ETSI TS 102 695-2 V10.3.0 (2017-09)

Smart Cards;

Test specification for the Host Controller Interface (HCI);

Part 2: UICC features

(Release 10)

**Technical Specification**

Reference

RTS/SCP-00HCIUva10

Keywords

smart card, terminal

***ETSI***

650 Route des Lucioles

F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C

Association à but non lucratif enregistrée à la

Sous-Préfecture de Grasse (06) N° 7803/88

***Important notice***

The present document can be downloaded from:  
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:  
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

***Copyright Notification***

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.  
The content of the PDF version shall not be modified without the written authorization of ETSI.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2017.

All rights reserved.

**DECT**TM, **PLUGTESTS**TM, **UMTS**TM and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.  
**3GPP**TM and **LTE**™ are Trade Marks of ETSI registered for the benefit of its Members and  
of the 3GPP Organizational Partners.  
**GSM**® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights 9

Foreword 9

Modal verbs terminology 9

Introduction 10

1 Scope 11

2 References 11

2.1 Normative references 11

2.2 Informative references 12

3 Definitions, symbols and abbreviations 12

3.1 Definitions 12

3.2 Symbols 12

3.3 Abbreviations 12

3.4 Void 13

3A Formats 13

3A.1 Format of the table of optional features 13

3A.2 Format of the applicability table 13

3A.3 Status and Notations 14

3A.4 Format of the conformance requirements tables 14

4 Test environment 15

4.1 Table of optional features 15

4.2 Applicability table 16

4.3 Information to be provided by the device supplier 20

4.4 Test equipment 20

4.4.1 Measurement/setting uncertainties 20

4.4.2 Default conditions for DUT operation 20

4.4.2.1 General 21

4.4.2.2 Status of UICC interfaces 21

4.4.3 Minimum/maximum conditions for DUT operation 21

4.4.4 Conventions 21

4.5 Test execution 21

4.5.1 Parameter variations 21

4.5.2 Execution requirements 21

4.6 Pass criterion 22

4.6.1 Unanticipated behaviour from the DUT 22

5 Test cases 22

5.1 HCI architecture 22

5.1.1 Overview 22

5.1.2 Hosts 22

5.1.2.1 Conformance requirements 22

5.1.2.2 Test case 1: processing of RFU host identifier 23

5.1.2.2.1 Test execution 23

5.1.2.2.2 Initial conditions 23

5.1.2.2.3 Test procedure 23

5.1.3 Gates 23

5.1.3.1 Conformance requirements 23

5.1.3.2 Test case 1: existence of gates 23

5.1.3.2.1 Test execution 23

5.1.3.2.2 Initial conditions 23

5.1.3.2.3 Test procedure 24

5.1.3.3 Void 24

5.1.4 Pipes 24

5.1.4.1 Conformance requirements 24

5.1.4.2 Test case 1: static pipe deletion - administration gate 24

5.1.4.2.1 Test execution 24

5.1.4.2.2 Initial conditions 24

5.1.4.2.3 Test procedure 24

5.1.4.3 Test case 2: static pipe deletion - link management gate 25

5.1.4.3.1 Test execution 25

5.1.4.3.2 Initial conditions 25

5.1.4.3.3 Test procedure 25

5.1.4.4 Test case 3: persistence of pipe state 25

5.1.4.4.1 Test execution 25

5.1.4.4.2 Initial conditions 25

5.1.4.4.3 Test procedure 25

5.1.4.5 Test case 4: initial pipe state 25

5.1.4.5.1 Test execution 25

5.1.4.5.2 Initial conditions 25

5.1.4.5.3 Test procedure 26

5.1.5 Registries 26

5.1.5.1 Conformance requirements 26

5.1.5.2 Test case 1: registry creation 26

5.1.5.2.1 Test execution 26

5.1.5.2.2 Initial conditions 26

5.1.5.2.3 Test procedure 26

5.1.5.3 Test case 2: registry deletion 27

5.1.5.3.1 Test execution 27

5.1.5.3.2 Initial conditions 27

5.1.5.3.3 Test procedure 27

5.2 HCP 27

5.2.1 HCP packets 27

5.2.1.1 Conformance requirements 27

5.2.2 HCP message structure 28

5.2.2.1 Conformance requirements 28

5.2.2.2 Test case 1: commands/events on pipe which is not open 28

5.2.2.2.1 Test execution 28

5.2.2.2.2 Initial conditions 28

5.2.2.2.3 Test procedure 28

5.2.3 Message fragmentation 29

5.2.3.1 Conformance requirements 29

5.3 Instructions 29

5.3.1 Commands 29

5.3.1.1 Overview 29

5.3.1.1.1 Conformance requirements 29

5.3.1.2 Generic commands 29

5.3.1.2.1 ANY\_SET\_PARAMETER 29

5.3.1.2.2 ANY\_GET\_PARAMETER 30

5.3.1.2.3 ANY\_OPEN\_PIPE 31

5.3.1.2.4 ANY\_CLOSE\_PIPE 33

5.3.1.3 Administration commands 34

5.3.1.3.1 ADM\_CREATE\_PIPE 34

5.3.1.3.2 ADM\_NOTIFY\_PIPE\_CREATED 34

5.3.1.3.3 ADM\_DELETE\_PIPE 34

5.3.1.3.4 ADM\_NOTIFY\_PIPE\_DELETED 34

5.3.1.3.5 ADM\_CLEAR\_ALL\_PIPE 35

5.3.1.3.6 ADM\_NOTIFY\_ALL\_PIPE\_CLEARED 35

5.3.2 Responses 35

5.3.2.1 Conformance requirements 35

5.3.2.2 Test case 1: response to unknown command 35

5.3.2.2.1 Test execution 35

5.3.2.2.2 Initial conditions 35

5.3.2.2.3 Test procedure 35

5.3.2.3 Test case 2: responses received out of order, previous command sent by host controller 35

5.3.2.3.1 Test execution 35

5.3.2.3.2 Initial conditions 36

5.3.2.3.3 Test procedure 36

5.3.2.4 Test case 3: responses received out of order, previous command sent by host 36

5.3.2.4.1 Test execution 36

5.3.2.4.2 Initial conditions 36

5.3.2.4.3 Test procedure 36

5.3.3 Events 36

5.3.3.1 Conformance requirements 36

5.3.3.2 Test case 1: reception of unknown events 36

5.3.3.2.1 Test execution 36

5.3.3.2.2 Initial conditions 37

5.3.3.2.3 Test procedure 37

5.4 GATES and subclauses 37

5.4.1 GATES 37

5.4.1.1 Conformance requirements 37

5.4.1.2 Test case 1: command and event support for link management gate 37

5.4.1.2.1 Test execution 37

5.4.1.2.2 Initial conditions 37

5.4.1.2.3 Test procedure 37

5.4.1.3 Test case 2: command and event support for management gates except link management gate 38

5.4.1.3.1 Test execution 38

5.4.1.3.2 Initial conditions 38

5.4.1.3.3 Test procedure 38

5.4.2 Management gates 38

5.4.2.1 Administration gates 38

5.4.2.1.1 Host controller administration gate 38

5.4.2.1.2 Host administration gate 39

5.4.2.2 Link management gate 39

5.4.2.2.1 Host controller link management gate 39

5.4.2.2.2 Host link management gate 40

5.4.2.3 Identity management gate 41

5.4.2.3.1 Local registry 41

5.4.2.3.2 Remote registry 42

5.4.2.4 Loop back gate 43

5.4.2.4.1 Conformance requirements 43

5.4.3 Generic gates 43

5.5 HCI procedures 43

5.5.1 Pipe management 43

5.5.1.1 Pipe creation 43

5.5.1.1.1 Conformance requirements 43

5.5.1.1.2 Test case 1: ADM\_CREATE\_PIPE 43

5.5.1.1.3 Test case 2: ADM\_NOTIFY\_PIPE\_CREATED from host controller 44

5.5.1.1.4 Test case 3: ADM\_NOTIFY\_PIPE\_CREATED from other host 44

5.5.1.1.5 Test case 4: ADM\_NOTIFY\_PIPE\_CREATED with incorrect destination HID 44

5.5.1.1.6 Test case 5: unsuccessful ADM\_NOTIFY\_PIPE\_CREATED 45

5.5.1.2 Pipe deletion 45

5.5.1.2.1 Conformance requirements 45

5.5.1.2.2 Test case 1: sending ADM\_DELETE\_PIPE 45

5.5.1.2.3 Test case 2: receiving ADM\_NOTIFY\_PIPE\_DELETED 46

5.5.1.3 Clear all Pipes 46

5.5.1.3.1 Conformance requirements 46

5.5.1.3.2 Test case 1: ADM\_CLEAR\_ALL\_PIPE for data link layer specified in ETSI TS 102 613 47

5.5.1.3.3 Test case 2: ADM\_CLEAR\_ALL\_PIPE - static pipes, dynamic pipes to host controller 47

5.5.1.3.4 Test case 3: ADM\_CLEAR\_ALL\_PIPE - dynamic pipes to other host 48

5.5.1.3.5 Test case 4: ADM\_CLEAR\_ALL\_PIPE - registry parameters 48

5.5.2 Registry access 49

5.5.3 Host and Gate discovery 49

5.5.4 Session initialization 49

5.5.4.1 Conformance requirements 49

5.5.4.2 Test case 1: SESSION\_IDENTITY not changed 49

5.5.4.2.1 Test execution 49

5.5.4.2.2 Initial conditions 49

5.5.4.2.3 Test procedure 50

5.5.4.3 Test case 2: SESSION\_IDENTITY changed 50

5.5.4.3.1 Test execution 50

5.5.4.3.2 Initial conditions 50

5.5.4.3.3 Test procedure 50

5.5.5 Loop back testing 50

5.5.5.1 Conformance requirements 50

5.5.5.2 Test case 1: pipe creation from host controller 51

5.5.5.2.1 Test execution 51

5.5.5.2.2 Initial conditions 51

5.5.5.2.3 Test procedure 51

5.5.5.3 Test case 2: pipe creation from another host 51

5.5.5.3.1 Test execution 51

5.5.5.3.2 Initial conditions 51

5.5.5.3.3 Test procedure 51

5.5.5.4 Test case 3: processing of EVT\_POST\_DATA 51

5.5.5.4.1 Test execution 51

5.5.5.4.2 Initial conditions 51

5.5.5.4.3 Test procedure 52

5.6 Contactless card emulation 52

5.6.1 Overview 52

5.6.1.1 Conformance requirements 52

5.6.2 Void 52

5.6.3 Gates 52

5.6.3.1 Void 52

5.6.3.2 Identity management gate 52

5.6.3.2.1 Conformance requirements 52

5.6.3.3 Card RF gates 52

5.6.3.3.1 Overview 52

5.6.3.3.2 Commands 52

5.6.3.3.3 Events and subclauses 53

5.6.3.3.4 Registry and subclauses 53

