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(Release 12)

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The present document is part 3 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](https://portal.etsi.org/Services/editHelp!/Howtostart/ETSIDraftingRules.aspx) (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 [].

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 additional test cases for the Host Controller to those specified in ETSI TS 102 695‑1 [].

The present document specifies the test cases for:

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

Test cases for the UICC and terminal relating to ETSI TS 102 622 [] 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.

* In the case of a reference to a TC SCP document, a non specific reference implicitly refers to the latest version of that document in the same Release as the present document.

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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; Part 1: 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(s) cards - Proximity cards - Part 2: Radio frequency power and signal interface".

[6] ISO/IEC 14443-3: "Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 3: Initialization and anticollision".

[7] ISO/IEC 14443-4: "Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 4: Transmission Protocol".

[8] ISO/IEC 7816-4: "Information technology - Identification 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 102 695-1: "Smart Cards; Test specification for the Host Controller Interface (HCI); Part 1: Terminal features".

## 2.2 Informative 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.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

# 3 Definitions, symbols, abbreviations and formats

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI TS 102 622 [] 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 []

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

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

**user:** 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 [] 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 [] and the following apply:

AC Alternating Current

DUT Device Under Test

FFS For Further Study

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.

NAA Network Access Application

PCD Proximity Coupling Device

PICC Proximity Card

RFU Reserved for Future Use

RO Read-Only

RQ Conformance requirement

RW Read-Write

SDL Specification and Description Language

SRx Static requirement (where x is a number)

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

TRx Trigger Requirement (where x is a number)

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

WO Write-Only

## 3.4 Formats

### 3.4.1 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 3.4.3. |
| Support | The support columns are to be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646‑7 [], 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. |

### 3.4.2 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 is to be completed by the manufacturer in respect of each particular requirement to indicate the choices, which have been made in the implementation. |

### 3.4.3 Status and Notations

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

The following notations, defined in ISO/IEC 9646‑7 [], 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 ..." is to 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 are to 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.

### 3.4.4 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:   | 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. |   The absence of this column indicates that all conformance requirements are applicable to every release which is covered by the present document. |
| 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 3.4 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 [] is used. | O |  | O\_102\_613 |
| 2 | ANY\_OPEN\_PIPE command transmission is implemented in the terminal. | O |  | O\_OPEN\_PIPE |
| 3 | ANY\_CLOSE\_PIPE command transmission is implemented in the terminal. | O |  | O\_CLOSE\_PIPE |
| 4 | ADM\_CREATE\_PIPE command transmission is implemented in the terminal. | O |  | O\_CREATE\_PIPE |
| 5 | ADM\_NOTIFY\_ALL\_PIPE\_CLEARED command transmission is implemented in the terminal, with the host controller as the requesting host. | O |  | O\_NTF\_PIPE\_CL\_HC |
| 6 | Card RF gate for technology A is supported. | O |  | O\_CE\_TypeA |
| 7 | Card RF gate for technology B is supported. | O |  | O\_CE\_TypeB |
| 8 | Card RF gate for technology F is supported. | O |  | O\_CE\_TypeF |
| 9 | CLT for Type A as specified in ETSI TS 102 613 [] is supported, see note. | O |  | O\_CE\_CLT\_TypeA |
| NOTE: If item 9 is supported, then items 1 and 6 shall also be supported. | | | | |

## 4.2 Applicability table

Tables 4.2 specifies the applicability of each test case to the device under test. See clause 3.4 for the format of tables 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 | Rel‑8 | Rel‑9 | Rel‑10 | Rel‑11 | Rel‑12 | Support |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5.3.1.2.1.2 | Test case 1: ANY\_SET\_PARAMETER reception - invalid structure | Rel-7 |  | M | M | M | M | M | M |  |
| 5.3.1.2.1.3 | Test case 2: ANY\_SET\_PARAMETER reception - RO registry parameter | Rel-7 |  | M | M | M | M | M | M |  |
| 5.3.1.2.2.2 | Test case 1: ANY\_GET\_PARAMETER reception - invalid structure | Rel-7 |  | M | M | M | M | M | M |  |
| 5.3.1.2.2.3 | Test case 2: ANY\_GET\_PARAMETER reception - WO registry parameter | Rel-7 | SR1 | M | M | M | M | M | M |  |
| 5.3.1.2.3.2 | Test case 1: ANY\_OPEN\_PIPE transmission | Rel-7 | TR1 | C102 | C102 | C102 | C102 | C102 | C102 |  |
| 5.3.1.2.4.2 | Test case 1: ANY\_CLOSE\_PIPE transmission | Rel-7 | TR2 | C103 | C103 | C103 | C103 | C103 | C103 |  |
| 5.3.2.2 | Test case 1: responses received out of order, previous command sent by host | Rel-7 |  | M | M | M | M | M | M |  |
| 5.3.2.3 | Test case 2: responses received out of order, previous command sent by host controller | Rel-7 | TR1 | C102 | C102 | C102 | C102 | C102 | C102 |  |
| 5.4.2.2.1.2 | Test case 1: REC\_ERROR | Rel-7 | ICR1 | M | M | M | M | M | M |  |
| 5.4.2.2.2.2 | Test case 1: REC\_ERROR | Rel-7 | TR3 | M | M | M | M | M | M |  |
| 5.4.2.3.1.2 | Test case 1: registry parameters - optional registries | Rel-7 |  | O | O | O | O | O | O |  |
| 5.5.1.1.2 | Test case 1: valid pipe creation from host simulator to another host | Rel-7 | SR2 | M | M | M | M | M | M |  |
| 5.5.1.1.3 | Test case 2: pipe creation from host simulator to another host, host simulator not in other host's WHITELIST | Rel-7 | SR3 | M | M | M | M | M | M |  |
| 5.5.1.1.4 | Test case 3: pipe creation from host simulator to another host, other host rejects pipe creation | Rel-7 | SR4 | M | M | M | M | M | M |  |
| 5.5.1.1.5 | Test case 4: valid pipe creation from host controller to host simulator | Rel-7 | TR4 | C104 | C104 | C104 | C104 | C104 | C104 |  |
| 5.5.1.1.6 | Test case 5: pipe creation from host simulator to host controller, pipe not supported by host controller | Rel-7 | SR5 | M | M | M | M | M | M |  |
| 5.5.1.2.2 | Test case 1: valid pipe deletion from host simulator to another host | Rel-7 | SR2 | M | M | M | M | M | M |  |
| 5.5.1.3.2 | Test case 1: clear all pipes from host controller - static pipes, dynamic pipes to host | Rel-7 | TR5 | C105 | C105 | C105 | C105 | C105 | C105 |  |
| 5.5.5.2 | Test case 1: pipe creation | Rel-7 |  | M | M | M | M | M | M |  |
| 5.6.3.3.4.2.2 | Test case 1: MODE parameter | Rel-7 |  | C106 | C106 | C106 | C106 | C106 | M |  |
| 5.6.3.3.4.2.3 | Test case 2: UID\_REG - verify parameter | Rel-7 |  | C106 | C106 | C106 | C106 | C106 | M |  |
| 5.6.3.3.4.2.4 | Test case 3: FWI, SFGI | Rel-7 |  | C106 | C106 | C106 | C106 | C106 | M |  |
| 5.6.3.3.4.3.2 | MODE parameter | Rel-7 |  | C107 | C107 | C107 | C107 | C107 | M |  |
| 5.6.3.3.4.5.2 | Test case 1: MODE parameter | Rel-7 |  | C108 | C108 | C108 | C108 | C108 | M |  |
| 5.6.3.3.4.5.3 | Test case 2: CLT\_SUPPORT and SPEED\_CAP - verify parameter | Rel-7 |  | C108 | C108 | C108 | C108 | C108 | M |  |
| 5.6.4.4.2 | Test case 1: NFCIP-1 command is not forwarded to UICC | Rel-9 |  | N/A | N/A | C108 | C108 | C108 | M |  |

