | HS gets SAK registry value and checks it is default: '00' | RQ10.20, RQ10.21 |
| 13 | HS → HCUT | HS sets [FWI, SFGT registry]= '81' | |
| 14 | HCUT → HS | Send response with an allowed error code for the command | RQ10.23 |
| 15 | HS ↔ HCUT | HS gets FWI, SFGT registry and checks it is default: 'EE' | RQ10.22, RQ10.23 |
| 16 | HS ↔ HCUT | HS gets DATARATE_MAX registry and checks it is default: '00' | RQ10.24, RQ10.25 |
| 17 | HS → HCUT HCUT ← HS | HS sets [DATARATE_MAX registry]= DRM_Val and HCUT accepts command | RQ10.25, RQ10.26 |
| 18 | HS ↔ HCUT | HS gets DATARATE_MAX registry and checks it is DRM_Val | RQ10.25 |
| 19 | HS → HCUT | Send EVT_READER_REQUESTED on PIPEa | RQ10.41, RQ10.43 |
| 20 | | Put a PICC supporting ISO/IEC 14443-4 [7] Type A protocol in the field | |
| 21 | HCUT → PICC PICC → HCUT | Perform the initialization of the RF ISO/IEC 14443-3 [6] Type A protocol (with anti-collision and selection, using ATQA_PICC , UID_PICC and SAK_PICC) | RQ10.3, RQ10.52, RQ10.42 |
| 22 | HCUT ↔ PICC | HCUT sends RATS, PICC answers ATS_PICC+CRC-A | RQ10.4 |
| 23 | HCUT ↔ PICC | HCUT may initiate a PPS Request/Response exchange HCUT behavior is checked as acceptable according to the Test execution clause | RQ10.4 |
| 24 | HCUT → HS | Send EVT_TARGET_DISCOVERED on PIPEa (see note) | RQ10.49, RQ10.53 |
| 25 | HS ↔ HCUT | HS gets UID registry value and checks it is now UID_PICC | RQ10.13, RQ10.15 |
| 26 | HS ↔ HCUT | HS gets ATQA registry value and checks it is now ATQA_PICC | RQ10.13, RQ10.17 |
| 27 | HS ↔ HCUT | HS gets APPLICATION_DATA registry value and checks it is now AppData_PICC | RQ10.13, RQ10.19 |
| 28 | HS → HCUT HCUT ← HS | HS gets SAK registry value and checks it is now SAK_PICC | RQ10.13, RQ10.21 |
| 29 | HS ↔ HCUT | HS gets FWI, SFGT registry and checks it is now: '81' | RQ10.22, RQ10.23 |
| 30 | HS → HCUT | HS sends WR_XCHG_DATA(CTR='00',C-APDU) on PIPEa, with C-APDU as specified in the Test execution clause | RQ10.5 |
| 31 | HCUT → PICC | HCUT sends C-APDU (Effective RF data rate has to be consistent with PPS exchange in step 23) | RQ10.4, RQ10.27 |
| 32 | PICC → HCUT | PICC sends R-APDU, with R-APDU as specified in the Test execution clause (Effective RF data rate has to be consistent with PPS exchange in step 23) | RQ10.4, RQ10.27 |
| 33 | HCUT → HS | HCUT sends ANY_OK(R-APDU) | RQ10.5, RQ10.8, RQ10.9, RQ10.55 |
| 34 | HS → HCUT | HS sends EVT_END_OPERATION on PIPEa Check that the HCUT turns the RF field OFF for 5 ms minimum, as defined in ISO/IEC 14443-3 [6] | RQ10.41, RQ10.43a |
| NOTE: | Depending on terminal implementation, step 24 may occur before or in parallel with the PPS Request/Response exchange in step 23. This shall not be considered as a test failure. | | |

5.7.2.3.2 Type B reader RF gate

5.7.2.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 10.1, 10.2.2.1, 10.2.3.2, 10.2.4, 10.2.4.1, 10.2.5, 10.3.4.1 and 10.4.1.

| | | | |
|---------|----------|-----------------|---|
| RQ10.28 | 10.2.3.2 | | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ10.29 | 10.2.3.2 | | The registry is not persistent. |
| RQ10.30 | 10.2.3.2 | Rel-7 to Rel-10 | The values are updated after each target activation. |
| RQ10.71 | 10.2.3.2 | Rel-11 upwards | The values '01', '03', '04' and '02' (read value) from table 43 defined in ETSI TS 102 622 [1] are updated after each target activation. |
| RQ10.72 | 10.2.3.2 | Rel-11 upwards | The value '07' from table 43 defined in ETSI TS 102 622 [1] is updated when the operating status changes. |