5.6.3.4 Card application gates 55

5.6.3.4.1 Overview 55

5.6.3.4.2 Commands 55

5.6.3.4.3 Events and subclauses 55

5.6.3.4.4 Registry 56

5.6.3.4.4.1 Conformance requirements 56

5.6.4 Procedures 57

5.6.4.1 Use of contactless card application 57

5.6.4.1.1 Conformance requirements 57

5.6.4.1.2 Test case 1: full power mode 57

5.6.4.1.3 Test case 2: full power mode, no EVT\_CARD\_ACTIVATED and EVT\_CARD\_DEACTIVATED 58

5.6.4.1.4 Test case 3: sequence from DEACTIVATED state 58

5.6.4.1.5 Test case 4: sequence from DEACTIVATED state, no EVT\_CARD\_ACTIVATED or EVT\_CARD\_DEACTIVATED 59

5.6.4.1.6 Test case 5: low power, power down instead of EVT\_FIELD\_OFF 60

5.6.4.1.7 Test case 6: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation 60

5.6.4.1.8 Test case 7: EVT\_FIELD\_OFF after EVT\_CARD\_ACTIVATED 61

5.6.4.1.9 Test case 8: EVT\_FIELD\_OFF after EVT\_SEND\_DATA 61

5.6.4.1.10 Test case 9: multiple open card gates 62

5.6.4.1.11 Test case 10: empty C-APDU 63

5.6.4.2 Non ISO/IEC 14443-4 type A 64

5.6.4.2.1 Conformance requirements 64

5.6.4.2.2 Test case 1: full power mode 64

5.6.4.2.3 Test case 2: sequence from DEACTIVATED state 65

5.6.4.2.4 Test case 3: low power mode, power down instead EVT\_FIELD\_OFF 66

5.6.4.2.5 Test case 4: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation 67

5.6.4.2.6 Test case 5: EVT\_FIELD\_OFF during CLT frames exchange 68

5.6.4.2.7 Test case 6: multiple open card gates 68

5.6.4.3 Type B' RF technology 69

5.6.4.3.1 Conformance requirements 69

5.6.4.4 Type F RF technology 70

5.6.4.4.1 Conformance requirements 70

5.6.4.4.2 Test case 1: RF error indicator 70

5.6.4.4.3 Test case 2: full power mode 71

5.6.4.4.4 Test case 3: sequence from DEACTIVATED state 72

5.6.4.4.5 Test case 4: low power, power down instead of EVT\_FIELD\_OFF 73

5.6.4.4.6 Test case 5: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation 74

5.6.4.4.7 Test case 6: EVT\_FIELD\_OFF after EVT\_SEND\_DATA 75

5.6.4.4.8 Test case 7: multiple open card gates 76

5.6.4.4.9 Test case 8: EVT\_FIELD\_OFF during CLT frames exchange 77

5.6.4.5 Update RF technology settings 78

5.6.4.5.1 Conformance requirements 78

5.6.4.6 Identity check 78

5.6.4.6.1 Conformance requirements 78

5.7 Contactless reader 78

5.7.1 Overview 78

5.7.1.1 Conformance requirements 78

5.7.2 Reader RF gates 79

5.7.2.1 Overview 79

5.7.2.2 Command 79

5.7.2.2.1 WR\_XCHG\_DATA 79

5.7.2.3 Registries 79

5.7.2.3.1 Type A reader RF gate 79

5.7.2.3.2 Type B reader RF gate 79

5.7.2.4 Events and subclauses 80

5.7.2.4.1 Events 80

5.7.2.4.2 EVT\_READER\_REQUESTED 80

5.7.2.4.3 EVT\_END\_OPERATION 80

5.7.2.5 Responses 80

5.7.2.5.1 Conformance requirements 80

5.7.3 Reader application gates 80

5.7.3.1 Overview 80

5.7.3.2 Command 80

5.7.3.2.1 Conformance requirements 80

5.7.3.3 Registry 80

5.7.3.3.1 Conformance requirements 80

5.7.3.4 Events and subclauses 81

5.7.3.4.1 Events 81

5.7.3.4.2 EVT\_TARGET\_DISCOVERED 81

5.7.4 Procedures 81

5.7.4.1 Use of contactless reader application 81

5.7.4.1.1 Conformance requirements 81

5.8 Connectivity 81

5.8.1 Overview 81

5.8.2 Connectivity gate and subclauses 81

5.8.2.1 Connectivity gate 81

5.8.2.2 Commands 82

5.8.2.2.1 PRO\_HOST\_REQUEST 82

5.8.2.3 Events and subclauses 82

5.8.2.3.1 Events 82

5.8.2.3.2 EVT\_CONNECTIVITY 82

5.8.2.3.3 Void 82

5.8.2.3.4 EVT\_OPERATION\_ENDED 82

5.8.2.3.5 EVT\_TRANSACTION 82

5.8.2.4 Registry 83

5.8.2.4.1 Conformance requirements 83

5.8.3 Connectivity application gate and subclauses 83

5.8.3.1 Connectivity application gate 83

5.8.3.1.1 Conformance requirements 83

5.8.3.2 Commands 83

5.8.3.2.1 Conformance requirements 83

5.8.3.3 Events and subclauses 83

5.8.3.3.1 Events 83

5.8.3.3.2 EVT\_STANDBY 83

5.8.3.4 Registry 83

5.8.3.4.1 Conformance requirements 83

5.8.4 Procedures 83

5.8.4.1 Use of connectivity gate 83

Annex A (informative): Core specification version information 84

Annex B (informative): Change history 85

History 86

# Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server ([http://ipr.etsi.org](http://webapp.etsi.org/IPR/home.asp)).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

# Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Smart Card Platform (SCP).

The contents of the present document are subject to continuing work within TC SCP and may change following formal TC SCP approval. If TC SCP modifies the contents of the present document, it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

0 early working draft;

1 presented to TC SCP for information;

2 presented to TC SCP for approval;

3 or greater indicates TC SCP approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

The present document is part 2 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](http://portal.etsi.org/Help/editHelp!/Howtostart/ETSIDraftingRules.aspx) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

# Introduction

The present document defines test cases for the UICC 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 the minimum characteristics which are considered necessary for the UICC in order to provide compliance to ETSI TS 102 622 [].

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 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 reference 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.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

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 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] ISO/IEC 18092: "Information technology - Telecommunications and information exchange between systems - Near Field Communication - Interface and Protocol (NFCIP-1)".

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

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

[6] ISO/IEC 9646-7: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

[7] ETSI TS 102 221: "Smart Cards; UICC-Terminal interface; Physical and logical characteristics".

[8] ETSI TS 102 600: "Smart Cards; UICC-Terminal interface; Characteristics of the USB interface".

[9] ISO/IEC 7816-4: "Identification cards - Integrated circuit cards - Part 4: Organization, security and commands for interchange".

## 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 reference 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.

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 and abbreviations

## 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:

ATQA Answer To reQuest of type A

ATQB Answer To reQuest of type B

CLT ContactLess Tunnelling

DUT Device Under Test

EOF End of Frame

FFS For Further Study

FWI Frame Waiting time Integer

HCI Host Controller Interface

HCS Host Controller Simulator

HUT Host Under Test

ICRx Initial Condition Requirement (where x is a number)

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

LEN LENgth

PUPI Pseudo-Unique PICC Identifier

RFU Reserved for Future Use

RO Read-Only

RQ conformance Requirement

RW Read-Write

SAK Select AcKnowledge

SFGT Start-up Frame Guard Time

SOF Starf of Frame

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 Void

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

# 3A Formats

## 3A.1 Format of the table of optional features

The columns in table 4.1 have the following meaning.

|  |  |
| --- | --- |
| Column | Meaning |
| Option | The optional feature supported or not by the DUT. |
| Status | See clause 3.4.3. |
| Support | The support columns shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646‑7 [], are used for the support column in table 4.1.  Y or y supported by the implementation.  N or n not supported by the implementation.  N/A, n/a or - no answer required (allowed only if the status is N/A, directly or after evaluation of a conditional status). |
| Mnemonic | The mnemonic column contains mnemonic identifiers for each item. |

## 3A.2 Format of the applicability table

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

The columns in table 4.2 have the following meaning.

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

## 3A.3 Status and Notations

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

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

M mandatory - the capability is required to be supported.

O optional - the capability may be supported or not.

N/A not applicable - in the given context, it is impossible to use the capability.

X prohibited (excluded) - there is a requirement not to use this capability in the given context.

O.i qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.