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\_OPEN\_PIPE |
| C103 | IF 4.1/3 THEN M ELSE N/A | O\_CLOSE\_PIPE |
| C104 | IF 4.1/4 THEN M ELSE N/A | O\_CREATE\_PIPE |
| C105 | IF 4.1/5 THEN M ELSE N/A | O\_NTF\_PIPE\_CL\_HC |
| C106 | IF 4.1/6 THEN M ELSE N/A | O\_CE\_TypeA |
| C107 | IF 4.1/7 THEN M ELSE N/A | O\_CE\_TypeB |
| C108 | IF 4.1/8 THEN M ELSE N/A | O\_CE\_TypeF |

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

| Execution requirement | Description |
| --- | --- |
| SR1 | A gate in the host controller which contains at least one WO registry parameter. |
| SR2 | Another host exists, with which the host simulator can communicate (i.e. host simulator is in the WHITELIST). |
| SR3 | Another host exists, with which the host simulator cannot communicate (i.e. host simulator is not in the WHITELIST). |
| SR4 | Another host exists, with which the host simulator can communicate (i.e. host simulator is in the WHITELIST). A valid GID exists, which is not contained in the GATES\_LIST of the host. |
| SR5 | A GID exists for which the host controller does not support pipe creation. |
| TR1 | Trigger the host controller to open PIPE\_ID\_MAN. |
| TR2 | Trigger the host controller to close PIPE\_ID\_MAN. |
| TR3 | Trigger the host controller to write a value of REC\_ERROR into the registry of the host simulator's link management gate in order to restart an error rate measure. |
| TR4 | Trigger the host controller to send ADM\_CREATE\_PIPE to the host simulator. |
| TR5 | Trigger the host controller to send ADM\_NOTIFY\_ALL\_PIPE\_CLEARED to the host simulator, with the host controller as the requesting host. |
| ICR1 | The last value of REC\_ERROR in the host's registry for PIPE0 is not '0000' (TBC). |
| NOTE: Clause 4.5.2 should be referenced for the meaning and usage of the execution requirements which are described in this table. | |

## 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 | Indication of presence of VERSION\_SW, and value if supported. |  | M | V\_VERSION\_SW |
| 2 | Indication of presence of VERSION\_HARD, and value if supported. |  | M | V\_VERSION\_HARD |
| 3 | Indication of presence of VENDOR\_NAME, and value if supported. |  | M | V\_VENDOR\_NAME |
| 4 | Indication of presence of MODEL\_ID, and value if supported. |  | M | V\_MODEL\_ID |
| 5 | Void. |  |  |  |
| 6 | Void. |  |  |  |
| 7 | Void. |  |  |  |
| 8 | Void. |  |  |  |
| 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 [] 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: 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 [] 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. |

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

### 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 [], 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 HID = HID of host simulator and destination HID = HID 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 []) 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 []) 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 [], clause 4.1.

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

### 5.1.2 Hosts

Reference: ETSI TS 102 622 [], 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 HID 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 HID value '02' to the first UICC detected, with priority to pre-release 12 UICC. Others UICCs if present will use dynamically allocated HID values. |
| RQ4.31 | Rel-12 upwards | In case of several pre-release 12 UICC, the host controller shall assign HID '02' only to the first one, the others will be dynamically assigned. |
| 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 are FFS. | | |

### 5.1.3 Gates

#### 5.1.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 []. |
| RQ4.10 | Void. |
| NOTE: RQ4.7 and RQ4.9 are not tested, as they are non-occurrence RQs. | |

### 5.1.4 Pipes

#### 5.1.4.1 Conformance requirements

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

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

Reference: ETSI TS 102 622 [], 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 []. |
| 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 [] are needed. |

### 5.1.5 Registries

#### 5.1.5.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ4.21 | For all gates defined in ETSI TS 102 622 [], parameter identifiers in the range of '00' to 'EF' are reserved for use in ETSI TS 102 622 []. |
| 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 [] 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 [] does not specify any gates with the required properties to exercise this functionality.  NOTE 3: Development of test cases for RQ4.26 is FFS. | |

## 5.2 HCP

### 5.2.1 HCP packets

#### 5.2.1.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 PID 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 the present document. | |

### 5.2.2 HCP message structure

#### 5.2.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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. | |

### 5.2.3 Message fragmentation

#### 5.2.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 []. |
| 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 [], 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 [], the host controller shall not use instruction values between '10' and '3F' which are not allocated in ETSI TS 102 622 []. |
| 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 [], 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 allowed 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:   * 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. | |

5.3.1.2.1.2 Test case 1: ANY\_SET\_PARAMETER reception - invalid structure

5.3.1.2.1.2.1 Test execution

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

5.3.1.2.1.2.2 Initial conditions

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

5.3.1.2.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_SET\_PARAMETER with no parameters on PIPE1. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.4 |

5.3.1.2.1.3 Test case 2: ANY\_SET\_PARAMETER reception - RO registry parameter

5.3.1.2.1.3.1 Test execution

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

5.3.1.2.1.3.2 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.

5.3.1.2.1.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_SET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN, where the parameter value is equal to the existing value of GATES\_LIST in the host controller's registry. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.5 |

##### 5.3.1.2.2 ANY\_GET\_PARAMETER

5.3.1.2.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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:   * 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. | |

5.3.1.2.2.2 Test case 1: ANY\_GET\_PARAMETER reception - invalid structure

5.3.1.2.2.2.1 Test execution

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

5.3.1.2.2.2.2 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.

5.3.1.2.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER with no parameters on PIPE\_ID\_MAN. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.9 |
| 3 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER containing parameters of length 2, with each byte containing the value of the GATES\_LIST identifier, on PIPE\_ID\_MAN. |  |
| 4 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.9 |

5.3.1.2.2.3 Test case 2: ANY\_GET\_PARAMETER reception - WO registry parameter

5.3.1.2.2.3.1 Test execution

Assignment of terms to entities referenced in SR1: GID of gate = GATE\_X, registry parameter identifier = REG\_PARAM.

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

5.3.1.2.2.3.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* A pipe (PIPE\_X) has been created to the gate with GID = GATE\_X, and is open.

5.3.1.2.2.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPE\_X. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.10 |

##### 5.3.1.2.3 ANY\_OPEN\_PIPE

5.3.1.2.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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: In ETSI TS 102 622 [], 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. | |

5.3.1.2.3.2 Test case 1: ANY\_OPEN\_PIPE transmission

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.
* A pipe (PIPE\_ID\_MAN) has been created to the host controller's identity management gate, and is open.