| | | | |
|---|----------|----------------|---|
| RQ10.31 | 10.2.3.2 | | The CLF shall use a default value for PUPI of 'N0=0'. |
| RQ10.32 | 10.2.3.2 | | The CLF shall apply the access condition of RO for PUPI. |
| RQ10.33 | 10.2.3.2 | | The CLF shall use a default value for APPLICATION_DATA of 'N1=0'. |
| RQ10.34 | 10.2.3.2 | | The CLF shall apply the access condition of RO for APPLICATION_DATA. |
| RQ10.35 | 10.2.3.2 | | The CLF shall set a default value for AFI of '00'. |
| RQ10.36 | 10.2.3.2 | | The CLF shall apply the access condition of RW to AFI. |
| RQ10.73 | 10.2.3.2 | Rel-11 upwards | The CLF shall use the value written to the AFI registry by the host to poll the target. |
| RQ10.74 | 10.2.3.2 | Rel-11 upwards | The CLF shall set the AFI registry value to the AFI value of the target after the activation of the target. |
| RQ10.37 | 10.2.3.2 | | The CLF shall use a default value for HIGHER_LAYER_RESPONSE of 'N2=0'. |
| RQ10.38 | 10.2.3.2 | | The CLF shall apply the access condition of RO to HIGHER_LAYER_RESPONSE. |
| RQ10.39 | 10.2.3.2 | | The CLF shall set a default value for HIGHER_LAYER_DATA of 'N3=0'. |
| RQ10.40 | 10.2.3.2 | | The CLF shall apply the access condition of RW to HIGHER_LAYER_DATA. |
| RQ10.8 | 10.2.2.1 | | When command WR_XCHG_DATA is successful, the host controller shall respond with ANY_OK with parameter which contains the data received and the RF error indicator. |
| RQ10.9 | 10.2.2.1 | | When command WR_XCHG_DATA is successful, the RF error indicator shall be '00' if no error. |
| RQ10.75 | 10.2.2.1 | Rel-11 upwards | The CLF shall set b1 to 0 of OPERATING_STATUS when the Type B reader mode is not available for the host (e.g. the CLF is exclusively active for another host). |
| RQ10.76 | 10.2.2.1 | Rel-11 upwards | The CLF shall set b1 to 1 of OPERATING_STATUS when the Type B reader mode is available for the host. |
| RQ10.77 | 10.2.2.1 | Rel-11 upwards | The CLF shall apply to the access condition of RO to OPERATING_STATUS. |
| RQ10.78 | 10.2.2.1 | Rel-11 upwards | The CLF shall set a default value for STATUS_EVENT_EN of '00'. |
| RQ10.79 | 10.2.2.1 | Rel-11 upwards | The CLF shall accept valid values of STATUS_EVENT_EN as defined in ETSI TS 102 622 [1]. |
| RQ10.80 | 10.2.2.1 | Rel-11 upwards | The CLF shall apply to the access condition of RW to STATUS_EVENT_EN. |
| RQ10.3 | 10.1 | | The anti-collision and activation as defined in ISO/IEC 14443-3 [6] shall be handled by the CLF under the control of the host. |
| RQ10.4 | 10.1 | | The RF protocol as defined in ISO/IEC 14443-4 [7] shall be handled by the CLF. |
| RQ10.5 | 10.1 | | The reader RF gate and reader application gate shall exchange APDUs defined in ISO/IEC 7816-4 [8] over their pipe. |
| RQ10.41 | 10.2.4 | | The reader RF gates shall support the EVT_READER_REQUESTED and EVT_END_OPERATION events. |
| RQ10.42 | 10.2.4.1 | | On receiving the EVT_READER_REQUESTED event, the CLF shall activate the RF polling (turn on the RF carrier). |
| RQ10.43 | 10.2.4.1 | | The CLF shall accept EVT_READER_REQUESTED event on any open pipe of any reader RF gate. |
| RQ10.43 a | 10.2.4.2 | | Upon reception of the event EVT_END_OPERATION from a host the CLF controller shall turn the RF field OFF if the EVT_TARGET_DISCOVERED has been previously sent to that specific host. |
| RQ10.44 | 10.2.5 | | If command WR_XCHG_DATA is successful, response shall be ANY_OK. |
| RQ10.48 | 10.3.4.1 | | The existence of an RF target in the field of the activated RF technology shall be signalled to the reader application gate by EVT_TARGET_DISCOVERED event. |
| RQ10.49 | 10.3.4.1 | | If there is a single target in the reader field and the activation of the target is completed then the value of STATUS parameter of EVT_TARGET_DISCOVERED event shall be equal to '00'. |
| RQ10.51 | 10.4.1 | | On receiving the EVT_READER_REQUESTED event, the CLF shall enable the RF polling. |
| RQ10.52 | 10.4.1 | | Once RF polling is enabled, the CLF shall start the detecting of a target according to all reader RF gates of the host that have an open pipe. |
| RQ10.53 | 10.4.1 | | When a target has been detected and activated, the CLF shall notify the host via the event EVT_TARGET_DISCOVERED. |
| RQ10.55 | 10.4.1 | | When the CLF receives a response from the target to a forwarded C-APDU, the reader RF gate shall reply in sending back an R-APDU to the reader application gate. |
| NOTE 1: RQ10.51 is redundant with RQ10.42, RQ10.48 is redundant with RQ10.53, RQ 10.44 is redundant with RQ10.8, so only RQ10.8, RQ10.53 and RQ10.42 are listed in clause 5.7.2.3.2.2. | | | |
| NOTE 2: RQ10.43 is only partially tested in clause 5.7.2.3.2.2: it is currently only tested in the context of a single reader pipe being created and open; it is not currently tested in the context of more than one reader pipe being created and open. | | | |
| NOTE 3: Development of test cases for RQ10.28, RQ10.29, RQ10.71, RQ10.72, RQ10.73, RQ10.74, RQ10.75, RQ10.76, RQ10.77, RQ10.78, RQ10.79, RQ10.80 is FFS. | | | |

5.7.2.3.2.2 Test case 2: ISO/IEC 14443-4 compliant type B

5.7.2.3.2.2.1 Test execution

- The emulated PICC shall use the following parameters:
 - PUPI: **PUPI_PICC** = '01 02 03 04'
 - APPLICATION DATA: **APP_DATA_PICC** = '01 xx xx 00'
 - AFI: **AFI_PICC** = '01'
 - HIGHER LAYER RESPONSE: **HI_LAYER_RSP_PICC** = '01 02 03 04 05 06 07 08 09 0A'
- The APDUs exchanged in steps 23 to 38 shall be:

| | | | |
|---------|--|---------|-----------------------------------|
| C-APDU1 | 4 bytes: '00 A4 00 0C' | R-APDU1 | 2 bytes: '90 00' |
| C-APDU2 | 5 bytes: '00 B0 00 00 00' | R-APDU2 | 258 bytes: '00 01 .. FE FF 90 00' |
| C-APDU3 | 260 bytes: '00 20 00 01 FF 00 01 .. FD FE' | R-APDU3 | 2 bytes: '63 C2' |
| C-APDU4 | 8 bytes: '00 A4 00 04 02 3F 00 02' | R-APDU4 | 4 bytes: '62 00 90 00' |

5.7.2.3.2.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- A PIPEa is created and opened by the host with source G_{ID} = '11' to the reader RF gate of type B.

5.7.2.3.1.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|----------------------------|--|--------------------------|
| 1 | HS → HCUT | HS sets [PUPI registry] = PUPI_PICC | |
| 2 | HCUT → HS | Send response with an allowed error code for the command | RQ10.32 |
| 3 | HS ↔ HCUT | HS gets PUPI registry value and checks it is default: " ($N_0=0$) | RQ10.31, RQ10.32 |
| 4 | HS → HCUT | HS sets [APPLICATION DATA registry] = APP_DATA_PICC | |
| 5 | HCUT → HS | Send response with an allowed error code for the command | RQ10.34 |
| 6 | HS ↔ HCUT | HS gets APPLICATION DATA registry value and checks it is default: " ($N_1=0$) | RQ10.33, RQ10.34 |
| 7 | HS ↔ HCUT | HS gets AFI registry and checks it is default: '00' | RQ10.35, RQ10.36 |
| 8 | HS ↔ HCUT | HS sets [AFI registry]= '01' and HCUT accepts command | RQ10.36 |
| 9 | HS ↔ HCUT | HS gets AFI registry and checks it is '01' | RQ10.36 |
| 10 | HS → HCUT | HS sets [HIGHER LAYER RESPONSE registry] = HI_LAYER_RSP_PICC | |
| 11 | HCUT → HS | Send response with an allowed error code for the command | RQ10.38 |
| 12 | HS → HCUT HCUT ← HS | HS gets HIGHER LAYER RESPONSE registry value and checks it is default: " ($N_2=0$) | RQ10.37, RQ10.38 |
| 13 | HS ↔ HCUT | HS gets HIGHER LAYER DATA registry and checks it is default: " ($N_3=0$) | RQ10.39, RQ10.40 |
| 14 | HS → HCUT HCUT ← HS | HS sets [HIGHER LAYER DATA registry]= 'FF' and HCUT accepts command | RQ10.40 |
| 15 | HS ↔ HCUT | HS gets HIGHER LAYER DATA registry and checks it is 'FF' | RQ10.40 |
| 16 | HS → HCUT | Send EVT_READER_REQUESTED on PIPEa | RQ10.41, RQ10.43 |
| 17 | | Put a PICC supporting ISO/IEC 14443-4 [7] Type B protocol in the field | |
| 18 | HCUT → PICC PICC → HCUT | Perform the initialization of the RF ISO/IEC 14443-3 [6] Type B protocol | RQ10.3, RQ10.52, RQ10.42 |
| 19 | HCUT → HS | Send EVT_TARGET_DISCOVERED on PIPEa | RQ10.49, RQ10.53 |
| 20 | HS ↔ HCUT | HS gets PUPI registry value and checks it is now PUPI_PICC | RQ10.30, RQ10.31 |
| 21 | HS ↔ HCUT | HS gets APPLICATION DATA registry value and checks it is now APP_DATA_PICC | RQ10.30, RQ10.33 |
| 22 | HS → HCUT HCUT ← HS | HS gets HIGHER LAYER RESPONSE registry value and checks it is now HI_LAYER_RSP_PICC | RQ10.30, RQ10.35 |
| 23 | HS → HCUT | Send WR_XCHG_DATA(CTR='00', C-APDU1) on PIPEa | RQ10.5 |
| 24 | HCUT → PICC | Send C-APDU1 | RQ10.4, RQ10.9, |