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

References to items

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

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

## 3A.4 Format of the conformance requirements tables

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

| Column Status | Meaning |
| --- | --- |
| Mandatory | This mandatory column contains the conformance requirement number (e.g. RQ3). |
| Optional | This optional column is present when the containing clause sources conformance requirements from multiple clauses in the core specification. In this case, the cells in this column indicate the specific clause from the core specification from which the conformance requirement was sourced.  If the conformance requirements are sourced from a single clause in the core specification, this column is not present. |
| Optional | This optional column is present when the table contains conformance requirements which are applicable to only a subset of the releases which are covered by the present document. In this case, the content of the cells indicates the release(s) to which the conformance requirement is applicable. Additionally, a cell being empty indicates that the conformance requirement is applicable to every release which is covered by the present document.  Examples of the content of cells in this column are given below:   | 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. | | Rel-7, Rel-9 upwards | Rel-7 and for Rel-9 up to the latest release which is covered by the present document. |   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 | Link management gate supported | O |  | O\_LINK\_MAN |
| 2 | WHITELIST contains the HID of at least one further host | O |  | O\_WHITELIST\_NON\_EMPTY |
| 3 | Data link layer specified in ETSI TS 102 613 [] is being used | O |  | O\_102\_613 |
| 4 | CLT, ISO/IEC 14443-3 [] Type A | O |  | O\_CLT\_A |
| 5 | Card emulation, Type A | O |  | O\_TYPE\_A |
| 6 | Card emulation, Type B | O |  | O\_TYPE\_B |
| 7 | Card emulation, Type B' | O |  | O\_TYPE\_B\_PRIME |
| 8 | Card emulation, Type F | O |  | O\_TYPE\_F |

## 4.2 Applicability table

Table 4.2 specifies the applicability of each test case to the device under test. See clause 3.4 for the format of table 4.2.

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

Table 4.2 a): Applicability of tests

| Clause | Test case number and description | Release | Execution requirements | Rel‑7 UICC | Rel‑8 UICC | Rel‑9 UICC | Rel‑10 UICC | Support |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5.1.2.2 | Test case 1: processing of RFU host identifier | Rel-7 |  | M | M | M | M |  |
| 5.1.3.2 | Test case 1: existence of gates | Rel-7 |  | M | M | M | M |  |
| 5.1.4.2 | Test case 1: static pipe deletion - administration gate | Rel-7 |  | M | M | M | M |  |
| 5.1.4.3 | Test case 2: static pipe deletion - link management gate | Rel-7 |  | C101 | C101 | C101 | C101 |  |
| 5.1.4.4 | Test case 3: persistence of pipe state | Rel-7 |  | M | M | M | M |  |
| 5.1.4.5 | Test case 4: initial pipe state | Rel-7 |  | M | M | M | M |  |
| 5.2.2.2 | Test case 1: commands/events on pipe which is not open | Rel-7 |  | M | M | M | M |  |
| 5.3.1.2.1.2 | Test case 1: ANY\_SET\_PARAMETER reception - invalid structure | Rel-7 |  | C101 | C101 | C101 | C101 |  |
| 5.3.1.2.1.3 | Test case 2: ANY\_SET\_PARAMETER reception - RO registry parameter | Rel-7 |  | 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 |  |
| 5.3.1.2.3.2 | Test case 1: ANY\_OPEN\_PIPE reception | Rel-7 |  | M | M | M | M |  |
| 5.3.1.2.4.2 | Test case 1: ANY\_CLOSE\_PIPE reception | Rel-7 |  | M | M | M | M |  |
| 5.3.2.2 | Test case 1: response to unknown command | Rel-7 |  | M | M | M | M |  |
| 5.3.2.3 | Test case 2: responses received out of order, previous command sent by host controller | Rel-7 |  | M | M | M | M |  |
| 5.3.3.2 | Test case 1: reception of unknown events | Rel-7 |  | M | M | M | M |  |
| 5.4.1.2 | Test case 1: command and event support for link management gate | Rel-7 |  | C101 | C101 | C101 | C101 |  |
| 5.4.1.3 | Test case 2: command and event support for host administration gate | Rel-7 |  | M | M | M | M |  |
| 5.4.2.1.1.2 | Test case 1: SESSION\_IDENTITY | Rel-7 |  | M | M | M | M |  |
| 5.4.2.3.1.2 | Test case 1: registry parameters | Rel-7 |  | M | M | M | M |  |
| 5.5.1.1.3 | Test case 2: ADM\_NOTIFY\_PIPE\_CREATED from host controller | Rel-7 |  | M | M | M | M |  |
| 5.5.1.1.4 | Test case 3: ADM\_NOTIFY\_PIPE\_CREATED from other host | Rel-7 |  | C102 | C102 | C102 | C102 |  |
| 5.5.1.1.5 | Test case 4: ADM\_NOTIFY\_PIPE\_CREATED with incorrect destination HID | Rel-7 |  | M | M | M | M |  |
| 5.5.1.1.6 | Test case 5: unsuccessful ADM\_NOTIFY\_PIPE\_CREATED | Rel-7 | SR5 | M | M | M | M |  |
| 5.5.1.2.3 | Test case 2: receiving ADM\_NOTIFY\_PIPE\_DELETED | Rel-7 |  | M | M | M | M |  |
| 5.5.1.3.2 | Test case 1: ADM\_CLEAR\_ALL\_PIPE for data link layer specified in ETSI TS 102 613 [] | Rel-7 |  | C103 | C103 | C103 | C103 |  |
| 5.5.1.3.3 | Test case 2: ADM\_CLEAR\_ALL\_PIPE - static pipes, dynamic pipes to host controller | Rel-7 |  | C103 | C103 | C103 | C103 |  |
| 5.5.1.3.4 | Test case 3: ADM\_CLEAR\_ALL\_PIPE - dynamic pipes to other host | Rel-7 |  | C102 | C102 | C102 | C102 |  |
| 5.5.4.2 | Test case 1: SESSION\_IDENTITY not changed | Rel-7 |  | C103 | C103 | C103 | C103 |  |
| 5.5.4.3 | Test case 2: SESSION\_IDENTITY changed | Rel-7 |  | C103 | C103 | C103 | C103 |  |
| 5.5.4.4 | Test case x: activation in low power mode, no session initialization | Rel-10 |  | N/A | N/A | N/A | C103 |  |
| 5.5.4.5 | Test case y: subsequent activation, no session initialization | Rel-10 |  | N/A | N/A | N/A | C103 |  |
| 5.5.5.2 | Test case 1: pipe creation from host controller | Rel-7 |  | M | M | M | M |  |
| 5.5.5.3 | Test case 2: pipe creation from another host | Rel-7 |  | C102 | C102 | C102 | C102 |  |
| 5.5.5.4 | Test case 3: processing of EVT\_POST\_DATA | Rel-7 |  | M | M | M | M |  |
| 5.6.3.3.4.2.2 | Test case 1: Type A registry values | Rel-7 | SR8 | C104 | C104 | C104 | C104 |  |
| 5.6.3.3.4.3.2 | Test case 1: Type B registry values | Rel-7 | SR8 | C105 | C105 | C105 | C105 |  |
| 5.6.3.3.4.5.2 | Test case 1: Type F registry values | Rel-7 | SR8 | C106 | C106 | C106 | C106 |  |
| 5.6.4.1.2 | Test case 1: full power mode | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.3 | Test case 2: full power mode, no EVT\_CARD\_ACTIVATED and EVT\_CARD\_DEACTIVATED | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.4 | Test case 3: sequence from DEACTIVATED state | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.5 | Test case 4: sequence from DEACTIVATED state, no EVT\_CARD\_ACTIVATED or EVT\_CARD\_DEACTIVATED | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.6 | Test case 5: low power, power down instead of EVT\_FIELD\_OFF | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.7 | Test case 6: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.8 | Test case 7: EVT\_FIELD\_OFF after EVT\_CARD\_ACTIVATED | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.9 | Test case 8: EVT\_FIELD\_OFF after EVT\_SEND\_DATA | Rel-7 | SR6 | C107 | C107 | C107 | C107 |  |
| 5.6.4.1.10 | Test case 9: multiple open card gates | Rel-7 | SR6 | C108 | C108 | C108 | C108 |  |
| 5.6.4.1.11 | Test case 10: empty C-APDU | Rel-7 | SR6 |  |  | C107 | C107 |  |
| 5.6.4.2.2 | Test case 1: full power mode | Rel-7 | SR7 | C109 | C109 | C109 | C109 |  |
| 5.6.4.2.3 | Test case 2: sequence from DEACTIVATED state | Rel-7 | SR7 | C109 | C109 | C109 | C109 |  |
| 5.6.4.2.4 | Test case 3: low power mode, power down instead EVT\_FIELD\_OFF | Rel-7 | SR7 | C109 | C109 | C109 | C109 |  |
| 5.6.4.2.5 | Test case 4: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation | Rel-7 | SR7 | C109 | C109 | C109 | C109 |  |
| 5.6.4.2.6 | Test case 5: EVT\_FIELD\_OFF during CLT frames exchange | Rel-7 | SR7 | C109 | C109 | C109 | C109 |  |
| 5.6.4.2.7 | Test case 6: multiple open card gates | Rel-7 | SR7 | C110 | C110 | C110 | C110 |  |
| 5.6.4.4.2 | Test case 1: RF error indicator | Rel-7 | SR9 |  |  |  | C106 |  |
| 5.6.4.4.3 | Test case 2: full power mode | Rel-7 | SR9 |  |  |  | C106 |  |
| 5.6.4.4.4 | Test case 3: sequence from DEACTIVATED state | Rel-7 | SR9 |  |  |  | C106 |  |
| 5.6.4.4.5 | Test case 4: low power, power down instead of EVT\_FIELD\_OFF | Rel-7 | SR9 |  |  |  | C106 |  |
| 5.6.4.4.6 | Test case 5: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation | Rel-7 | SR9 |  |  |  | C106 |  |
| 5.6.4.4.7 | Test case 6: EVT\_FIELD\_OFF after EVT\_SEND\_DATA | Rel-7 | SR9 |  |  |  | C106 |  |
| 5.6.4.4.8 | Test case 7: multiple open card gates | Rel-7 | SR9 |  |  |  | C111 |  |
| 5.6.4.4.9 | Test case 8: EVT\_FIELD\_OFF during CLT frames exchange | Rel-7 | SR9 |  |  |  | C106 |  |