5.3.1.2.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK. |  |
| 3 | User 🡪 HCUT | Trigger the host controller to open PIPE\_ID\_MAN. |  |
| 4 | HCUT 🡪 HS | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. | RQ6.16 |
| 5 | HS 🡪 HCUT | Send ANY\_OK with valid response parameter. |  |
| 6 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 7 | HCUT 🡪 HS | Send ANY\_OK (parameters are not checked). | RQ6.17 |

##### 5.3.1.2.4 ANY\_CLOSE\_PIPE

5.3.1.2.4.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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. |

5.3.1.2.4.2 Test case 1: ANY\_CLOSE\_PIPE transmission

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.
* A pipe (PIPE\_ID\_MAN) has been created to the host controller's identity management gate, and is open.

5.3.1.2.4.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HCUT | Trigger the host controller to close PIPE\_ID\_MAN. |  |
| 2 | HCUT 🡪 HS | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. | RQ6.20 |
| 3 | HS 🡪 HCUT | Send ANY\_OK. |  |
| 4 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 5 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.21 |

#### 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 [], 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 []. |
| 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 clause 5.5.1.1 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 [], 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 HID in the command parameters shall be the HID 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 [], 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 [], 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 [], 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 [] 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 [], 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 HID 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 [], 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 [], the host controller shall only return a response code which is specified for that command in table 16 in ETSI TS 102 622 []. |
| NOTE: Development of test cases for RQ6.37 is FFS. | |

#### 5.3.2.2 Test case 1: responses received out of order, previous commands sent by host

##### 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.
* A pipe (PIPE\_ID\_MAN) has been created to the host controller's identity management gate, and is open.

##### 5.3.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 2 | HCUT 🡪 HS | Send response with ANY\_OK and value of GATES\_LIST on PIPE\_ID\_MAN. |  |
| 3 | HS 🡪 HCUT | Send response with ANY\_OK and no parameters on PIPE\_ID\_MAN. |  |
| 4 | HCUT | No message on PIPE\_ID\_MAN. | RQ6.36 |
| 5 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 6 | HCUT 🡪 HS | Send response with ANY\_OK and same value of GATES\_LIST as in step 2. | RQ6.36 |

#### 5.3.2.3 Test case 2: responses received out of order, previous commands sent by host controller

##### 5.3.2.3.1 Test execution

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

##### 5.3.2.3.2 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.

##### 5.3.2.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK. |  |
| 3 | User 🡪 HCUT | Trigger the host controller to open PIPE\_ID\_MAN. |  |
| 4 | HCUT 🡪 HS | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 5 | HS 🡪 HCUT | Send ANY\_OK with valid response parameter on PIPE\_ID\_MAN. |  |
| 6 | HS 🡪 HCUT | Send ANY\_E\_NOK on PIPE\_ID\_MAN. |  |
| 7 | HCUT | No message on PIPE\_ID\_MAN. | RQ6.36 |
| 8 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 9 | HCUT 🡪 HS | Send response with ANY\_OK and value of GATES\_LIST on PIPE\_ID\_MAN. | RQ6.36 |

### 5.3.3 Events

#### 5.3.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 | When the host controller send EVT\_HOT\_PLUG, it shall contain no parameters. |
| RQ6.41 | For gates defined in ETSI TS 102 622 [], the host controller shall not use event values which are not allocated in ETSI TS 102 622 []. |
| NOTE 1: RQ6.41 is not tested, as it is a non-occurrence RQ.  NOTE 2: Development of test cases for RQ6.39 and RQ6.40 is FFS. | |

## 5.4 GATES and subclauses

### 5.4.1 GATES

#### 5.4.1.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ7.1 | Gates shall support the commands and events specified for them in tables 18 and 19 of ETSI TS 102 622 []. |
| 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 []. | |

### 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 [], clauses 7.1.1.1 and 4.5.

|  |  |  |
| --- | --- | --- |
| RQ4.28 |  | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] shall not be present in the registry. |
| 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\*N1 bytes, where N1 the list of the hosts that are accessible from this host controller including the host controller itself. |
| 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 RQ4.28 RQ7.8, RQ7.45, RQ7.46, RQ7.47, RQ7.48, RQ7.49, RQ7.50, RQ7.51, RQ7.52 and RQ7. are 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 [], 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 ETSI 102 695-1 []. | | |

##### 5.4.2.1.2 Host administration gate

5.4.2.1.2.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ4.28 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] 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: Development of test cases for RQ4.28 is FFS. | |

5.4.2.2.1.2 Test case 1: REC\_ERROR

5.4.2.2.1.2.1 Test execution

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

5.4.2.2.1.2.2 Initial conditions

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

5.4.2.2.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK (parameters are not checked). |  |
| 3 | HS 🡪 HCUT | Send ANY\_OPEN\_PIPE on PIPE0. |  |
| 4 | HCUT 🡪 HS | Send ANY\_OK. |  |
| 5 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER(REC\_ERROR) on PIPE0. |  |
| 6 | HCUT 🡪 HS | Send ANY\_OK with parameter value '0000' (see note). | RQ7.15, RQ7.16 |
| 7 | HS 🡪 HCUT | Send ANY\_SET\_PARAMETER(REC\_ERROR, '0000') on PIPE0. |  |
| 8 | HCUT 🡪 HS | Send ANY\_OK. | RQ7.16 |
| 9 | HS 🡪 HCUT | Send ANY\_SET\_PARAMETER(REC\_ERROR, '000000') on PIPE0. |  |
| 10 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ7.17 |
| NOTE: This assumes that the HCI session initialization procedure has not resulted in any errors at the data link layer which would result in the incrementing of REC\_ERROR. | | | |

##### 5.4.2.2.2 Host link management gate

5.4.2.2.2.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ7.18 | The host controller shall only set values of REC\_ERROR with length 2 bytes. |

5.4.2.2.2.2 Test case 1: REC\_ERROR

5.4.2.2.2.2.1 Test execution

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

5.4.2.2.2.2.2 Initial conditions

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

5.4.2.2.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HCUT | Trigger the host controller to write a value of REC\_ERROR into the registry of the host simulator's link management gate in order to restart an error rate measure. |  |
| 2 | HCUT 🡪 HS | Send ANY\_SET\_PARAMETER(REC\_ERROR) on PIPE0. | RQ7.18 |
| 3 | HS 🡪 HCUT | Send ANY\_OK. |  |

#### 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 [], clauses 7.1.3 and 4.5.

NOTE: This clause covers the conformance requirements contained within ETSI TS 102 622 [], 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 [] 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 |  | 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, RQ7.44, RQ7.54 and RQ7.55 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 [], 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 in ETSI TS 102 695-1 []. | | |

5.4.2.3.1.2 Test case 1: registry parameters - optional registries

5.4.2.3.1.2.1 Test execution

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Registry parameter (designated REG\_PARAM) | Presence | Expected value (designated VALUE) | RQ to be checked in steps 2 and 6 | RQ to be checked in step 4 |
| VERSION\_SW | O | V\_VERSION\_SW | RQ7.21 | RQ7.22 |
| VERSION\_HARD | O | V\_VERSION\_HARD | RQ7.23 | RQ7.24 |
| VERSION\_NAME | O | V\_VERSION\_NAME | RQ7.25 | RQ7.26 |
| MODEL\_ID | O | V\_MODEL\_ID | RQ7.27 | RQ7.28 |

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 |

##### 5.4.2.3.2 Remote registry

5.4.2.3.2.1 Conformance requirements

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

NOTE: This clause covers the conformance requirements contained within ETSI TS 102 622 [], 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 [], clauses 7.1.4 and 4.5.

|  |  |  |  |
| --- | --- | --- | --- |
| RQ4.26 | 4.5 |  | Registry parameters which are in the range of '00' to 'EF' but which are not allocated in ETSI TS 102 622 [] shall not be present in the registry. |
| RQ4.27 | 7.1.4 | 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 [], 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 [], 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 PIPEx. |
| 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 HID in the command parameters shall be the HID 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 []. |
| RQ8.5 | The host controller responds to ADM\_CREATE\_PIPE that PIPEx 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 [] 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 [] 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. |
| RQ5.4 | When it receives a packet from a host, the host controller uses the value of PID 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: 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. | |

##### 5.5.1.1.2 Test case 1: valid pipe creation from host simulator to another host

5.5.1.1.2.1 Test execution

Assignment of terms to entities referenced in SR2: HID of host = HOST\_X.