| Step | Direction | Description | RQ |
|------|-------------|---|-----------------------------------|
| 25 | PICC → HCUT | Send R-APDU1 | RQ10.4 |
| 26 | HCUT → HS | Send ANY_OK(R-APDU1) | RQ10.5, RQ10.8 RQ10.9, RQ10.55 |
| 27 | HS → HCUT | Send WR_XCHG_DATA(CTR='00', C-APDU2) on PIPEa | RQ10.5 |
| 28 | HCUT → PICC | Send C-APDU2 | RQ10.4, RQ10.9, |
| 29 | PICC → HCUT | Send R-APDU2 | RQ10.4 |
| 30 | HCUT → HS | Send ANY_OK(R-APDU2) | RQ10.5, RQ10.8 RQ10.9, RQ10.55 |
| 31 | HS → HCUT | Send WR_XCHG_DATA(CTR='00', C-APDU3) on PIPEa | RQ10.5 |
| 32 | HCUT → PICC | Send C-APDU3 | RQ10.4, RQ10.9, |
| 33 | PICC → HCUT | Send R-APDU3 | RQ10.4 |
| 34 | HCUT → HS | Send ANY_OK(R-APDU3) | RQ10.5, RQ10.8 RQ10.9, RQ10.55 |
| 35 | HS → HCUT | Send WR_XCHG_DATA(CTR='00', C-APDU4) on PIPEa | RQ10.5 |
| 36 | HCUT → PICC | Send C-APDU4 | RQ10.4, RQ10.9, |
| 37 | PICC → HCUT | Send R-APDU4 | RQ10.4 |
| 38 | HCUT → HS | Send ANY_OK(R-APDU4) | RQ10.5, RQ10.8 RQ10.9, RQ10.55 |
| 39 | HS → HCUT | HS sends EVT_END_OPERATION on PIPEa Check that the HCUT cuts the RF field OFF for 5ms minimum, as defined in ISO/IEC 14443-3 [6] | RQ10.41, RQ10.43a |

5.7.2.4 Events and subclauses

5.7.2.4.1 Events

5.7.2.4.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.2.4.

| | |
|---------|--|
| RQ10.41 | The reader RF gates shall support the EVT_READER_REQUESTED and EVT_END_OPERATION events. |
| NOTE: | RQ10.41 is tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. |

5.7.2.4.2 EVT_READER_REQUESTED

5.7.2.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.2.4.1.

| | |
|---------|--|
| RQ10.42 | On receiving the EVT_READER_REQUESTED event, the CLF shall activate the RF polling (turn on the RF carrier). |
| RQ10.43 | The CLF shall accept EVT_READER_REQUESTED event on any open pipe of any reader RF gate. |
| NOTE: | RQ10.42 and RQ.43 are tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. |

5.7.2.4.3 EVT_END_OPERATION

5.7.2.4.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.2.4.2.

| | |
|---------|--|
| RQ10.58 | Upon reception of the event EVT_END_OPERATION from a host the CLF controller shall turn the RF field OFF if the EVT_TARGET_DISCOVERED has been previously sent to that specific host |
| NOTE: | RQ10.43a is tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. |

5.7.2.4.4 EVT_READER_STATUS

5.7.2.4.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.2.4.2.

| | | |
|--|----------------|--|
| RQ10.81 | Rel-11 upwards | The CLF shall send this event once after the reader status event enable bit (b1) in the STATUS_EVENT_EN is changed to 1. |
| RQ10.82 | Rel-11 upwards | The CLF shall send this event as long as the reader status event enable bit (b1) in the corresponding STATUS_EVENT_EN remains at 1 whenever the availability status of a reader RF gate has changed. |
| RQ10.83 | Rel-11 upwards | If multiple pipes from one host to reader RF gates are open, the CLF shall send this event over one of these pipes only. |
| RQ10.84 | Rel-11 upwards | If different types of the reader mode become available/unavailable for the host at different points in time, the CLF shall send one event for each change. |
| RQ10.85 | Rel-11 upwards | The CLF shall not send the EVT_READER_STATUS if the reader status event enable bit (b1) in the corresponding STATUS_EVENT_EN is set to 0. |
| RQ10.86 | Rel-11 upwards | The CLF shall set the reader status field of READER_STATUS for b1: Type A reader status to 0 if the reader mode for Type A targets is not available for this host. |
| RQ10.87 | Rel-11 upwards | The CLF shall set the reader status field of READER_STATUS for b1: Type A reader status to 1 if the reader mode for Type A targets is available for this Host. |
| RQ10.88 | Rel-11 upwards | The CLF shall set the reader status field of READER_STATUS for b2: Type B reader status to 0 if the reader mode for Type B targets is not available for this host. 1 if the reader mode for Type B targets is available for this Host. |
| RQ10.89 | Rel-11 upwards | The CLF shall set the reader status field of READER_STATUS for b2: Type B reader status to 1 if the reader mode for Type B targets is available for this Host. |
| NOTE: Development of test cases for above listed RQs is FFS. | | |

5.7.2.5 Responses

5.7.2.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.2.5.

| | |
|---|--|
| RQ10.44 | If command WR_XCHG_DATA is successful, response shall be ANY_OK. |
| RQ10.45 | If command WR_XCHG_DATA is rejected and /or not completed, response shall be ANY_E_OK. |
| RQ10.46 | If Application level time-out occurred, the response shall be ANY_E_TIMEOUT. |
| RQ10.47 | If Target has returned an RF error the response shall be 'WR_RF_ERROR'. |
| NOTE 1: Development of test cases for RQ10.45, RQ10.46, RQ10.47 is FFS. | |
| NOTE 2: RQ10.44 is tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. | |

5.7.3 Reader application gates

5.7.3.1 Overview

Reference: ETSI TS 102 622 [1], clause 10.3.1.