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\_LINK\_MAN |
| C102 | IF 4.1/2 THEN M ELSE N/A | O\_WHITELIST\_NON\_EMPTY |
| C103 | IF 4.1/3 THEN M ELSE N/A | O\_102\_613 |
| C104 | IF 4.1/5 THEN M ELSE N/A | O\_TYPE\_A |
| C105 | IF 4.1/6 THEN M ELSE N/A | O\_TYPE\_B |
| C106 | IF 4.1/8 THEN M ELSE N/A | O\_TYPE\_F |
| C107 | IF 4.1/5 OR 4.1/6 THEN M ELSE N/A | O\_TYPE\_A OR O\_TYPE\_B |
| C108 | IF (4.1/5 AND (4.1/6 OR 4.1/7 OR 4.1/8)) OR (4.1/6 AND (4.1/5 OR 4.1/7 OR 4.1/8)) THEN M ELSE N/A | (O\_TYPE\_A AND (O\_TYPE\_B OR O\_TYPE\_B\_PRIME OR O\_TYPE\_F)) OR (O\_TYPE\_B AND (O\_TYPE\_A OR O\_TYPE\_B\_PRIME OR O\_TYPE\_F)) |
| C109 | IF 4.1/4 AND 4.1/5 THEN M ELSE N/A | O\_CLT\_A AND O\_TYPE\_A |
| C110 | IF 4.1/4 AND 4.1/5 AND (4.1/6 OR 4.1/7 OR 4.1/8) THEN M ELSE N/A | O\_CLT\_A AND O\_TYPE\_A AND (O\_TYPE\_B OR O\_TYPE\_B\_PRIME OR O\_TYPE\_F) |
| C111 | IF 4.1/8 AND (4.1/5 OR 4.1/6 OR 4.1/7) THEN M ELSE N/A | O\_TYPE\_F AND (TYPE A OR O\_TYPE\_B OR O\_TYPE\_B\_PRIME) |

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

| Execution requirement | Description |
| --- | --- |
| SR1 | Void |
| SR2 | Void |
| SR3 | Void. |
| SR4 | Void |
| SR5 | A GID exists which is reserved for proprietary use or is host specific according to table 2 of ETSI TS 102 622 [], and which is not contained in the GATES\_LIST of the host. |
| SR6 | The UICC contains an application which can respond predictably with R-APDUs to received C-APDUs. |
| SR7 | The UICC contains an application which can respond predictably with CLT responses to received CLT commands for non ISO/IEC 14443‑4 [] Type A. |
| SR8 | An application is needed on the UICC, in order for the Host Controller to be able to verify the settings of the registry parameters for the given RF technology. |
| SR9 | The UICC contains an application which can respond predictably with ISO/IEC 18092 [] 212 kbps/424 kbps response frames to received ISO/IEC 18092 [] 212 kbps/424 kbps command frames. |
|  |  |
| TR1 | Void |
| TR2 | Void |
| TR3 | Void |
| TR4 | Void |
| TR5 | Void |
| TR6 | Void |
|  |  |
| ICR1 | Void |

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

## 4.3 Information to be provided by the device supplier

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

Table 4.3: Default configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Presence/Value | Status | Mnemonic |
| 1 | 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 | Indication of presence of HCI\_VERSION, and value if supported. |  | M | V\_HCI\_VERSION |
| 6 | Value of GATES\_LIST. |  | M | V\_GATES\_LIST |
| NOTE: Conditional values shall be provided if the corresponding option is supported in the table 4.1. | | | | |

## 4.4 Test equipment

The test equipment shall provide a host controller simulator which is connected to the DUT during test procedure execution, unless otherwise specified. For test cases which require a further host to be present, the test equipment shall further provide a host simulator which is connected to the DUT via the host controller simulator during test procedure execution, unless otherwise specified.

Before execution of each test case, the host network state shall be set back to the state in which it was after the UICC was powered up in full power mode using the default SESSION\_IDENTITY (in order to instigate a new HCI session initialization).

With respect to the DUT, the host controller simulator shall act as a valid host controller according to ETSI TS 102 622 [] unless otherwise specified. In particular, the host controller simulator shall ensure that the values of HOST\_LIST and GATES\_LIST are valid, according to the particular requirements of the test case being executed.

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 network simulation (i.e. host controller simulator and any host simulators) shall comprise a valid network according to the specific DUT. The details are out of the scope of the present document.

When the DUT is expected *not* to send an HCI response or event in response to a prior HCI message sent by the simulator, the simulator shall wait 500 ms, during which it checks whether an HCI response or event has been sent in response.

NOTE: the value of 500 ms specified above is not derived from any value in ETSI TS 102 622 []. This value was selected to optimize the duration of the test execution.

### 4.4.1 Measurement/setting uncertainties

Void.

### 4.4.2 Default conditions for DUT operation

Unless otherwise specified, the test equipment shall apply the default conditions described in the following clauses during test procedure execution.

#### 4.4.2.1 General

The test equipment shall treat the identity check mechanism of the lower layer as having passed (see ETSI TS 102 622 [], clause 8.4).

The test equipment shall use the same SESSION\_IDENTITY on power up within an individual test case.

#### 4.4.2.2 Status of UICC interfaces

If the data link layer in ETSI TS 102 613 [] is used and the DUT is a UICC, the terminal simulator shall not activate the ETSI TS 102 221 [] interface or the ETSI TS 102 600 [] interface.

### 4.4.3 Minimum/maximum conditions for DUT operation

Void.

### 4.4.4 Conventions

Unless otherwise specified, ADM\_NOTIFY\_PIPE\_CREATED is sent by the test equipment with source HID = HID of host controller, destination HID = HID of host and a currently unused PID.

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, when the data link layer in ETSI TS 102 613 [] is used, all tests shall be carried out once for each of following parameter variations in addition to the parameter variations specified individually for each test case.

Table 4.5.1: Global parameter variations

|  |  |
| --- | --- |
| Voltage class and power mode | Vcc |
| B | Default: in the range of 2,90 V to 3,10 V |
| Minimum: in the range of 2,70 V to 2,80 V |
| Maximum: in the range of 3,20 V to 3,30 V |
| C, full power | Default: in the range of 1,75 V to 1,85 V |
| Minimum: in the range of 1,62 V to 1,67 V |
| Maximum: in the range of 1,93 V to 1,98 V |
| C, low power | Default: in the range of 1,75 V to 1,85 V |
| Minimum: in the range of 1,62 V to 1,67 V |
| Maximum: in the range of 1,93 V to 1,98 V |

The specification of global parameter variations for when other data link layers are used is out of the scope of the present document.

### 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

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 UICC for the referenced clause.

### 5.1.2 Hosts

#### 5.1.2.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | A host shall not use host identifiers which are RFU. |
| RQ2 | A host shall reject received host identifiers which are RFU. |
| NOTE: RQ1 is a non-occurrence RQ. | |

#### 5.1.2.2 Test case 1: processing of RFU host identifier

##### 5.1.2.2.1 Test execution

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

* Source HID values of: every HID value which is RFU as defined in ETSI TS 102 622 [].

##### 5.1.2.2.2 Initial conditions

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

##### 5.1.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with the specified source HID, source GID = '01' and destination GID = GID of loop back gate. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ2 |

### 5.1.3 Gates

#### 5.1.3.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | All hosts shall have one administration gate. |
| RQ2 | All hosts shall have one identity management gate. |
| RQ3 | All hosts shall have one loop back gate. |
| RQ4 | A host shall not use gate identifiers which are RFU. |
| RQ5 | Void. |
| RQ6 | A host shall not use gate identifiers which are host specific but not yet allocated in ETSI TS 102 622 []. |
| RQ7 | Void. |
| NOTE: RQ4 and RQ6 are not tested, as they are non-occurrence RQs. | |

#### 5.1.3.2 Test case 1: existence of gates

##### 5.1.3.2.1 Test execution

Void.

##### 5.1.3.2.2 Initial conditions

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

##### 5.1.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source and destination GID = GID of identity management gate; designate the created pipe PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1, RQ2 |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ2 |
| 5 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 6 | HUT 🡪 HCS | Send ANY\_OK.  Check that the GATES\_LIST returned contains the GID of the identity management gate and the GID of the loop back gate. | RQ2, RQ3 |
| 7 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '01' and destination GID = GID of the loop back gate; designate the created pipe PIPE\_LOOP\_BACK. |  |
| 8 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ3 |
| 9 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 10 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ3 |
| 11 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 12 | HUT 🡪 HCS | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. | RQ3 |

#### 5.1.3.3 Void

### 5.1.4 Pipes

#### 5.1.4.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | A host shall not attempt to delete a static pipe. |
| RQ2 | A host shall reject any attempts to delete a static pipe. |
| RQ3 | The state of a pipe (i.e. open or closed) shall remain persistent if the hosts are powered down and up again. |
| RQ4 | The state of a dynamic pipe after creation shall be closed. |
| RQ5 | The initial state of a static pipe shall be closed. |
| RQ6 | A host shall not use pipe identifiers which are RFU. |
| NOTE 1: RQ1 and RQ6 are not tested, as they are non-occurrence RQs.  NOTE 2: RQ5 is not tested, as it is not clear when the initial state of the static pipe applies. | |

#### 5.1.4.2 Test case 1: static pipe deletion - administration gate

##### 5.1.4.2.1 Test execution

Void.