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

5.5.1.1.2.2 Initial conditions

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

5.5.1.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ADM\_CREATE\_PIPE on PIPE1, with source GID = 'EE', destination HID = HOST\_X and destination GID = GID of identity management gate. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK, with parameters of 5 bytes as follows:   * Source HID = HID of host simulator. * Source GID = source GID in command. * Destination HID = destination HID in command. * Destination GID = destination GID in command. * PID = a previously unallocated PID.   Designate the create pipe PIPE\_ID\_MAN. | RQ8.2,  RQ8.3,  RQ6.23,  RQ8.7 |
| 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). | RQ5.4,  RQ5.5 |

##### 5.5.1.1.3 Test case 2: pipe creation from host simulator to another host, host simulator not in other host's WHITELIST

5.5.1.1.3.1 Test execution

Assignment of terms to entities referenced in SR3: HID of host = HOST\_X.

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

5.5.1.1.3.2 Initial conditions

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

5.5.1.1.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ADM\_CREATE\_PIPE on PIPE1, with source GID = 'EE', destination HID = HOST\_X and destination GID = GID of identity management gate. |  |
| 2 | HCUT 🡪 HS | Send ANY\_E\_PIPE\_ACCESS\_DENIED. | RQ8.1 |

##### 5.5.1.1.4 Test case 3: pipe creation from host simulator to another host, other host rejects pipe creation

5.5.1.1.4.1 Test execution

Assignment of terms to entities referenced in SR4: HID of host = HOST\_X, and GID of gate = GATE\_X.

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

5.5.1.1.4.2 Initial conditions

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

5.5.1.1.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ADM\_CREATE\_PIPE on PIPE1, with source GID = 'EE', destination HID = HOST\_X and destination GID = GATE\_X. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.23 |

##### 5.5.1.1.5 Test case 4: valid pipe creation from host controller to host simulator

5.5.1.1.5.1 Test execution

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

5.5.1.1.5.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* PIPE1 is open.
* Host simulator's GATE\_LIST includes all valid GID.

5.5.1.1.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HCUT | Trigger the host controller to create a pipe to any gate which exists in the host simulator's GATE\_LIST. |  |
| 2 | HCUT 🡪 HS | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with parameters 5 bytes long, as follows:   * Source HID = HID of host controller. * Source GID = valid GID. * Destination HID = HID of host simulator. * Destination GID = GID in the host simulator's GATE\_LIST. * PID = a previously unallocated PID.   Designate the created pipe PIPE\_X. | RQ8.3, RQ6.24, RQ8.6 |
| 3 | HS 🡪 HCUT | Send ANY\_OK (parameters are not checked). |  |
| 4 | HCUT 🡪 HS | Wait for a reasonable delay for the host controller to send a command on PIPE\_X.  If the host controller sends a command on PIPE\_X, consider the test passed.  If the host controller does not send a command on PIPE\_X, perform steps 5 and 6. |  |
| 5 | HS 🡪 HCUT | Send ANY\_OPEN\_PIPE on PIPE\_X. |  |
| 6 | HCUT 🡪 HS | Send ANY\_OK. |  |

##### 5.5.1.1.6 Test case 5: pipe creation from host simulator to host controller, pipe not supported by host controller

5.5.1.1.6.1 Test execution

Assignment of terms to entities referenced in SR5: GID of gate = GATE\_X.

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

5.5.1.1.6.2 Initial conditions

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

5.5.1.1.6.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ADM\_CREATE\_PIPE on PIPE1, with source GID = 'EE', destination HID = HID of host controller and destination GID = GATE\_X. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ8.8 |

#### 5.5.1.2 Pipe deletion

##### 5.5.1.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 PIPEx 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 [] are needed. |
| RQ8.11 | When PIPEx 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 [] are needed. |
| NOTE: 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 simulator to another host

5.5.1.2.2.1 Test execution

Assignment of terms to entities referenced in SR2: HID of host = HOST\_X.

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 pipe (PIPE\_X) has been created between a gate on the host simulator and a gate on HOST\_X, 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. | RQ6.26  RQ6.27 |

#### 5.5.1.3 Clear all Pipes

##### 5.5.1.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 [] 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 HID of the requesting host. |

##### 5.5.1.3.2 Test case 1: clear all pipes from host controller - static pipes, dynamic pipes to host

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.
* PIPE1 is open.
* A pipe (PIPE\_LOOP\_BACK) has been created to the host controller's loop back gate, and is currently open.

5.5.1.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HCUT | Trigger the host controller to send ADM\_NOTIFY\_ALL\_PIPE\_CLEARED, with the host controller as the requesting host. |  |
| 2 | HCUT 🡪 HS | Send ADM\_NOTIFY\_ALL\_PIPE\_CLEARED, with the host controller as the requesting host. | RQ6.34 |
| 3 | HS 🡪 HCUT | Send ANY\_OK. |  |
| 4 | HCUT 🡪 HS | Wait for a reasonable delay for the host controller to send a command on PIPE1.  If host controller sends a command on PIPE1, perform step 5.  If host controller does not send a command on PIPE1, perform steps 6 to 9. |  |
| 5 | HCUT 🡪 HS | Check that the command sent in step 3 is ANY\_OPEN\_PIPE (see note). | RQ6.33 |
| 6 | HS 🡪 HCUT | Send ADM\_CREATE\_PIPE on PIPE1, with source and destination GID = GID of identity management gate. |  |
| 7 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ6.33 |
| 8 | HS 🡪 HCUT | Send ANY\_OPEN\_PIPE on PIPE1. |  |
| 9 | HCUT 🡪 HS | Send ANY\_OK. | RQ6.33 |
| NOTE: The host simulation shall respond appropriately to this command, independently of what command has been sent. | | | |

### 5.5.2 Registry access

Reference: ETSI TS 102 622 [], 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 [], 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 [], clause 8.4.

|  |  |
| --- | --- |
| RQ6.29 | 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. |
| RQ6.30 | 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. |
| RQ6.31 | In case the lower layer identity check fails, the host controller shall ignore all events on all pipes. |
| RQ6.32 | 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. |
| RQ6.33 | The inhibited state shall be terminated after processing a valid ADM\_CLEAR\_ALL\_PIPE command. |
| RQ6.34 | In case the lower layer identity check passes, the host controller shall not enter the inhibited state. |

### 5.5.5 Loop back testing

#### 5.5.5.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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: pipe creation

##### 5.5.5.2.1 Test execution

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

* Source GID values of: '00', '03', '05', '10', 'AA', 'FF'.