There are no conformance requirements for the terminal for the referenced clause.

5.7.3.2 Command

5.7.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.3.2.

There are no conformance requirements for the terminal for the referenced clause.

5.7.3.3 Registry

5.7.3.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.3.3.

There are no conformance requirements for the terminal for the referenced clause.

5.7.3.4 Events and subclauses

5.7.3.4.1 Events

5.7.3.4.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.3.4.

There are no conformance requirements for the terminal for the referenced clause.

5.7.3.4.2 EVT_TARGET_DISCOVERED

5.7.3.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.3.4.1.

| | |
|--|---|
| RQ10.48 | The existence of an RF target in the field of the activated RF technology shall be signalled to the reader application gate by EVT_TARGET_DISCOVERED event. |
| RQ10.49 | If there is a single target in the reader field and the activation of the target is completed then the value of STATUS parameter of EVT_TARGET_DISCOVERED event shall be equal to '00'. |
| RQ10.50 | If there are several targets in the field irrespective of the RF technology then the value of STATUS parameter of EVT_TARGET_DISCOVERED event shall be equal to '03'. |
| NOTE 1: RQ10.48 and RQ10.49 are tested in clauses 5.7.2.3.1 and 5.7.2.3.2 of the present document. | |
| NOTE 2: Development of test cases for RQ10.50 is FFS. | |

5.7.4 Procedures

5.7.4.1 Use of contactless reader application

5.7.4.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.4.1.

| | | |
|--|-----------------|--|
| RQ10.51 | | On receiving the EVT_READER_REQUESTED event, the CLF shall enable the RF polling. |
| RQ10.52 | | Once RF polling is enabled, the CLF shall start the detecting of a target according to all reader RF gates of the host that have an open pipe. |
| RQ10.53 | | When a target has been detected and activated, the CLF shall notify the host via the event EVT_TARGET_DISCOVERED. |
| RQ10.54 | | If the several targets in the field then the procedure shall stop. |
| RQ10.55 | | When the CLF receives a response from the target to a forwarded C-APDU, the reader RF gate shall reply in sending back an R-APDU to the reader application gate. |
| RQ10.56 | Rel-7 to Rel-10 | If an application level time-out occurs before the CLF receives a response from the target, the CLF shall respond to the UICC with ANY_E_TIMEOUT. |
| RQ10.57 | Rel-7 to Rel-10 | Once the CLF responds with ANY_E_TIMEOUT, it shall discard data received from the target thereafter. |
| NOTE 1: RQ10.51, RQ10.52, RQ10.53 and RQ10.55 are tested in clauses 5.7.2.3.1 and 5.7.2.3.2. | | |
| NOTE 2: Development of test cases for RQ10.54, RQ10.56 and RQ10.57 is FFS. | | |

5.7.4.2 Contactless reader not available

5.7.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.4.2.

| | | |
|--|----------------|--|
| RQ10.90 | Rel-11 upwards | After receiving ANY_GET_PARAMETER(OPERATING_STATUS), if the reader is not available the CLF shall report to the UICC that the reader is not available in the response ANY_OK (not available) as specified in RQ10.XB and RQ10.XI |
| RQ10.91 | Rel-11 upwards | After receiving ANY_SET_PARAMETER(STATUS_EVENT_EN, on) from the host, the CLF shall reports to the UICC that the reader is (still not) available via EVT_READER_STATUS |
| RQ10.92 | Rel-11 upwards | Once the reader becomes available for the host, the CLF activates the reader for the host and the reader RF gates signals this via the event reader status |
| NOTE: Development of test cases for above listed RQs is FFS. | | |

5.7.4.3 Error management

5.7.4.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 10.4.3.

| | | |
|--|----------------|--|
| RQ10.93 | Rel-11 upwards | If the CLF detected a non-recoverable RF error after WR_XCHG_DATA reception and the reader RF gate replies in sending the response ANY_OK with parameter "Error indicator" set to '01'. |
| RQ10.94 | Rel-11 upwards | The CLF shall be able to restart the reader operation if the host sends the EVT_READER_REQUESTED after stopping a previous reader operation by sending the EVT_END_OPERATION upon RF error occurrence. |
| NOTE: Development of test cases for above listed RQs is FFS. | | |

5.8 Connectivity

5.8.1 Overview

Reference: ETSI TS 102 622 [1], clause 11.1.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.2 Connectivity gate and subclauses

5.8.2.1 Connectivity gate

Reference: ETSI TS 102 622 [1], clause 11.2.

| | | |
|--|----------------|--|
| RQ11.8 | Rel-11 upwards | As destination gate, the connectivity gate shall accept at least one pipe from each host in its WHITELIST. |
| NOTE: Development of test cases for RQ11.8 is FFS. | | |

5.8.2.2 Commands

5.8.2.2.1 PRO_HOST_REQUEST

5.8.2.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.2.1.1.

| | |
|--------|--|
| RQ11.1 | When the Terminal Host receives an PRO_HOST_REQUEST, it shall attempt to activate every host in the list of host identifiers during the Activation Duration. |
| RQ11.2 | If every requested host has successfully been activated, the Terminal Host shall send an ANY_OK response with no parameters. |
| RQ11.3 | If no requested host has been successfully activated, the Terminal Host shall send a response which is not ANY_OK. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.8.2.3 Events and subclauses

5.8.2.3.1 Events

Reference: ETSI TS 102 622 [1], clause 11.2.2.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.2.3.2 EVT_CONNECTIVITY

5.8.2.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.2.2.1.

| | |
|--------|--|
| RQ11.4 | When the Terminal Host receives an EVT_CONNECTIVITY, it shall send a "HCI connectivity event" as defined in ETSI TS 102 223 [3]. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.8.2.3.3 Void

Reference: ETSI TS 102 622 [1], clause 11.2.2.2.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.2.3.4 EVT_OPERATION_ENDED

5.8.2.3.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.2.2.3.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.2.3.5 EVT_TRANSACTION

5.8.2.3.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.2.2.4.

| | | |
|---|----------------|---|
| RQ11.5 | | When the Terminal Host receives an EVT_TRANSACTION, it shall launch an application associated to an NFC application in a UICC host identified by the AID on the parameter list. |
| RQ11.17 | Rel-12 upwards | The terminal host shall make the PARAMETERS available to the launched application. |
| NOTE: Development of test cases for RQ11.17 is FFS. | | |

5.8.2.3.5.2 Test case 1: EVT_TRANSACTION

5.8.2.3.5.2.1 Test execution

There are no test case-specific parameters for this test case.