##### 5.1.4.2.2 Initial conditions

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

##### 5.1.4.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_DELETED(PIPE1) on PIPE1. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ2 |

#### 5.1.4.3 Test case 2: static pipe deletion - link management gate

##### 5.1.4.3.1 Test execution

Void.

##### 5.1.4.3.2 Initial conditions

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

##### 5.1.4.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_DELETED(PIPE0) on PIPE1. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ2 |

#### 5.1.4.4 Test case 3: persistence of pipe state

##### 5.1.4.4.1 Test execution

Void.

##### 5.1.4.4.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* PIPE1 is open.
* A pipe (PIPE\_ID\_MAN) has been created to the host's identity management gate, and is open.

##### 5.1.4.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '01' and destination GID = GID of the loop back gate; designate the created pipe PIPE\_LOOP\_BACK. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 3 | HCS 🡪 HUT | Power down host. |  |
| 4 | HCS 🡪 HUT | Power up host, and proceed until the HCI interface is available. |  |
| 5 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE1. |  |
| 6 | HUT 🡪 HCS | Send ANY\_OK. | RQ3 |
| 7 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 8 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ3 |
| 9 | HCS 🡪 HUT | Send EVT\_POST\_DATA on PIPE\_LOOP\_BACK. |  |
| 10 | HUT 🡪 HCS | Send no message on PIPE\_LOOP\_BACK. | RQ3 |
| 11 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 12 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ3 |

#### 5.1.4.5 Test case 4: initial pipe state

##### 5.1.4.5.1 Test execution

Void.

##### 5.1.4.5.2 Initial conditions

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

##### 5.1.4.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '00' and destination GID = GID of identity management gate; designate the created pipe PIPEx. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 3 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPEx. |  |
| 4 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ4 |

### 5.1.5 Registries

#### 5.1.5.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | 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 []. |
| RQ2 | A new instance of the registry is created for every pipe that connects to the gate. |
| RQ3 | Upon pipe creation all registry parameters with access rights Read-write (RW) or Write-only (WO) shall be set to their default values. |
| RQ4 | 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. |
| RQ5 | When a pipe is deleted its registry instance is also deleted. |
| NOTE 1: As the specification of registry parameters is specific to each individual registry, RQ1, RQ3 and RQ4 are not tested in this clause, but are tested in other clauses of the present document for each individual registry.  NOTE 2: RQ2 and RQ5 are not testable in a standardised manner. See Annex X for test cases which could be used in a non-standardised manner. | |

#### 5.1.5.2 Void



#### 5.1.5.3 Void



## 5.2 HCP

### 5.2.1 HCP packets

#### 5.2.1.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | All hosts shall use the correct structure for transmitted HCP packets. |
| RQ2 | All hosts shall recognize correctly structured received HCP packets. |
| RQ3 | The destination host forwards the packet to the destination gate. |
| NOTE 1: RQ1 and RQ2 are implicitly tested by the testing of higher layers in other clauses of the present document.  NOTE 2: RQ3 is internal to the host, and is not tested in this clause. It will be implicitly tested in many other test cases within the present document. | |

### 5.2.2 HCP message structure

#### 5.2.2.1 Conformance requirements

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

|  |  |  |
| --- | --- | --- |
| RQ1 |  | All hosts shall use the correct structure for transmitted HCP messages. |
| RQ2 |  | Type value 3 shall not be used. |
| RQ3 |  | All hosts shall recognize correctly structured received HCP messages. |
| RQ4 |  | 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 |  | 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. |
| RQ6 | Rel-9 upwards | A gate shall interpret incoming events and commands even while it is waiting for a response to a previously sent command. |
| NOTE 1: RQ1 and RQ3 are implicitly tested by the testing of higher layers in other clauses of the present document.  NOTE 2: RQ2 and RQ5 are not tested, as they are non-occurrence RQs.  NOTE 3: Development of test cases for RQ6 is FFS. | | |

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

##### 5.2.2.2.1 Test execution

Void.

##### 5.2.2.2.2 Initial conditions

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

##### 5.2.2.2.3 Test procedure

| Step | Direction | Description | RQ |
| --- | --- | --- | --- |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source and destination GID = GID of identity management gate; designate the created pipe PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 3 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ4 |
| 5 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 6 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 7 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 8 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ4 |
| 9 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 10 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 11 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 12 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ4 |
| 13 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '00' and destination GID = GID of the loop back gate; designate the created pipe PIPE\_LOOP\_BACK. |  |
| 14 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 15 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 16 | HUT 🡪 HCS | Send no message on PIPE\_LOOP\_BACK. | RQ4 |
| 17 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 18 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 19 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 20 | HUT 🡪 HCS | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. | RQ4 |
| 21 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE\_LOOP\_BACK. |  |
| 22 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 23 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 24 | HUT 🡪 HCS | Send no message on PIPE\_LOOP\_BACK. | RQ4 |
| 25 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 26 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ4 |

### 5.2.3 Message fragmentation

#### 5.2.3.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | Message fragmentation shall be used when the size of the message is larger than supported by the underlying data link layer. |
| RQ2 | Messages shall be fragmented according to the rules specified in ETSI TS 102 622 []. |
| RQ3 | The destination gate is responsible for rebuilding the message from the fragmented messages. |
| RQ4 | 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 RQ1, RQ2, RQ3 and RQ4 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.

|  |  |
| --- | --- |
| RQ1 | For all gates, hosts shall not use RFU instruction values ('05' to '0F') in commands. |
| RQ2 | For administration gates, hosts shall not use RFU instruction values ('16' to '3F') in commands. |
| RQ3 | For gates defined in ETSI TS 102 622 [], hosts shall not use instruction values between '10' and '3F' which are not allocated in ETSI TS 102 622 []. |
| NOTE: RQ1, RQ2 and RQ3 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.

|  |  |
| --- | --- |
| RQ1 | A host shall reject an incorrectly formatted ANY\_SET\_PARAMETER command. |
| RQ2 | A host 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). |
| RQ3 | A host 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). |
| RQ4 | When a host receives a valid ANY\_SET\_PARAMETER command, it shall write the parameter value into the registry and respond with ANY\_OK without any parameters. |
| RQ5 | Whenever a host 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: RQ3 is not tested, as it is a non-occurrence RQ.  NOTE 2: RQ4 and RQ5 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

Void.

5.3.1.2.1.2.2 Initial conditions

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

5.3.1.2.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER with no parameters on PIPE0. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ1 |

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

Void.

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's identity management gate, and is open.

5.3.1.2.1.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | 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's registry. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ2 |

##### 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.

|  |  |
| --- | --- |
| RQ1 | A host shall reject an incorrectly formatted ANY\_GET\_PARAMETER command. |
| RQ2 | A host 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). |
| RQ3 | A host 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). |
| RQ4 | When a host receives a valid ANY\_GET\_PARAMETER command, it shall respond with ANY\_OK with the value of the parameter. |
| RQ5 | Whenever a host 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: RQ3 is not tested, as it is a non-occurrence RQ.  NOTE 2: RQ4 and RQ5 are not tested, as they are effectively tested in other clauses of the present document for each individual registry parameter.  NOTE 3: RQ2 is not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | |

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

5.3.1.2.2.2.1 Test execution

Void.

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's identity management gate, and is open.

5.3.1.2.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER with no parameters on PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ1 |
| 3 | HCS 🡪 HUT | 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 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ1 |

5.3.1.2.2.3 Void



##### 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.

|  |  |
| --- | --- |
| RQ1 | A host shall reject an incorrectly formatted ANY\_OPEN\_PIPE command. |
| RQ2 | When a host other than the host controller receives a valid ANY\_OPEN\_PIPE command on a closed pipe, it shall open the pipe and return ANY\_OK with a parameter containing the "number of pipes already open on this gate before the execution of the command". |
| RQ3 | When a host sends an ANY\_OPEN\_PIPE command, it shall contain no command parameters. |
| RQ4 | When a host receives ANY\_OK in response to an ANY\_OPEN\_PIPE command, it shall open the pipe. |
| NOTE 1: In ETSI TS 102 622 [], it is not clear whether ANY\_OPEN\_PIPE is valid over a pipe which is already open. This is therefore not listed as a conformance requirement.  NOTE 2: RQ3 and RQ4 are not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | |

5.3.1.2.3.2 Test case 1: ANY\_OPEN\_PIPE reception

5.3.1.2.3.2.1 Test execution

Void.