##### 5.5.5.2.2 Initial conditions

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

##### 5.5.5.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ADM\_CREATE\_PIPE on PIPE1, with source GID as specified and destination GID = GID of loop back gate. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK (parameters are not checked). | RQ8.18 |

## 5.6 Contactless card emulation

### 5.6.1 Overview

#### 5.6.1.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 case for RQ9.3 and RQ9.114 is FFS. | | |

### 5.6.2 Void

Reference: ETSI TS 102 622 [], 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 [], 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 [], 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 [], 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 [], 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 [], 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 [], 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 [], 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 [], 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 []) 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 of '00'. |
| RQ9.21 | The CLF shall apply the access condition of RW for SAK. |
| 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 tunnelling mode capability for type A ISO/IEC 14443-4 [] non-compliant protocol support then the value of CLT\_SUPPORT shall be '01'. |
| RQ9.33 | If the CLF does not contain a tunnelling mode capability for type A ISO/IEC 14443-4 [] 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 [] where:   * 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 []. |
| RQ9.39 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] shall not be present in the registry. |
| NOTE 1: Development of test cases for RQ 9.39 is FFS.  NOTE 2: Development of test cases for RQ 9.32, RQ 9.33 and RQ 9.34 is FFS. | |

5.6.3.3.4.2.2 Test case 1: MODE parameter

5.6.3.3.4.2.2.1 Test execution

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

5.6.3.3.4.2.2.2 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 GID = '23' to the card RF gate of type A.
* HCI session initialization is ongoing.

5.6.3.3.4.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK with value of 'FF'. | RQ9.13,  RQ9.14 |
| 3 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (MODE, '02') on PIPEa. |  |
| 4 | HCUT🡪 HS | Send ANY\_OK. | RQ9.12,  RQ9.14 |
| 5 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 6 | HCUT 🡪 HS | Send ANY\_OK with value '02'. | RQ9.12,  RQ9.14 |
| 7 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (MODE, 'FF') on PIPEa. |  |
| 8 | HCUT🡪 HS | Send ANY\_OK. | RQ9.12,  RQ9.14 |
| 9 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 10 | HCUT🡪 HS | Send ANY\_OK with a parameter value of 'FF'. | RQ9.12,  RQ9.14 |

5.6.3.3.4.2.3 Test case 2: UID\_REG and SAK - verify parameter

5.6.3.3.4.2.3.1 Test execution

The test procedure shall be executed once for each of following parameters which is supported by the terminal according to the Applicability column:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Applicability | UID length | UIDa value | SAKa value | Cascade levels expected |
| O\_CE\_TypeA AND O\_CE\_CLT\_TypeA | 4 | 01 02 03 04 | 00 | 1 |
| O\_CE\_TypeA AND O\_CE\_CLT\_TypeA | 7 | 01 02 03 04 05 06 07 | 00 | 2 |
| O\_CE\_TypeA AND O\_CE\_CLT\_TypeA | 10 | 01 02 03 04 05 06 07 08 09 0A | 00 | 3 |
| O\_CE\_TypeA | 4 | 01 02 03 04 | 20 | 1 |
| O\_CE\_TypeA | 7 | 01 02 03 04 05 06 07 | 20 | 2 |
| O\_CE\_TypeA | 10 | 01 02 03 04 05 06 07 08 09 0A | 20 | 3 |

5.6.3.3.4.2.3.2 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 GID = '23' to the card RF gate of type A.
* The Proximity Coupling Device (PCD) supporting ISO/IEC14443-3 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 (UI\_REG) on PIPEa. |  |
| 2 | HCUT 🡪 HS | Send response containing an allowed error response code for the command. | RQ9.19 |
| 3 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (UID, 'UIDa') on PIPEa. |  |
| 4 | HCUT🡪 HS | Send ANY\_OK. | RQ9.18,  RQ9.19 |
| 5 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (SAK) on PIPEa. |  |
| 6 | HCUT🡪 HS | Send ANY\_OK. | RQ9.20,  RQ9.21 |
| 7 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (SAK, 'SAKa') on PIPEa. |  |
| 8 | HCUT🡪 HS | Send ANY\_OK. | RQ9.21 |
| 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 🡪PCD | The terminal is placed in PCD field. |  |
| 12 | PCD 🡪 HCUT | Transitions from POWER\_OFF to IDLE state. |  |
| 13 | PCD 🡪 HCUT | Send REQA. |  |
| 14 | HCUT 🡪 PCD | Send ATQA and enter READY state. |  |
| 15 | PCD 🡪 HCUT | Send AC command with appropriate cascade level. |  |
| 16 | HCUT 🡪 PCD | Send UID CLn given in step 3. | RQ9.18 |
| 17 | PCD 🡪 HCUT | Send SELECT command with received UID. |  |
| 18 | HCUT 🡪 PCD | If this is the last expected cascade level: HCUT sends SAKa (UID is complete). Only check bit3.  Otherwise, HCUT sends SAK (UID is not complete). Only check bit3. Then repeat the steps 14 to 17. | RQ9.18, RQ9.21 |
| 19 | User 🡪 HCUT | The terminal is removed from the PCD field. |  |
| 20 | User 🡪 HCUT | The terminal is placed in PCD field. |  |
| 21 | PCD 🡪 HCUT | Transitions from POWER\_OFF to IDLE state. |  |
| 22 | PCD 🡪 HCUT | Send REQA. |  |
| 23 | HCUT 🡪 PCD | Send ATQA and enter READY state. |  |
| 24 | PCD 🡪 HCUT | Send AC command with appropriate cascade level. |  |
| 25 | HCUT 🡪 PCD | Send UID CLn given in step 3. | RQ9.18 |
| 26 | PCD 🡪 HCUT | Send SELECT with received UID. |  |
| 27 | HCUT 🡪 PCD | If this is the last expected cascade level: HCUT sends SAKa (UID is complete). Only check bit3.  Otherwise, HCUT sends SAK (UID is not complete). Only check bit3. Then repeat the steps 23 to 26. | RQ9.18, RQ9.21 |

5.6.3.3.4.2.4 Test case 3: FWI, SFGI

5.6.3.3.4.2.4.1 Test execution

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

* SFGI\_1 = 4.
* FWI\_1 = 8.

5.6.3.3.4.2.4.2 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 GID = '23' to the card RF gate of type A.
* MODE is set to 'FF' and SAK is set to '20'.
* HCI session initialization is ongoing (to be completed during the test procedure).

5.6.3.3.4.2.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (FWI, SFGI, 'FWI\_1 SFG\_1') on PIPEa. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK. | RQ9.27 |
| 3 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (FWI, SFGI) on PIPEa. |  |
| 4 | HCUT 🡪 HS | Send ANY\_OK with value 'FWI\_1 SFG\_1' given in step 1. | RQ9.27 |
| 5 | HS 🡪 HCUT  HCUT 🡪 HS | Set the MODE parameter to '02'. |  |
| 6 | HS 🡪 HCUT | Set SESSION\_IDENTITY to a random value on PIPE1. |  |
| 7 | PCD 🡪 HCUT  HCUT 🡪 PCD | Perform initialization of RF ISO/IEC 14443-3 [] Type A (with anti-collision and selection). |  |
| 8 | PCD 🡪 HCUT | Send RATS. |  |
| 9 | HCUT 🡪 PCD | Send ATS with value (TB(1)) given in step 1. | RQ9.27 |

5.6.3.3.4.3 RF technology type B

5.6.3.3.4.3.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ9.40 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] 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 []). |
| 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 []. |
| 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 []. |
| 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 [] where:   * 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 []. |
| NOTE: Development of test cases for RQ9.40 and RQ9.64 is FFS. | |

5.6.3.3.4.3.2 Test case 1: MODE parameter

5.6.3.3.4.3.2.1 Test execution

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

5.6.3.3.4.3.2.2 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 GID = '21' to the card RF gate of type B.
* HCI session initialization is ongoing.