5.8.2.3.5.2.2 Initial conditions

- The HCI interface is idle; i.e. no further communication is expected.
- Conditions of TR4 are met and the terminal application is not currently running.
- A PIPEc is created and opened by the host with source G_{ID} = '41' to the connectivity gate of the terminal host.

5.8.2.3.5.2.3 Test procedure

| Step | Direction | Description | RQ |
|------|-----------|--|--------|
| 1 | HS → HCUt | Send EVT_TRANSACTION with AID and PARAMETERS as defined by the provider of the terminal application on PIPEc | |
| 2 | HCUt | The terminal application is launched | RQ11.5 |

5.8.2.3.6 EVT_MH_NOTIFICATION

5.8.3.3.6.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.2.2.5.

| | |
|--|---|
| RQ11.18 | EVT_MH_NOTIFICATION shall be used only in a configuration where the Managing Host is the terminal. |
| RQ11.19 | In a HCI only system configuration where the MH is not the terminal, the same event defined for the platform management gate shall be used. |
| RQ11.20 | Upon reception of this event the MH (the terminal host) shall adapt the configuration of the system accordingly. |
| RQ11.21 | This event sends a list of parameters defined in GlobalPlatform Card; Multiple Contactless Secure Elements - Managing Entity [13]. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

5.8.2.4 Registry

5.8.2.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.2.3.

| | | |
|--------|----------------|---|
| RQ11.6 | | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [1] but which are not defined in ETSI TS 102 622 [1] shall not be present in the registry. |
| RQ11.9 | Rel-12 upwards | The terminal host shall use a default value for UI_STATE of '00'. |

| | | |
|--|----------------|---|
| RQ11.10 | Rel-12 upwards | The terminal host shall apply the access condition of RO to UI_STATE of 1 byte length. |
| RQ11.11 | Rel-12 upwards | The terminal host shall set UI_STATE to '00' if the UI availability unknown. |
| RQ11.12 | Rel-12 upwards | The terminal host shall set UI_STATE to '01' if UI is fully available, i.e. the screen is currently active and the terminal application can display a message to the user and/or ask for a user input. |
| RQ11.13 | Rel-12 upwards | The terminal host shall set UI_STATE to '02' if the UI is locked and the user cannot be notified. |
| RQ11.14 | Rel-12 upwards | The terminal host shall set UI_STATE to '03' if the UI is locked and the user can be notified. |
| RQ11.15 | Rel-12 upwards | The terminal host shall set UI_STATE to '04' if the UI is unlocked but the user cannot be notified. |
| RQ11.16 | Rel-12 upwards | The terminal should update this information whenever the availability state of the UI is modified, where the information provided by the terminal is only accurate at the time it is delivered by the terminal. |
| NOTE: Development of test cases for above listed RQs is FFS. | | |

5.8.3 Connectivity application gate and subclauses

5.8.3.1 Connectivity application gate

5.8.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.3.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.3.2 Commands

5.8.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.3.1.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.3.3 Events and subclauses

5.8.3.3.1 Events

5.8.3.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.3.2.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.3.3.2 EVT_STANDBY

5.8.3.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.3.2.1.

| | |
|--|---|
| RQ11.7 | When the terminal host send EVT_STANDBY, it shall not contain parameters. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

5.8.3.3.3 EVT_HOST_NOTIFICATION

5.8.3.3.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.3.2.1.

| | |
|---------|--|
| RQ11.22 | EVT_HOST_NOTIFICATION shall be used by the Connectivity gate only in a configuration where the Managing Host is the terminal. |
| RQ11.23 | In HCI only system configuration where the MH is not the terminal, the same event defined for the platform management application gate shall be used. |
| RQ11.24 | This event is sent by the terminal host at any time when the configuration of its contactless card emulation applications has to be changed or in order to indicate to the host that the preferred mode (aggregated/non-aggregated) has changed. |
| RQ11.25 | This event sends a list of parameters defined in GlobalPlatform Card; Multiple Contactless Secure Elements - Managing Entity [13]. |
| NOTE: | Development of test cases for above listed RQs is FFS. |

5.8.3.4 Registry

5.8.3.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 11.3.3.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.8.4 Procedures

5.8.4.1 Use of connectivity gate

Reference: ETSI TS 102 622 [1], clause 11.4.1.

There are no conformance requirements for the Terminal Host for the referenced clause.

5.9 APDU Transport

5.9.1 Server APDU host (APDU gate)

5.9.1.1 General

5.9.1.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 12.1, 12.2 and 12.3.

| | | | |
|--------|--|----------------|---|
| RQ12.1 | 12.1 | Rel-12 upwards | A client APDU host shall be able to create a pipe to the APDU gate of a server APDU host only if the client APDU host is included in the WHITELIST of the server APDU host. |
| RQ12.2 | 12.2 | Rel-12 upwards | The APDU gate may accept only an implementation specific maximum concurrent number of pipes from other hosts. |
| RQ12.3 | 12.2 | Rel-12 upwards | The server APDU host shall support the generic gate commands and events as defined in clause 7.2 in ETSI TS 102 622 [1]. |
| RQ12.4 | 12.3 | Rel-12 upwards | The G _{ID} for APDU application gate shall be dynamically assigned by the host. |
| NOTE: | Development of test cases for all above listed RQs is FFS. | | |

5.9.1.2 Commands

Reference: ETSI TS 102 622 [1], clause 12.2.1.

There are no conformance requirements for the terminal for the referenced clause.

5.9.1.3 Events

5.9.1.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 12.2.2 and subclauses, 12.3.2 and subclauses.