5.3.1.2.3.2.2 Initial conditions

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

5.3.1.2.3.2.3 Test procedure

| Step | Direction | Description | RQ |
| --- | --- | --- | --- |
| 1 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE1. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE with parameter '00' on PIPE1. |  |
| 4 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ1 |
| 5 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source and destination GID = GID of identity management gate. |  |
| 6 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ1 |
| 7 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE1. |  |
| 8 | HUT 🡪 HCS | Send ANY\_OK with parameter '00'. | RQ2 |
| 9 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source and destination GID = GID of identity management gate; designate the created pipe PIPE\_ID\_MAN. |  |
| 10 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ2 |
| 11 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 12 | HUT 🡪 HCS | Send ANY\_OK with a parameter containing the number of pipes already open on this gate before the execution of the command (see note). | RQ2 |
| 13 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 14 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ2 |
| 15 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 16 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 17 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 18 | HUT 🡪 HCS | Send ANY\_OK with a parameter containing the number of pipes already open on this gate before the execution of the command (see note). | RQ2 |
| 19 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '01' and destination GID = GID of the loop back gate; designate the created pipe PIPE\_LOOP\_BACK. |  |
| 20 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 21 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 22 | HUT 🡪 HCS | Send ANY\_OK with a parameter containing the number of pipes already open on this gate before the execution of the command (see note). | RQ2 |
| NOTE: The test equipment shall calculate the number of pipes already open on the gate before the execution of the command, taking into account any pipes which have been opened by the host. Example for step 12: if no pipes were opened to the host controller's identity management gate before the execution of the test procedure and no further pipes have been opened by the host, this value would be '00'. | | | |

5.3.1.2.3.3 Void



Void

##### 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.

|  |  |
| --- | --- |
| RQ1 | A host shall reject an incorrectly formatted ANY\_CLOSE\_PIPE command. |
| RQ2 | When a host receives a valid ANY\_CLOSE\_PIPE on an open pipe, it shall close the pipe and respond with ANY\_OK and no parameters. |
| RQ3 | When a host sends an ANY\_CLOSE\_PIPE command, it shall contain no command parameters. |
| RQ4 | When a host receives ANY\_OK in response to an ANY\_CLOSE\_PIPE command, it shall close the pipe. |
| NOTE: RQ3 and RQ4 are not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | |

5.3.1.2.4.2 Test case 1: ANY\_CLOSE\_PIPE reception

5.3.1.2.4.2.1 Test execution

Void.

5.3.1.2.4.2.2 Initial conditions

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

5.3.1.2.4.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE with parameter '00' on PIPE1. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ1 |
| 3 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source and destination GID = GID of identity management gate; designate the created pipe PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |
| 5 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE1. |  |
| 6 | HUT 🡪 HCS | Send ANY\_OK with no parameters. | RQ2 |
| 7 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source and destination GID = GID of identity management gate. |  |
| 8 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ2 |
| 9 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 10 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 11 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 12 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 13 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 14 | HUT 🡪 HCS | Send ANY\_OK with no parameters. | RQ2 |
| 15 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 16 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ2 |

5.3.1.2.4.3 Void



#### 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.

NOTE: All conformance requirements for the referenced clause are included in clause 5.5.1.1 of the present document.

##### 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.

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.

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.

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.

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.

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.

|  |  |
| --- | --- |
| RQ1 | A response shall be sent to all commands received even to those unknown to the receiving gate. |
| RQ2 | Responses received out of order (i.e. if no command was sent previously) shall be discarded. |
| RQ3 | For a received command which is defined in table 16 in ETSI TS 102 622 [], hosts shall only return a response code which is specified for that command in table 16 in ETSI TS 102 622 []. |
| NOTE 1: Development of test cases for RQ3 is FFS.  NOTE 2: RQ2 is not fully verified in this clause. See Annex B for further test scenarios that cannot be implemented in a standardised way. | |

#### 5.3.2.2 Test case 1: response to unknown command

##### 5.3.2.2.1 Test execution

Void.

##### 5.3.2.2.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* PIPE1 is open.
* A pipe (PIPE\_ID\_MAN) has been created to the host's identity management gate, and is open.

##### 5.3.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send command with an RFU instruction value on PIPE1. |  |
| 2 | HUT 🡪 HCS | Send response (contents are not checked). | RQ1 |
| 3 | HCS 🡪 HUT | Send command with an RFU instruction value on PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send response (contents are not checked). | RQ1 |

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

##### 5.3.2.3.1 Test execution

Void.

##### 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's identity management gate, and is open.

##### 5.3.2.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send response with ANY\_OK and value of GATES\_LIST on PIPE\_ID\_MAN. |  |
| 3 | HCS 🡪 HUT | Send response with ANY\_OK and no parameters on PIPE\_ID\_MAN. |  |
| 4 | HUT | No message on PIPE\_ID\_MAN. | RQ2 |
| 5 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 6 | HUT 🡪 HCS | Send response with ANY\_OK and same value of GATES\_LIST as in step 2. | RQ2 |

#### 5.3.2.4 Void



### 5.3.3 Events

#### 5.3.3.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | Unknown events received shall be discarded. |
| RQ2 | When the host sends EVT\_HCI\_END\_OF\_OPERATION, it shall contain no parameters. |
| RQ3 | For gates defined in ETSI TS 102 622 [], hosts shall not use event values which are not allocated in ETSI TS 102 622 []. |
| NOTE 1: No RQs are specified for when the host should send EVT\_HCI\_END\_OF\_OPERATION, as the conditions for sending this event are internal to the host.  NOTE 2: Development of test cases for RQ2 is FFS.  NOTE 3: RQ3 is not tested, as it is a non-occurrence RQ. | |

#### 5.3.3.2 Test case 1: reception of unknown events

##### 5.3.3.2.1 Test execution

Void.

##### 5.3.3.2.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* A pipe (PIPE\_ID\_MAN) has been created to the host's identity management gate, and is open.

##### 5.3.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send response with ANY\_OK and value of GATES\_LIST on PIPE\_ID\_MAN. |  |
| 3 | HCS 🡪 HUT | Send event with an RFU instruction value on PIPE\_ID\_MAN. |  |
| 4 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 5 | HUT 🡪 HCS | Send response with ANY\_OK and same value of GATES\_LIST as in step 2. | RQ1 |

## 5.4 GATES and subclauses

### 5.4.1 GATES

#### 5.4.1.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | Gates shall support the commands and events specified for them in tables 18 and 19 of ETSI TS 102 622 []. |
| NOTE 1: In this clause, RQ1 is only tested for the management gates. Other clauses may test RQ1 for other gates as applicable.  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\_NOTIFY\_PIPE\_CREATED, ADM\_NOTIFY\_PIPE\_DELETED and ADM\_NOTIFY\_ALL\_PIPE\_CLEARED are not tested for the host 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\_HOT\_PLUG is not tested for the host administration gate, as the reaction of the host is not specified in ETSI TS 102 622 []. | |

#### 5.4.1.2 Test case 1: command and event support for link management gate

##### 5.4.1.2.1 Test execution

Void.

##### 5.4.1.2.2 Initial conditions

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

##### 5.4.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE0. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE0. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |

#### 5.4.1.3 Test case 2: command and event support for management gates except link management gate

##### 5.4.1.3.1 Test execution

The test procedure shall be executed once for each of following parameters, indicating the pipe to be used in the test procedure:

* PIPE1;
* a pipe which has been created from the host controller's identity management gate to the host's identity management;
* a pipe which has been created from gate with GID = '01' on the host controller to the host's loop back gate.

##### 5.4.1.3.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* The pipe indicated in the test execution clause is open.

##### 5.4.1.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on the pipe indicated in the test execution clause. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on the pipe indicated in the test execution clause. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |

### 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 [], clause 7.1.1.1.

|  |  |
| --- | --- |
| RQ1 | The host shall only set values of SESSION\_IDENTITY with length 8 bytes. |
| RQ2 | The session identity shall be modified by the host whenever a modification of the configuration is performed by the host. |
| RQ3 | The default value of the session identity shall never be written by a host. |
| RQ4 | The session identity shall use random values. |
| RQ5 | The host shall adhere to the access condition of RO for MAX\_PIPE. |
| RQ6 | The host shall only set values of WHITELIST containing valid host identifiers (including proprietary host identifiers but excluding RFU host identifiers) as specified in table 1 in ETSI TS 102 622 [], and not containing the host controller's host identifier and the host's own host identifier; an empty array is allowed. |
| RQ7 | The host shall adhere to the access condition of RO for HOST\_LIST. |
| NOTE 1: RQ2 is not tested in this clause. It is tested in the context of HCI session initialization in clause 5.5.4. As other circumstances in which the host may modify the configuration are not evident, it is not tested further in this clause.  NOTE 2: RQ5 and RQ7 are not tested, as they are non-occurrence RQs.  NOTE 3: RQ6 is not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | |

5.4.2.1.1.2 Test case 1: SESSION\_IDENTITY

5.4.2.1.1.2.1 Test execution

Run this test procedure in full power mode only.

5.4.2.1.1.2.2 Initial conditions

* The host is not powered up.

5.4.2.1.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡨 🡪 HCS | Perform HCI session initialization. |  |
| 3 | HUT 🡪 HCS | Send ANY\_SET\_PARAMETER(SESSION\_IDENTITY) on PIPE1.  Check value is 8 bytes long, and is different from the default value. | RQ1, RQ3 |
| 4 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 5 |  | Execute steps 7 to 10 ten times. |  |
| 6 | HCS 🡪 HUT | Power down host. |  |
| 7 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 8 | HUT 🡨 🡪 HCS | Perform HCI session initialization. |  |
| 9 | HUT 🡪 HCS | Send ANY\_SET\_PARAMETER(SESSION\_IDENTITY) on PIPE1.  Check value is 8 bytes long, is different from the default value, and is different from any value previously sent by the host in the test procedure. | RQ1, RQ3, RQ4 |
| 10 | HCS 🡪 HUT | Send ANY\_OK. |  |

5.4.2.1.1.3 Void



##### 5.4.2.1.2 Host administration gate

5.4.2.1.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], clauses 7.1.1.2 and 4.5.

|  |  |  |
| --- | --- | --- |
| RQ1 | 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. |
| NOTE: Development of test cases for RQ1 is FFS. | | |

#### 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 [], clause 7.1.2.1.

|  |  |
| --- | --- |
| RQ1 | The host shall only set values of REC\_ERROR with length 2 bytes. |
| NOTE: RQ1 is not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | |

5.4.2.2.1.2 Void



##### 5.4.2.2.2 Host link management gate

5.4.2.2.2.1 Conformance requirements

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

|  |  |  |
| --- | --- | --- |
| RQ1 | 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. |
| RQ2 | 7.1.2.1 | The host shall use a default value for REC\_ERROR of '0000'. |
| RQ3 | 7.1.2.1 | The host shall apply the access condition of RW to REC\_ERROR. |
| RQ4 | 7.1.2.1 | The host shall only accept values of REC\_ERROR of length 2 bytes. |
| NOTE 1: Development of test cases for RQ1 is FFS.  NOTE 2: RQ2, RQ3 and RQ4 are not testable in a standardised manner. See Annex X for test cases which could be used in a non-standardised manner. | | |