5.6.3.3.4.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK with value 'FF'. | RQ9.42,  RQ9.43 |
| 3 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (MODE, '02') on PIPEa. |  |
| 4 | HCUT🡪 HS | Send ANY\_OK. | RQ9.41,  RQ9.43 |
| 5 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 6 | HCUT 🡪 HS | Send ANY\_OK with value '02'. | RQ9.43 |
| 7 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (MODE, 'FF') on PIPEa. |  |
| 8 | HCUT🡪 HS | Send ANY\_OK. | RQ9.41,  RQ9.43 |
| 9 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 10 | HCUT🡪 HS | Send ANY\_OK with value 'FF'. | RQ9.43 |

5.6.3.3.4.4 RF technology type B'

5.6.3.3.4.4.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 (ISO18092 212 kbps/424 kbps card emulation only)

5.6.3.3.4.5.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ9.65 | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] 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 []. |
| RQ9.70 | The CLF shall apply the access condition of RO to SPEED\_CAP. |
| RQ9.71 | The CLF shall contain a tunnelling mode capability for type F card emulation anti-collision support if CLT\_SUPPORT='01'. |
| RQ9.72 | The CLF shall not contain a tunnelling 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 1: Development of test cases for RQ9.65, RQ9.70 and RQ9.73 is FFS.  NOTE 2: RQ9.69 is not fully tested, further test cases for RQ9.69 are FFS. | |

5.6.3.3.4.5.2 Test case 1: MODE parameter

5.6.3.3.4.5.2.1 Test execution

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

5.6.3.3.4.5.2.2 Initial conditions

* The user has to ensure that the RF technology type F is enabled in the terminal for the UICC.
* The HCI interface is idle; i.e. no further communication is expected.
* A PIPEa is created and opened by the host with source GID = '24' to the card RF gate of type F.
* HCI session initialization is ongoing.

5.6.3.3.4.5.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK with value of 'FF'. | RQ9.67,  RQ9.68 |
| 3 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (MODE, '02') on PIPEa. |  |
| 4 | HCUT🡪 HS | Send ANY\_OK. | RQ9.66,  RQ9.68 |
| 5 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 6 | HCUT 🡪 HS | Send ANY\_OK with value '02'. | RQ9.66,  RQ9.68 |
| 7 | HS 🡪 HCUT | Send ANY \_SET \_PARAMETER (MODE, 'FF') on PIPEa. |  |
| 8 | HCUT🡪 HS | Send ANY\_OK. | RQ9.66,  RQ9.68 |
| 9 | HS 🡪 HCUT | Send ANY \_GET \_PARAMETER (MODE) on PIPEa. |  |
| 10 | HCUT🡪 HS | Send ANY\_OK with a parameter value of 'FF'. | RQ9.66,  RQ9.68 |

5.6.3.3.4.5.3 Test case 2: CLT\_SUPPORT and SPEED\_CAP - verify parameter

5.6.3.3.4.5.3.1 Test execution

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

5.6.3.3.4.5.3.2 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.
* The HCI interface is idle; i.e. no further communication is expected.
* A PIPEa is created and not opened by the host with source GID = '24' to the card RF gate of type F of HCUT.
* HCI session initialization is ongoing (to be completed during the test procedure).
* The Proximity Coupling Device (PCD) supporting 18092 212 kbps/424 kbps [4] Type F protocol is powered off.

5.6.3.3.4.5.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HS 🡪 HCUT | Send ANY\_OPEN\_PIPE on PIPEa. |  |
| 2 | HCUT 🡪 HS | Send ANY\_OK. |  |
| 3 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER (MODE) on PIPEa. |  |
| 4 | HCUT 🡪 HS | Send ANY\_OK with a parameter value of 'FF'. | RQ9.67,  RQ9.68 |
| 5 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER (CLT\_SUPPORT) on PIPEa. |  |
| 6 | HCUT 🡪 HS | Send ANY\_OK with a parameter value of '01'. | RQ9.71,  RQ9.72 |
| 7 | HS 🡪 HCUT | Send ANY\_GET\_PARAMETER (SPEED\_CAP) on PIPEa. |  |
| 8 | HCUT 🡪 HS | Send ANY\_OK with a valid parameter value of 'SPEED\_CAPa', as defined in ETSI TS 102 622 []. | RQ9.69 |
| 9 | HS 🡪 HCUT | Send ANY\_SET\_PARAMETER (MODE, '02') on PIPEa. |  |
| 10 | HCUT 🡪 HS | Send ANY\_OK. | RQ9.66,  RQ9.68 |
| 11 | HS 🡪 HCUT | Set SESSION\_IDENTITY to a random value on PIPE1. |  |
| 12 | User 🡪 HCUT | While the field is off, the terminal is placed in the area where the field will be powered on. |  |
| 13 | PCD 🡪 HCUT | Power on the field. |  |
| 14 | PCD -> HCUT  HCUT -> HS  HS -> HCUT  HCUT -> PCD | Perform initialization of RF ISO/IEC 18092 [4] 212 kbps/424 kbps passive mode.  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. | RQ9.71,  RQ9.72 |

#### 5.6.3.4 Card application gates

##### 5.6.3.4.1 Overview

Reference: ETSI TS 102 622 [], 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 [], 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 [], 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 [], 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 [], 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: Development of test cases for RQ9.75 & RQ9.77 is FFS. | |

5.6.3.4.3.3 EVT\_CARD\_DEACTIVATED

5.6.3.4.3.3.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ9.78 | When the host controller sends EVT\_CARD\_DEACTIVATED, it shall not contain parameters. |

5.6.3.4.3.4 EVT\_CARD\_ACTIVATED

5.6.3.4.3.4.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ9.79 | When the host controller sends EVT\_CARD\_ACTIVATED, it shall not contain parameters. |

5.6.3.4.3.5 EVT\_FIELD\_OFF

5.6.3.4.3.5.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ9.80 | When the host controller sends EVT\_FIELD\_OFF, it shall not contain parameters. |

5.6.3.4.3.6 EVT\_SEND\_DATA

5.6.3.4.3.6.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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. |

##### 5.6.3.4.4 Registry

5.6.3.4.4.1 Conformance requirements

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| 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 of ETSI TS 102 622 []. |
| 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 GID. |
| 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 [] using the parameters from the appropriate card RF gate registry for the present RF technology. |
| RQ9.85 | 9.4.1 | Rel-7 - 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 []. |
| 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 []. |
| 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 GID. |
| 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. |
| RQ9.111 | 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 []. |
| RQ9.115 | 9.4 | Rel-11 upwards | The CLF shall only send events defined in Table 35 from 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). |
| NOTE: Development of test cases for RQ9.111, RQ9.113 and RQ9.115 is FFS. | | | |

#### 5.6.4.2 Non ISO/IEC 14443-4 type A applications

##### 5.6.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], clause 9.4.2.

|  |  |
| --- | --- |
| RQ9.91 | 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 | 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 GID. |
| RQ9.93 | 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 [] using the parameters from the card RF gate registry for the RF technology type A. |
| RQ9.94 | Any other communications are done using the CLT mode as defined in ETSI TS 102 613 []. |
| RQ9.95 | 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 | 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 GID. |
| RQ9.97 | 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. |