| | | | |
|--|----------|----------------|--|
| RQ12.5 | 12.2.2 | Rel-12 upwards | The APDU gate shall support the events listed in table 55 defined in ETSI TS 102 622 [1] |
| RQ12.6 | 12.2.2.2 | Rel-12 upwards | Upon reception of EVT_ABORT the server APDU host shall reset the state of the APDU gate to "INIT" and logically behave as the signal input (RST) was reset on the ETSI TS 102 221 [12] interface, and should not imply any impact on the contactless interface or any application context(s) on any other HCI pipe or other interfaces |
| RQ12.7 | 12.2.2.2 | Rel-12 upwards | After processing EVT_ABORT the server APDU host shall send an EVT_ATR event to the client APDU host |
| RQ12.8 | 12.3.2.1 | Rel-12 upwards | EVT_R-APDU event shall be sent by the server APDU host after processing of APDU command received in an EVT_C-APDU |
| RQ12.9 | 12.3.2.1 | Rel-12 upwards | EVT_R-APDU shall be sent by the server APDU host not later than the maximum waiting time specified in the APDU gate registry after receiving EVT_C-APDU or after sending the last EVT_WTX |
| RQ12.10 | 12.3.2.1 | Rel-12 upwards | EVT_R-APDU event shall contain the Response APDU Data parameter |
| RQ12.11 | 12.3.2.2 | Rel-12 upwards | EVT_WTX event shall be sent by the server APDU host during processing of APDU command if the processing of the command exceeds the maximum waiting time specified in the APDU gate registry and can be sent repeatedly if more time is required for the processing |
| RQ12.12 | 12.3.2.2 | Rel-12 upwards | EVT_WTX event shall contain no parameters |
| RQ12.13 | 12.3.2.3 | Rel-12 upwards | The EVT_ATR event shall be sent by the server APDU host to indicate to the client APDU host the availability of the server for APDU processing |
| RQ12.14 | 12.3.2.3 | Rel-12 upwards | EVT_ATR shall be sent not later than 100 ms after opening of the pipe by the client APDU host |
| RQ12.15 | 12.3.2.3 | Rel-12 upwards | EVT_ATR shall be sent not later than 100 ms after reception of an EVT_ABORT |
| RQ12.16 | 12.3.2.3 | Rel-12 upwards | EVT_ATR shall be sent not later than 100 ms after the end of the session initialization as described in clause 8.4 in [1], in case the server APDU host is powered up and the pipe is already open and EVT_ATR should not be sent before the end of the session initialization |
| RQ12.17 | 12.3.2.3 | Rel-12 upwards | EVT_ATR shall contain ATR parameter, where the value of ATR is encoded as defined in ISO/IEC 7816-3 [11] |
| NOTE: Development of test cases for all above listed RQs is FFS. | | | |

5.9.1.4 Registry

5.9.1.4.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 12.2.3.

| | | |
|--|----------------|--|
| RQ12.18 | Rel-12 upwards | The registry shall be persistent |
| RQ12.19 | Rel-12 upwards | The host controller shall apply the access condition of RO for MAX_C-APDU_SIZE |
| RQ12.20 | Rel-12 upwards | The host controller shall apply the access condition of RO for MAX_WAIT_TIME |
| NOTE: Development of test cases for all above listed RQs is FFS. | | |

5.9.1.5 State diagram for the APDU gate

5.9.1.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 12.4.

Extraction of requirements for this clause is FFS.

5.9.2 Client APDU host (APDU application gate)

5.9.2.1 General

5.9.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 12.1 and 12.3.

| | | | |
|--|------|----------------|---|
| RQ12.21 | 12.1 | Rel-12 upwards | A client APDU host shall not create more than one pipe to the APDU gate of a server APDU host. |
| RQ12.22 | 12.3 | Rel-12 upwards | The APDU application gate of a client APDU host shall support the generic gate commands and events as defined in clause 7.2 in ETSI TS 102 622 [1]. |
| NOTE: Development of test cases for all above listed RQs is FFS. | | | |

5.9.2.2 Commands

Reference: ETSI TS 102 622 [1], clause 12.3.1.

There are no conformance requirements for the terminal for the referenced clause.

5.9.2.3 Events

5.9.2.3.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 12.2.2 and subclauses, 12.3.2 and subclauses.

| | | | |
|--|----------|----------------|---|
| RQ12.23 | 12.3.2 | Rel-12 upwards | The APDU application gate support the events listed in table 58 defined in ETSI TS 102 622 [1] |
| RQ12.24 | 12.2.2.1 | Rel-12 upwards | The event EVT_C-APDU shall be used by the client APDU host in order to send an APDU command to be processed by the server APDU host |
| RQ12.25 | 12.2.2.1 | Rel-12 upwards | The event EVT_C-APDU has one parameter describing the Command APDU field and the length shall not exceed the length specified in the gate's registry |
| RQ12.26 | 12.2.2.2 | Rel-12 upwards | Event EVT_ABORT shall contain no parameters |
| RQ12.27 | 12.2.2.3 | Rel-12 upwards | The event EVT_END_OF_APDU_TRANSACTION shall contain no parameters |
| RQ12.28 | 12.2.2.3 | Rel-12 upwards | The event EVT_END_OF_APDU_TRANSACTION shall be sent by the client APDU host when no more activity is requested on the sever APDU host |
| RQ12.29 | 12.3.2.3 | Rel-12 upwards | If the client APDU host has control of the availability of the underlying data link layer (e.g. activation and deactivation), it should take care to keep the underlying data link layer available to the server APDU host for at least 100 ms after the events indicated under clause 12.3.2 of ETSI TS 102 622 [1] or until EVT_ATR is received |
| RQ12.30 | 12.3.2.2 | Rel-12 upwards | Upon reception of EVT_WTX, the APDU application gate which received the request for additional time shall restart its timer with the value set to the maximum waiting time |
| NOTE: Development of test cases for all above listed RQs is FFS. | | | |

5.9.2.4 Registry

Reference: ETSI TS 102 622 [1], clause 12.3.3.

There are no conformance requirements for the terminal for the referenced clause.

5.9.2.5 State diagram for the APDU gate

5.9.2.5.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clauses 12.4.

Extraction of requirements for this clause is FFS.

5.10 Managing Host Interface

5.10.1 General

5.10.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 13.1.

| | | |
|--|----------------|---|
| RQ13.1 | Rel-13 upwards | Support of the Platform Management gate is mandatory for a Managing Host interfacing with the CLF using HCI only. If the interface between the MH and the CLF is based on another technology (e.g. NCI [14]), this gate shall not be implemented. |
| RQ13.2 | Rel-13 upwards | The CLF shall create and open a pipe to the Platform Management gate of the MH. |
| RQ13.3 | Rel-13 upwards | The CLF shall create only one pipe on this gate to only one MH, all the other pipes created on any other host on this gate shall be deleted. |
| RQ13.4 | Rel-13 upwards | The CLF shall accept request the creation and open a pipe to this gate when it received from hosts using the card emulation feature and supporting the multiple execution environment. |
| RQ13.5 | Rel-13 upwards | The WHITELIST set by the MH shall be ignored by the host controller when a host requests the creation of a pipe to this gate on the MH. |
| NOTE: Development of test cases for all above listed RQs is FFS. | | |

5.10.2 Platform Management gate

5.10.2.1 Registry

5.10.2.1.1 Conformance requirements

FFS

5.10.3 Platform Management application gate

5.10.3.1 Registry

5.10.3.1.1 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 13.3.4.1.

| | | | |
|--|----------|-------------------|--|
| RQ13.6 | 13.3.4.1 | Rel-13 upwards | This registry shall be supported only by the CLF when the CLF creates a pipe to the Platform Management gate of the Managing Host. |
| RQ13.7 | 13.3.4.2 | Rel-13 upwards | The CLF shall apply the access condition of RO for ROUTING_CAPABILITY. |
| RQ13.8 | 13.3.4.2 | Rel-13 upwards | When one of bits as specified in ETSI TS 102 622 [1] is set to 1, this indicates that this routing type is supported by the CLF. |
| RQ13.9 | 13.3.4.2 | Rel-13 upwards | The CLF shall apply the access condition of RW for HOST_RF_CONFIG. |
| RQ13.10 | 13.3.4.2 | Rel-13 upwards | The CLF shall set a default value for MODE of 'FF'. |
| RQ13.11 | 13.3.4.2 | Rel-13 upwards | The CLF shall only accept values of MODE of 'FF' and '02'. |
| RQ13.12 | 13.3.4.2 | Rel-13 upwards | The CLF shall apply the access condition of RW for MODE. |
| NOTE: Development of test cases for all above listed RQs is FFS. | | | |

Annex A (informative): Bibliography

- ETSI TS 101 220: "Smart Cards; ETSI numbering system for telecommunication application providers".