5.4.2.2.2.2 Void



#### 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.

|  |  |  |
| --- | --- | --- |
| RQ1 | 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. |
| RQ2 | 7.1.3 | The registry of the identity management gate shall be persistent. |
| RQ3 | 7.1.3 | This gate shall be provided by all hosts and the host controller. |
| RQ4 | 7.1.3 | If present in the host, the host shall use a value for VERSION\_SW of length 3 bytes. |
| RQ5 | 7.1.3 | If present in the host, the host shall apply the access condition of RO to VERSION\_SW. |
| RQ6 | 7.1.3 | If present in the host, the host shall use a value for VERSION\_HARD of length 3 bytes. |
| RQ7 | 7.1.3 | If present in the host, the host shall apply the access condition of RO to VERSION\_HARD. |
| RQ8 | 7.1.3 | If present in the host, the host shall use a value for VENDOR\_NAME of maximum length 20 bytes with UTF8 coding. |
| RQ9 | 7.1.3 | If present in the host, the host shall apply the access condition of RO to VENDOR\_NAME. |
| RQ10 | 7.1.3 | If present in the host, the host shall use a value for MODEL\_ID of length 1 byte. |
| RQ11 | 7.1.3 | If present in the host, the host shall apply the access condition of RO to MODEL\_ID. |
| RQ12 | 7.1.3 | If present in the host, the host shall apply the access condition of RO to HCI\_VERSION. |
| RQ13 | 7.1.3 | The host shall use a value for GATES\_LIST containing the list of all gates that accept dynamic pipes as an array of gate identifiers. |
| RQ14 | 7.1.3 | The host shall apply the access condition of RO to GATES\_LIST. |
| RQ15 | 7.1.3 | A host according to the present document shall set the HCI\_VERSION parameter if provided to '01'. |
| NOTE 1: Development of test cases for RQ1 is FFS.  NOTE 2: RQ2 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: RQ3 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. | | |

5.4.2.3.1.2 Test case 1: registry parameters

5.4.2.3.1.2.1 Test execution

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Registry parameter (designated REG\_PARAM) | Presence | Expected value (designated VALUE) | Value to be used in ANY\_SET\_PARAMETER (designated VALUE\_SET) | RQ to be checked in steps 2 and 6 | RQ to be checked in step 4 |
| VERSION\_SW | O | V\_VERSION\_SW | '01 01 01' | RQ4 | RQ5 |
| VERSION\_HARD | O | V\_VERSION\_HARD | '01 01 01' | RQ6 | RQ7 |
| VENDOR\_NAME | O | V\_VENDOR\_NAME | '56 65 6E 64 6F 72' | RQ8 | RQ9 |
| MODEL\_ID | O | V\_MODEL\_ID | '01' | RQ10 | RQ11 |
| HCI\_VERSION | O | V\_HCI\_VERSION | '01' | RQ15 | RQ12 |
| GATES\_LIST | M | V\_GATES\_LIST | '04 05' | RQ13 | RQ14 |

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's identity management gate, and is open.

5.4.2.3.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | If REG\_PARAM is supported by the device under test as indicated in table 4.3, send ANY\_OK with parameter value equal to VALUE.  If REG\_PARAM is not supported by the device under test as indicated in table 4.3, send response containing an allowed error response code for the command. | See test execution clause |
| 3 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER(REG\_PARAM, VALUE\_SET) on PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | See test execution clause |
| 5 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPE\_ID\_MAN. |  |
| 6 | HUT 🡪 HCS | 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.

|  |  |
| --- | --- |
| RQ1 | The host shall adhere to the access condition of RO for VERSION\_SW in the host controller. |
| RQ2 | The host shall adhere to the access condition of RO for VERSION\_HARD in the host controller. |
| RQ3 | The host shall adhere to the access condition of RO for VENDOR\_NAME in the host controller. |
| RQ4 | The host shall adhere to the access condition of RO for MODEL\_ID in the host controller. |
| RQ5 | The host shall adhere to the access condition of RO for HCI\_VERSION in the host controller. |
| RQ6 | The host shall adhere to the access condition of RO for GATES\_LIST in the host controller. |
| RQ7 | Every host 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. |
| RQ8 | A host connected to a host with higher HCI version number shall operate according to its own version. |
| NOTE 1: RQ1, RQ2, RQ3, RQ4, RQ5 and RQ6 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 is therefore not tested in the current version of the present document.  NOTE 3: Development of test cases for RQ8 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.

|  |  |  |
| --- | --- | --- |
| RQ1 | 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. |
| NOTE: Development of test cases for RQ1 is FFS. | | |

### 5.4.3 Generic gates

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

There are no conformance requirements for the UICC 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, 6.1.3.1 and 6.1.3.2.

|  |  |  |
| --- | --- | --- |
| RQ1 | 6.1.3.1 | When a host sends an ADM\_CREATE\_PIPE command, the command parameters shall be 3 bytes long, and contain valid GIDs and HID. |
| RQ2 | 6.1.3.2 | When a host receives an ADM\_NOTIFY\_PIPE\_CREATED command, it shall respond with ANY\_OK with no parameters if it accepts the pipe. |
| RQ3 | 6.1.3.2 | If a host receives an ADM\_NOTIFY\_PIPE\_CREATED command containing a destination HID which is not the HID of the host, it shall reject the pipe creation. |
| RQ4 | 8.1.1 | If host B does not accept the creation of the pipe, it shall respond to ADM\_NOTIFY\_PIPE\_CREATED with an appropriate response code. |
| RQ5 | 6.1.3.1 | When receiving ADM\_NOTIFY\_PIPE\_CREATED, the host shall accept any gate identifier being used as source gate. |
| NOTE 1: Development of test cases for RQ5 is FFS.  NOTE 2: RQ1 is not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | | |

##### 5.5.1.1.2 Void



##### 5.5.1.1.3 Test case 2: ADM\_NOTIFY\_PIPE\_CREATED from host controller

5.5.1.1.3.1 Test execution

Void.

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 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID '01' and destination GID of the loop back gate; designate the create pipe PIPE\_LOOP\_BACK. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK with no parameters. | RQ2 |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ2 |
| 5 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 6 | HUT 🡪 HCS | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. | RQ2 |

##### 5.5.1.1.4 Test case 3: ADM\_NOTIFY\_PIPE\_CREATED from other host

5.5.1.1.4.1 Test execution

Void.

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 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1 with source HID equal to a value in the WHITELIST of the host, source GID = '01' and destination GID = GID of the loop back gate; designate the created pipe PIPE\_LOOP\_BACK. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK with no parameters. | RQ2 |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ2 |
| 5 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 6 | HUT 🡪 HCS | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. | RQ2 |

##### 5.5.1.1.5 Test case 4: ADM\_NOTIFY\_PIPE\_CREATED with incorrect destination HID

5.5.1.1.5.1 Test execution

Void.

5.5.1.1.5.2 Initial conditions

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

5.5.1.1.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1 with destination HID equal to a proprietary HID according to table 1 of ETSI TS 102 622 [] but which is not equal to the HID of the host, with source GID = '01' and destination GID = GID of the loop back gate. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ3 |

##### 5.5.1.1.6 Test case 5: unsuccessful ADM\_NOTIFY\_PIPE\_CREATED

5.5.1.1.6.1 Test execution

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

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 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '01' and destination GID equal to GATE\_UNSUPPORTED. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ4 |

#### 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.

|  |  |  |
| --- | --- | --- |
| RQ1 | 6.1.3.3 | When a host sends an ADM\_DELETE\_PIPE command, the command parameters shall be 1 byte long. |
| RQ2 | 6.1.3.3 | When a host sends an ADM\_DELETE\_PIPE command, the host that requested the deletion of the pipe shall be the source host or destination host. |
| RQ3 | 6.1.3.4 | When a host receives a valid ADM\_NOTIFY\_PIPE\_DELETED command, it shall respond with ANY\_OK with no parameters. |
| NOTE 1: RQ2 is not tested, as it is a non-occurrence RQ.  NOTE 2: RQ1 is not testable in a standardised manner. See Annex B for test cases which could be used in a non-standardised manner. | | |

##### 5.5.1.2.2 Void



##### 5.5.1.2.3 Test case 2: receiving ADM\_NOTIFY\_PIPE\_DELETED

5.5.1.2.3.1 Test execution

Void.

5.5.1.2.3.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* PIPE1 is open.
* A pipe (PIPE\_LOOP\_BACK) has been created to the host's loop back gate, and is open.