#### 5.6.4.3 Type B' RF technology

##### 5.6.4.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 [], clause 9.4.4.

|  |  |  |
| --- | --- | --- |
| RQ9.98 |  | 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 |  | 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 GID. |
| RQ9.100 | Rel-7 to Rel-11 | In case SWP as defined in ETSI TS 102 613 [] is used as a data link layer, the initialization data exchange is performed using CLT as defined in ETSI TS 102 613 []. The host provides information for the initialization. |
| RQ9.109 | 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 |  | The card RF gate shall forward the ISO/IEC 18092 [] 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 []. |
| RQ9.110 | 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 | 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 |  | The host sending a response shall encapsulate the ISO/IEC 18092 [] 212 kbps/424 kbps frames in an EVT\_SEND\_DATA event and shall send it to the card RF gate. |
| RQ9.104 |  | 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 |  | 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 GID. |
| RQ9.106 |  | 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 |  | ISO/IEC 18092 [] 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 []. |
| RQ9.108 |  | The command codes reserved for the NFCIP-1 protocol shall not be forwarded. |
| RQ9.112 | 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 |
| NOTE: Development of test cases for , RQ9.100, RQ9.109, RQ9.110, RQ9.111 and RQ9.112 are FFS. | | |

##### 5.6.4.4.2 Test case 1: NFCIP-1 command is not forwarded to UICC

5.6.4.4.2.1 Test execution

Run this test with the following parameters:

* None.

5.6.4.4.2.2 Initial conditions

* The user has to ensure that the RF technology type F is enabled in the Host Controller for the UICC prior to placing the Host Controller in the PCD field.
* A PIPEa is created and opened by the host with source GID = '24' to the card RF gate of type F of HCUT.
* MODE is set to '02'.
* SESSION\_IDENTITY is set to a random value.
* The Proximity Coupling Device (PCD) supporting ISO/IEC 18092 [] 212 kbps/424 kbps Type F protocol is powered off.

5.6.4.4.2.3 Test procedure

| Step | Direction | Description | RQ |
| --- | --- | --- | --- |
| 1 | User 🡪 HCUT | While the field is off, the Host Controller 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  HS -> HCUT  HCUT -> PCD | Perform initialization of RF ISO/IEC 18092 [] 212 kbps/424 kbps passive mode.  PCD transmits RF frame with payload of the initialization command (POLLING REQUEST) as defined in ISO/IEC 18092 [] 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,  and HCUT responds RF frame (POLLING RESPONSE ) to PCD in one of the available time slot(s) according to the initialization procedure as defined in ISO/IEC 18092 [] 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.  In case SWP as defined in ETSI TS 102 613 [] is used as a data link layer, the initialization data exchange is performed using CLT as defined in ETSI TS 102 613 []. The UICC provides information for the initialization. |  |
| 5 | PCD -> HCUT | Send the ATR\_REQ command, where the LEN is set to '11', CMD0 to 'D4', CMD1 to '00', Byte 0 to Byte 9 to '01FE0000000000000000', DID to '00', BS to '00', BR to '00', PP to '00', and the last 2 bytes represent the correct CRC at 212 kbps. |  |
| 6 | HCUT 🡪 HS | No frame is forwarded to HS. | RQ9.108 |
| 7 | HCUT 🡪 PCD | The HCUT may or may not send an RF response frame to the PCD. The PCD shall therefore wait for a potential response for a certain amount of time before continuing. This amount of time is up to the test case implementation and shall be such that the overall test case verdict is not affected. |  |
| 8 | PCD -> HCUT | Send the DEP\_REQ command, where the LEN is set to '0C', CMD0 to 'D4', CMD1 to '06', PFB to '00', DATA to '0001020304050607', and the last 2 bytes represent the correct CRC at 212 kbps. |  |
| 9 | HCUT 🡪 HS | No frame is forwarded. | RQ9.108 |
| 10 | HCUT 🡪 PCD | The HCUT may or may not send an RF response frame to the PCD. The PCD shall therefore wait for a potential response for a certain amount of time before continuing. This amount of time is up to the test case implementation and shall be such that the overall test case verdict is not affected. |  |
| 11 | PCD -> HCUT  HCUT -> HS  HS -> HCUT  HCUT -> PCD | Perform initialization of RF ISO/IEC 18092 [] 212 kbps/424 kbps passive mode.  PCD transmits RF frame with payload of the initialization command (POLLING REQUEST) as defined in ISO/IEC 18092 [] 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,  and HCUT responds RF frame (POLLING RESPONSE ) to PCD in one of the available time slot(s) according to the initialization procedure as defined in ISO/IEC 18092 [] for 212 kbps/424 kbps passive mode, where the Length is set to '12', 1st byte to '01', 2st to 9th bytes to '02FE000000000000', 10th to 17th bytes to 'FFFFFFFFFFFFFFFF', 18 and 19 bytes represent the correct CRC at 212 kbps.  In case SWP as defined in ETSI TS 102 613 [] is used as a data link layer, the initialization data exchange is performed using CLT as defined in ETSI TS 102 613 []. The UICC provides information for the initialization. |  |
| 12 | User 🡪 HCUT | The Host Controller is removed from the PCD field. |  |
| 13 | HCUT 🡪 HS | Send EVT\_FIELD\_OFF. | RQ9.104, RQ9.106 |

#### 5.6.4.5 Update RF technology settings

##### 5.6.4.5.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 [], 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 [], 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 []. |
| RQ10.3 |  | The anti-collision and activation as defined in ISO/IEC 14443-3 [] shall be handled by the CLF under the control of the host. |
| RQ10.4 |  | The RF protocol as defined in ISO/IEC 14443-4 [] 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 [] 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: 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 [], 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 [], 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 []. |
| 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: Development of test cases for RQ10.6, RQ10.7, RQ10.60, RQ10.10, 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 [], clause 10.2.3.1.

|  |  |  |  |
| --- | --- | --- | --- |
| RQ10.11 | 10.2.3.1 |  | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] 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 []) 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 []) 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 []. |
| 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 []. |
| RQ10.70 | 10.2.3.1 | Rel-11 upwards | The CLF shall apply to the access condition of RW to STATUS\_EVENT\_EN. |
| NOTE: 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. | | | |

##### 5.7.2.3.2 Type B reader RF gate

5.7.2.3.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], clause 10.2.2.1and 10.2.3.2.

|  |  |  |  |
| --- | --- | --- | --- |
| RQ10.28 | 10.2.3.2 |  | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] 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 [] 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 [] 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. |
| RQ10.75 | 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 []. |
| RQ10.80 | 10.2.2.1 | Rel-11 upwards | The CLF shall apply to the access condition of RW to STATUS\_EVENT\_EN. |
| NOTE: 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. | | | |

#### 5.7.2.4 Events and subclauses

##### 5.7.2.4.1 Events

5.7.2.4.1.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ10.41 | The reader RF gates shall support the EVT\_READER\_REQUESTED and EVT\_END\_OPERATION events. |

##### 5.7.2.4.2 EVT\_READER\_REQUESTED

5.7.2.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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. |

##### 5.7.2.4.3 EVT\_END\_OPERATION

5.7.2.4.3.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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. |

##### 5.7.2.4.4 EVT\_READER\_STATUS

5.7.2.4.4.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 [], 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: Development of test cases for above listed RQs is FFS. | |