Annex B (informative): Core specification version information

Unless otherwise specified, the versions of ETSI TS 102 622 [1] from which conformance requirements have been extracted are as follows:

| Release | Latest version from which conformance requirements have been extracted |
|---------|---|
| 7 | V7.10.0 |
| 8 | V8.4.0 |
| 9 | V9.4.0 |
| 10 | V10.3.0 |
| 11 | V11.3.0 |
| 12 | V12.1.0 + accepted CRs (SCP(14)000282, SCP(14)000283, SCP(14)000284, SCP(15)000047, SCP(16)000236r1, SCP(16)000192r1) |
| 13 | V13.0.0 + accepted CRs (SCP(16)000210, SCP(17)000088) |

Annex C (informative): Change history

The table below indicates all changes that have been incorporated into the present document since it was placed under change control.

| Change history | | | | | | | | |
|----------------|---------|-----------------|-----|-----|-----|---|-------|-------|
| Date | Meeting | Plenary Doc | CR | Rev | Cat | Subject/Comment | Old | New |
| | | | | | | Creation of the specification | | 7.0.0 |
| 2010-07 | SCP #45 | SCP(10)0195 | 001 | 1 | F | Correction of card emulation test procedures and initial conditions | 7.0.0 | 7.1.0 |
| | | SCP(10)0120 | 002 | - | F | Removal of redundant steps. | 7.0.0 | 7.1.0 |
| | | SCP(10)0120 | 003 | - | F | Correction of test procedure 5.5.4.2.3 | 7.0.0 | 7.1.0 |
| 2010-10 | SCP #46 | SCP(10)0223 | 004 | - | F | Correction of wrong test cases numbering | 7.1.0 | 7.2.0 |
| | | SCP(10)0224 | 005 | - | F | Deletion of RFU Gates test procedure 5.1.3.3 | 7.1.0 | 7.2.0 |
| 2011-01 | SCP #47 | SCP(11)0028 | 006 | - | F | Corrections to allow for EVT_CARD_ACTIVATED being optional | 7.2.0 | 7.3.0 |
| | | SCP(11)0029 | 007 | - | F | Numbering correction | 7.2.0 | 7.3.0 |
| | | SCP(11)0030 | 008 | - | F | Modify RF registries setting test cases to consider the procedure in ETSI TS 102 622 clause 9.4.5 | 7.2.0 | 7.3.0 |
| 2011-03 | SCP #48 | SCP(11)0109 | 009 | - | F | Specification of default of full power mode only for test execution | 7.2.0 | 7.3.0 |
| | | SCP(11)0110 | 010 | - | F | ANY_OPEN_PIPE command is sent to the pipe already opened | 7.2.0 | 7.3.0 |
| | | SCP(11)0111 | 011 | - | F | Update the requirements to version 7.8.0 of ETSI TS 102 622 | 7.2.0 | 7.3.0 |
| | | SCP(11)0114 | 014 | - | F | Correction of card emulation test cases to allow for SWP DEACTIVATED state and low power mode | 7.2.0 | 7.3.0 |
| | | SCP(11)0115 | 015 | - | F | Correction of state transition for ISO/IEC 14443-3 type B | 7.2.0 | 7.3.0 |
| | | SCP(11)0112 | 012 | - | F | Creation of Rel-8 of ETSI TS 102 695-1 to cover Rel-8 conformance requirements of ETSI TS 102 622 | 7.3.0 | 8.0.0 |
| 2011-06 | SCP #50 | SCP(11)0233 | 016 | - | F | Modification of card emulation test cases applicability from mandatory to conditional | 8.0.0 | 8.1.0 |
| | | SCP(11)0234 | 017 | - | F | Modifiac Test Cases on card emulation to include the data rate capabilities of the terminal | 8.0.0 | 8.1.0 |
| | | SCP(11)0235 | 018 | - | F | Clarification of the portion of the ATS which can be checked in TC 5.6.3.3.4.2.4 | 8.0.0 | 8.1.0 |
| | | SCP(11)0236 | 019 | - | D | Editorial corrections of VENDOR_NAME typo | 8.0.0 | 8.1.0 |
| | | SCP(11)0237 | 020 | - | F | Corrections of card emulation test cases | 8.0.0 | 8.1.0 |
| | | SCP(11)0238 | 021 | - | F | Clarify the test of SAK on RF | 8.0.0 | 8.1.0 |
| 2011-09 | SCP #52 | SCP(11)0299r1 | 022 | 1 | B | Addition of reader mode test cases | 8.1.0 | 8.2.0 |
| 2011-12 | SCP #53 | SCP(11)0347r1 | 023 | 1 | F | Definition of card emulation trigger | 8.1.0 | 8.2.0 |
| | | SCP(11)0348 | 024 | - | F | Test case 5.6.3.3.4.3.3: More precision in testing CID bit | 8.1.0 | 8.2.0 |
| 2012-09 | SCP #56 | SCP(12)000185 | 025 | - | F | Definition of ATQA for Card emulation test cases | 8.1.0 | 8.2.0 |
| 2012-12 | SCP #57 | SCP(12)000244 | 026 | - | F | Correction of test procedure 5.6.1.2.3 and 5.6.3.3.4.2.3.3 | 8.2.0 | 8.3.0 |
| 2013-02 | SCP #58 | SCP(13)000031 | 027 | - | B | Creation of Rel-9 of ETSI TS 102 695-1 | 8.3.0 | 9.0.0 |
| 2013-04 | SCP #59 | SCP(13)000077 | 029 | - | B | Add the test spec to ETSI TS 102 695-1 for Type F (altered at implementation for consistency with the changes in CR 80r1) | 9.0.0 | 9.1.0 |
| | | SCP(13)000078 | 030 | - | F | Addition of low power mode execution for card emulation test cases | 9.0.0 | 9.1.0 |
| | | SCP(13)000079 | 031 | - | F | Tidy up of RQ status | 9.0.0 | 9.1.0 |
| | | SCP(13)000080 | 032 | 1 | F | Correction of test cases 5.6.1.2/3 to power on the field during the test procedure | 9.0.0 | 9.1.0 |
| | | SCP(13)000082 | 034 | - | F | Improved specification of no response expected behaviour | 9.0.0 | 9.1.0 |
| 2013-07 | SCP #60 | SCP(13)000134r1 | 036 | 1 | F | Test case 5.5.1.3.3: removal of delay by simulator | 9.1.0 | 9.2.0 |
| 2013-10 | SCP #61 | SCP(13)000214 | 035 | 1 | F | Card emulation test cases: update to set SESSION_IDENTITY and MODE | 9.2.0 | 9.3.0 |
| | | SCP(13)000215 | 037 | 1 | B | Additional tests for Type F | 9.2.0 | 9.3.0 |
| | | SCP(13)000213r1 | 038 | 1 | F | Definition of time to wait for response | 9.2.0 | 9.3.0 |
| 2014-02 | SCP #62 | SCP(14)000018 | 039 | - | F | Clarification for Type F initialization command and response parameters | 9.3.0 | 9.4.0 |

| Change history | | | | | | | | |
|----------------|---------|---------------------|-----|-----|-----|--|--------|--------|
| Date | Meeting | Plenary Doc | CR | Rev | Cat | Subject/Comment | Old | New |
| 2014-06 | SCP #64 | SCP(14)000155 | 040 | - | F | Addition of test case for EVT_TRANSACTION | 9.3.0 | 9.4.0 |
| | | SCP(14)000154 r1 | 041 | 1 | F | Addition of test cases on Non ISO/IEC 14443-4 type A | 9.3.0 | 9.4.0 |
| | | SCP(14)000156 | 043 | - | F | Correction of ATQA coding | 9.3.0 | 9.4.0 |
| | | SCP(14)000153 r1 | 042 | 1 | F | Event reception on lowest gate ID | 9.3.0 | 9.4.0 |
| 2014-12 | SCP #66 | SCP(14)000313 | 044 | - | B | Addition of card emulation test cases with EVT_CARD_ACTIVATED (Creation of Rel-10 of the test specification) | 9.4.0 | 10.0.0 |
| 2015-02 | SCP #67 | SCP(15)000019 | 046 | - | F | Addition of initialization using all defined gates test case | 10.0.0 | 10.1.0 |
| | | SCP(15)000020 | 047 | - | F | Test case 5.6.4.1.4: corrected to be consistent with other Type A test cases | 10.0.0 | 10.1.0 |
| | | SCP(15)000021 | 048 | - | F | Test case 5.6.4.1.5: correction of ATQA | 10.0.0 | 10.1.0 |
| | | SCP(15)000022 r1 | 049 | 1 | F | Test case 5.6.4.4.4: various corrections | 10.0.0 | 10.1.0 |
| | | SCP(15)000023 | 050 | - | F | Test cases 5.6.4.2.2/3: update of ATQA value | 10.0.0 | 10.1.0 |
| | | SCP(15)000024 | 051 | - | F | Removal of explicit ANDs in applicability table | 10.0.0 | 10.1.0 |
| 2015-07 | SCP #69 | SCP(15)000159 | 052 | - | F | Corrections on test case 5.7.2.3.1.2 | 10.1.0 | 10.2.0 |
| 2015-10 | SCP #70 | SCP(15)000226 | 053 | - | F | Test case 5.6.3.3.4.2.4: removal of RQ9.30 | 10.1.0 | 10.2.0 |
| 2015-10 | SCP #70 | SCP(15)000227 | 054 | - | D | Removal of unused items in Clause 4.3 | 10.1.0 | 10.2.0 |
| 2015-10 | SCP #70 | SCP(15)000228 | 055 | - | F | Test case 5.6.4.1.5/6: Clarification of the test procedures with respect to EVT_CARD_ACTIVATED | 10.1.0 | 10.2.0 |
| 2015-10 | SCP #70 | SCP(15)000229 r1 | 056 | 1 | B | Creation of Rel-11 of the specification | 10.2.0 | 11.0.0 |
| 2016-02 | SCP #72 | SCP(16)000033 r1 | 057 | 1 | B | Creation of Rel-12 of the specification | 11.0.0 | 12.0.0 |
| 2016-04 | SCP #73 | SCP(16)000066 | 059 | - | F | Verification of RQ9.81 for EVT_SEND_DATA | 12.0.0 | 12.1.0 |
| 2016-04 | SCP #73 | SCP(16)000067 | 060 | - | F | Correction of note under 5.6.3.4.3 sub-clauses | 12.0.0 | 12.1.0 |
| 2016-04 | SCP #73 | SCP(16)000068 | 061 | - | F | Test case 5.6.4.4.3: clarification of field off during transmitted frame | 12.0.0 | 12.1.0 |
| 2016-04 | SCP #73 | SCP(16)000069 | 062 | 1 | B | Addition of new test cases on EVT_HOT_PLUG | 12.0.0 | 12.1.0 |
| 2016-04 | SCP #73 | SCP(16)000098 | 058 | - | B | Addition of new test cases for MODE parameter | 12.0.0 | 12.1.0 |
| 2016-07 | SCP #74 | SCP(16)000129 | 063 | - | F | Test case 5.5.4.4: clarification of response to ADM_CREATE_PIPE | 12.0.0 | 12.1.0 |
| 2016-07 | SCP #74 | SCP(16)000130 | 064 | - | B | Verification of HCI_VERSION requirements in TC 5.4.2.3.1.2 and 5.4.2.3.1.X | 12.0.0 | 12.1.0 |
| 2016-07 | SCP #74 | SCP(16)000131 | 065 | - | D | Editorial corrections on cl.5.6.4.4.1 and cl.5.8.3.2.5.1 | 12.0.0 | 12.1.0 |
| 2016-10 | SCP #75 | SCP(16)000177 | 066 | - | D | Deletion of incorrect sentence in clause 5.5.1.1.1 | 12.1.0 | 13.0.0 |
| 2016-10 | SCP #75 | SCP(16)000178 | 067 | - | F | Verification of RQ9.81 for EVT_SEND_DATA in TC 5.6.4.4.2 | 12.1.0 | 13.0.0 |
| 2016-12 | SCP #76 | SCP(16)000247 | 068 | - | B | The Host Simulator shall accept dynamically allocated H _{ID} . | 12.1.0 | 13.0.0 |
| 2016-12 | SCP #76 | SCP(16)000248 r1 | 069 | 1 | B | Addition of new test cases for Type F in 5.6.4.4. | 12.1.0 | 13.0.0 |
| 2017-11 | SCP #81 | SCP(17)000171 r2 | 070 | 2 | B | Addition of Rel-13 requirements in the applicability tables | 12.1.0 | 13.0.0 |
| 2018-04 | SCP #83 | SCP(18)000091 r1 | 071 | 1 | F | Clarification for CLT CE_type A option test case | 12.1.0 | 13.0.0 |

History

| Document history | | |
|-------------------------|------------|-------------|
| V13.0.0 | April 2019 | Publication |
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