### 5.7.3 Reader application gates

#### 5.7.3.1 Overview

Reference: ETSI TS 102 622 [], 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 [], 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 [], 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 [], 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 [], 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: 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 [], 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: 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 [], 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 RQ10.65 and RQ10.75. |
| 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 [], 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 pervious 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 [], 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 [], 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 [], 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 [], 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 [], 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 []. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

##### 5.8.2.3.3 Void

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

|  |  |  |
| --- | --- | --- |
| RQ11.5 |  | When the terminal host receives an EVT\_TRANSACTION, it shall attempt to launch an application associated to an NFC application in a UICC host identified by the AID. |
| 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. | | |

#### 5.8.2.4 Registry

##### 5.8.2.4.1 Conformance requirements

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

|  |  |  |
| --- | --- | --- |
| RQ11.6 |  | Registry parameters which are in the range reserved for usage by ETSI TS 102 622 [] but which are not defined in ETSI TS 102 622 [] shall not be present in the registry. |
| RQ11.AA | Rel-12 upwards | The terminal host shall use a default value for UI\_STATE of '00'. |
| RQ11.BB | Rel-12 upwards | The terminal host shall apply the access condition of RO to UI\_STATE of 1 byte length. |
| RQ11.CC | Rel-12 upwards | The terminal host shall set UI\_STATE to '00' if the UI availability unknown. |
| RQ11.DD | 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.EE | Rel-12 upwards | The terminal host shall set UI\_STATE to '02' if the UI is locked and the user cannot be notified |
| RQ11.FF | Rel-12 upwards | The terminal host shall set UI\_STATE to '03' if the UI is locked and the user can be notified. |
| RQ11.GG | Rel-12 upwards | The terminal host shall set UI\_STATE to '04' if the UI is unlocked but the user cannot be notified. |
| RQ11.HH | 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 [], 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 [], 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 [], 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 [], 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. | |

#### 5.8.3.4 Registry

##### 5.8.3.4.1 Conformance requirements

Reference: ETSI TS 102 622 [], 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 [], 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 GID 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 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 other HCI pipe. |
| 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 |
| 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. |
| 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.

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 [] 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 and SCP(15)000047) |

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 |
| 2011-01 | SCP #47 | SCP(11)0031 | 001 | - | F | Modify RF registries setting test cases to consider the procedure in ETSI TS 102 622 clause 9.4.5 | 7.0.0 | 7.1.0 |
| 2011-03 | SCP #48 | SCP(11)0122 | 002 | - | F | CR 102 695-3 R7 #002: editorial corrections | 7.0.0 | 7.1.0 |
| SCP(11)0123 | 003 | - | F | CR 102 695-3 R7 #003: essential corrections | 7.0.0 | 7.1.0 |
| SCP(11)0124 | 004 | - | F | CR 102 695-3 R7 #004: Move mandatory tests to optional, based on terminal features declaration | 7.0.0 | 7.1.0 |
| SCP(11)0125 | 005 | - | F | CR 102 695-3 R7 #005: Update the requirements to version 7.8.0 of ETSI TS 102 622 | 7.0.0 | 7.1.0 |
| SCP(11)0128 | 008 | - | F | CR 102 695-3 R7 #008: Correction of execution parameters in clause 5.6.3.3.4.2.3 | 7.0.0 | 7.1.0 |
| SCP(11)0129 | 009 | - | F | CR 102 695-3 R7 #009: Specification of default of full power mode only for test execution | 7.0.0 | 7.1.0 |
| SCP(11)0126 | 006 | - | F | Creation of Rel-8 of ETSI TS 102 695-3 to cover Rel-8 conformance requirements of ETSI TS 102 622 | 7.1.0 | 8.0.0 |
| 2011-06 | SCP #50 | SCP(11)0239 | 010 | - | F | Modification of applicability of mandatory tests to conditional based on terminal features declaration | 8.0.0 | 8.1.0 |
| SCP(11)0240 | 011 | - | D | Editorial corrections of VENDOR\_NAME typo | 8.0.0 | 8.1.0 |
| 2011-12 | SCP #53 | SCP(11)0349 | 012 | - | F | Correct TR3, to make it consistent with TC 5.4.2.2.2.2 | 8.1.0 | 8.2.0 |
| 2012-09 | SCP #56 | SCP(12)000196 | 013 | 2 | F | Correction of editorial errors on RQs in ETSI TS 102 695-3 | 8.2.0 | 8.3.0 |
| 2013-03 | SCP #58 | SCP(13)000034r1 | 014 | 1 | F | Clarification of SAK test | 8.3.0 | 8.4.0 |
| 2013-03 | SCP #58 | SCP(13)000035 | 015 |  | B | Creation of Rel-9 of ETSI TS 102 695-3 | 8.4.0 | 9.0.0 |
| 2013-04 | SCP #59 | SCP(13)000083 | 017 |  | F | Tidy up of RQ status | 9.0.0 | 9.1.0 |
| 2013-04 | SCP #59 | SCP(13)000084 | 018 |  | F | Test case 5.6.3.3.4.2.3: clarification of cascade levels | 9.0.0 | 9.1.0 |
| 2013-07 | SCP #60 | SCP(13)000137r1 | 019 | 1 | B | Test procedures for Type F | 9.1.0 | 9.2.0 |
| 2015-10 | SCP #70 | SCP(15)000231 | 020 |  | F | Card emulation test cases: update to set SESSION\_IDENTITY and MODE | 9.2.0 | 9.3.0 |
| 2015-10 | SCP #70 | SCP(15)000232 | 021 |  | F | Test case 5.6.3.3.4.2.3: correction of applicability for terminals not supporting CLT-A | 9.2.0 | 9.3.0 |
| 2015-10 | SCP #70 | SCP(15)000233 | 023 |  | F | Card emulation test cases: correction of applicability | 9.2.0 | 9.3.0 |
| 2015-10 | SCP #70 | SCP(15)000234 | 024 |  | F | Type F test cases: correction and clarifications related to RF field | 9.2.0 | 9.3.0 |
| 2015-10 | SCP #70 | SCP(15)000235 | 026 |  | F | Clause 4.3: consolidation of information to be provided by the device supplier | 9.2.0 | 9.3.0 |
| 2016-04 | SCP #73 | SCP(16)000070 | 027 |  | D | Deletion of notes under 5.6.3.4.3 sub-clauses | 9.2.0 | 9.3.0 |
| 2016-04 | SCP #73 | SCP(16)000071r1 | 028 | 1 | F | Test case 5.6.4.4.2: clarification of whether RF responses are expected | 9.2.0 | 9.3.0 |
| 2015-10 | SCP #70 | SCP(15)00236r1 | 022 | 1 | B | Update to Rel-10 | 9.3.0 | 10.0.0 |
| 2015-10 | SCP #70 | SCP(15)000237 | 025 | 1 | B | Creation of ETSI TS 102 695-3 Rel-11 | 10.0.0 | 11.0.0 |
| 2016-07 | SCP#74 | SCP(16)000132r1 | 029 | 1 | B | Creation of TS 102 695-3 REL-12 | 11.0.0 | 12.0.0 |
| 2016-10 | SCP#75 | SCP(16)000182 | 030 | - | D | Deletion of incorrect sentence in clause 5.5.1.1.1 and 5.5.1.2.1 | 12.0.0 | 12.0.1 |

# History

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| --- | --- | --- |
| **Document history** | | |
| V11.0.0 | August 2016 | Publication |
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