5.5.1.2.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_ NOTIFY\_PIPE\_DELETED on PIPE1, with parameter value of length 1 and equal to PIPE\_LOOP\_BACK. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK. | RQ3 |
| 3 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 4 | HUT 🡪 HCS | No messages on PIPE\_LOOP\_BACK. | RQ3 |
| 5 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 6 | HUT 🡪 HCS | Send no response, or a response containing an allowed error response code for the command. | RQ3 |

#### 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.

|  |  |  |
| --- | --- | --- |
| RQ1 | 6.1.3.5 | When the host sends an ADM\_CLEAR\_ALL\_PIPE command and the data link layer specified in ETSI TS 102 613 [] is used, the command parameters are the identity reference data and shall be two bytes long. |
| RQ2 | 6.1.3.5 | When the data link layer specified in ETSI TS 102 613 [] is used, the identity reference data in the ADM\_CLEAR\_ALL\_PIPE command shall contain random elements. |
| RQ3 | 6.1.3.5 | When the host receives ANY\_OK in response to an ADM\_CLEAR\_ALL\_PIPE command, it shall consider that all dynamic pipes connected to it are deleted, all static pipes connected to it are closed, and all registry values related to static pipes connected to it are set to their default values. |
| RQ4 | 6.1.3.6 | When the host receives a valid ADM\_NOTIFY\_ALL\_PIPE\_CLEARED command, and the requesting host is not the host controller, the host shall consider all dynamic pipes between the host and the requesting host to be deleted. |
| RQ5 | 6.1.3.6 | When the host receives a valid ADM\_NOTIFY\_ALL\_PIPE\_CLEARED command, and the requesting host is the host controller, the host shall consider all dynamic pipes between the host controller and the host to be deleted, and all static pipes between the host and the host controller to be closed. |
| RQ6 | 6.1.3.6 | The host shall respond to an ADM\_NOTIFY\_ALL\_PIPE\_CLEARED command with an ANY\_OK without parameters. |
| NOTE 1: Development of test cases for RQ4, RQ5 and RQ6 is FFS.  NOTE 2: RQ3 is not fully verified in this clause. See Annex B for further test scenarios that cannot be implemented in a standardised way. | | |

##### 5.5.1.3.2 Test case 1: ADM\_CLEAR\_ALL\_PIPE for data link layer specified in ETSI TS 102 613

5.5.1.3.2.1 Test execution

Run this test procedure in full power mode only.

5.5.1.3.2.2 Initial conditions

* The host is not powered up.

5.5.1.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡪 HCS | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1, with a parameter value of length 2 bytes (see note). | RQ1 |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 4 | HCS | Wait for HCI session initialization to be completed, and for the HCI interface to be idle; i.e. no further communication is expected. |  |
| 5 |  | Execute steps 6 to 12 ten times. |  |
| 6 | HCS 🡪 HUT | Power down host. |  |
| 7 | HCS 🡪 HUT | Power up host. |  |
| 8 | HUT 🡪 HCS | Send ACT\_SYNC, with SYNC\_ID equal to the parameter value in the last ADM\_CLEAR\_ALL\_PIPE command. | RQ1 |
| 9 | HCS 🡪 HUT  HUT 🡪 HCS | Complete SWP interface activation and SHDLC link establishment. |  |
| 10 | HCS 🡪 HUT | Behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 11 | HUT 🡪 HCS | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1, with a parameter value of length 2 bytes, and with a value different from any value previously sent by the host in the test procedure (see note). | RQ2 |
| 12 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 13 | HUT 🡨 🡪 HCS | Complete HCI session initialisation. |  |
| NOTE: Other commands may be sent prior to the ADM\_CLEAR\_ALL\_PIPE command. | | | |

##### 5.5.1.3.3 Test case 2: ADM\_CLEAR\_ALL\_PIPE - static pipes, dynamic pipes to host controller

5.5.1.3.3.1 Test execution

Run this test procedure in full power mode only.

5.5.1.3.3.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* PIPE1 is open.
* A pipe (PIPE\_LOOP\_BACK) has been created to the host's loop back gate, and is open.

5.5.1.3.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power down host. |  |
| 2 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 3 | HUT 🡪 HCS | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1; parameter value is not checked (see note 1). |  |
| 4 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 5 | HUT 🡪 HCS | Send ANY\_OPEN\_PIPE on PIPE1. | RQ3 |
| 6 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 7 | HCS | See note 2. |  |
| 8 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 9 | HUT 🡪 HCS | No messages on PIPE\_LOOP\_BACK. | RQ3 |
| 10 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 11 | HUT 🡪 HCS | Send no response, or a response containing an allowed error response code for the command. | RQ3 |
| NOTE 1: Other commands may be sent prior to the ADM\_CLEAR\_ALL\_PIPE command.  NOTE 2: The host controller simulator shall not use PIPE\_LOOP\_BACK for any subsequent pipe creation. | | | |

##### 5.5.1.3.4 Test case 3: ADM\_CLEAR\_ALL\_PIPE - dynamic pipes to other host

5.5.1.3.4.1 Test execution

Run this test procedure in full power mode only.

5.5.1.3.4.2 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 from gate '01' on a host whose HID is in the WHITELIST of the host to the host's loop back gate, and is open.

5.5.1.3.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power down host. |  |
| 2 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 3 | HUT 🡪 HCS | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1; parameter value is not checked (see note 1). |  |
| 4 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 5 | HCS | See note 2. |  |
| 6 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 7 | HUT 🡪 HCS | No messages on PIPE\_LOOP\_BACK. | RQ3 |
| 8 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 9 | HUT 🡪 HCS | Send no response, or a response containing an allowed error response code for the command. | RQ3 |
| NOTE 1: Other commands may be sent prior to the ADM\_CLEAR\_ALL\_PIPE command.  NOTE 2: The host controller simulator shall not use PIPE\_LOOP\_BACK for any subsequent pipe creation. | | | |

##### 5.5.1.3.5 Void



### 5.5.2 Registry access

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

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

### 5.5.4 Session initialization

#### 5.5.4.1 Conformance requirements

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

|  |  |  |
| --- | --- | --- |
| RQ1 | Up to Rel-9 | The Host shall perform session initialization only if no contactless transaction is pending at startup (e.g. after power up in full-power mode as defined in ETSI TS 102 613 []). |
| RQ2 | Up to Rel-9 | If the data link layer specified in ETSI TS 102 613 [] is being used, then after power up in full-power mode, the host shall perform session initialization. |
| RQ3 |  | If the returned value of SESSION\_IDENTITY equals the previous value stored in the host, the host shall stop the session initialization procedure. |
| RQ4 |  | If the returned value of SESSION\_IDENTITY does not equal the previous value stored in the host, the host needs to reinitialize and it requests the host controller to clear all pipes. |
| RQ5 |  | In the context of RQ4, after performing any further initializations, the host generates a new session identity and stores its value and stores it in the host controller registry. |
| RQ6 | Rel-10 upwards | The host shall perform this procedure only at startup and only if no contactless transaction is pending. |
| RQ7 | Rel-10 upwards | In case of an underlying data link layer according to TS 102 613 [2] this procedure shall only be performed after the initial interface activation in full-power mode and only if no contactless transaction is pending. |
| NOTE 1: RQ1 is not tested in this clause, as the only circumstances where no contactless transaction is pending at startup which are defined after power up in full-power mode as defined in ETSI TS 102 613 [], which is dealt with in RQ2.  NOTE 2: For the case of an underlying data link layer according to TS 102 613 [2], testing of RQ6 is incorporated into testing of RQ7. | | |

#### 5.5.4.2 Test case 1: SESSION\_IDENTITY not changed

##### 5.5.4.2.1 Test execution

Run this test procedure in full power mode only.

##### 5.5.4.2.2 Initial conditions

* The host is not powered up.

##### 5.5.4.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host. |  |
| 2 | HUT 🡪 HCS | Send ANY\_SET\_PARAMETER(SESSION\_IDENTITY) on PIPE1 (see note 1). |  |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 4 | HUT 🡨🡪 HCS | Wait for any the HCI interface to be idle. |  |
| 5 | HCS 🡪 HUT | Power down host. |  |
| 6 | HCS 🡪 HUT | Power up host. |  |
| 7 | HUT 🡪 HCS | Send ANY\_GET\_PARAMETER(SESSION\_IDENTITY) on PIPE1 (see note 2). | RQ2/  RQ7 |
| 8 | HCS 🡪 HUT | Send ANY\_OK with the same value of SESSION\_IDENTITY as in step 2. |  |
| 9 | HUT 🡪 HCS | Do not send ADM\_CLEAR\_ALL\_PIPE or ANY\_SET\_PARAMETER(SESSION\_IDENTITY). | RQ3 |
| NOTE 1: Other commands may be sent prior to the ANY\_SET\_PARAMETER command (i.e. in order to let the HUT run the session initialization procedure).  NOTE 2: Other commands may be sent prior to the ANY\_GET\_PARAMETER command. | | | |

#### 5.5.4.3 Test case 2: SESSION\_IDENTITY changed

##### 5.5.4.3.1 Test execution

Run this test procedure in full power mode only.

##### 5.5.4.3.2 Initial conditions

* The host is not powered up.

##### 5.5.4.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡪 HCS | Send ANY\_GET\_PARAMETER(SESSION\_IDENTITY) on PIPE1 (see note 1). | RQ2/  RQ7 |
| 3 | HCS 🡪 HUT | Send an allowed response code for the command. |  |
| 4 | HUT 🡪 HCS | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1; parameter value is not checked (see note 2) | RQ4 |
| 5 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 6 | HUT 🡪 HCS | Send ANY\_SET\_PARAMETER(SESSION\_IDENTITY) on PIPE1 with a different value from that previously used by the host (see note 3). | RQ5 |
| 7 | HCS 🡪 HUT | Send ANY\_OK. |  |
| NOTE 1: Other commands may be sent prior to the ANY\_GET\_PARAMETER command.  NOTE 2: Other commands may be sent prior to the ADM\_CLEAR\_ALL\_PIPE command.  NOTE 3: Other commands may be sent prior to the ANY\_SET\_PARAMETER command. | | | |

#### 5.5.4.4 Test case 3: activation in low power mode, no session initialization

##### 5.5.4.4.1 Test execution

Run this test procedure in low power mode only.

##### 5.5.4.4.2 Initial conditions

* The Host is not powered up.
* At the end of the previous full power mode activation, the state of at least one card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

##### 5.5.4.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host in low power mode. |  |
| 2 | HUT 🡪 HCS | Do not send ANY\_GET\_PARAMETER(SESSION\_IDENTITY), ADM\_CLEAR\_ALL\_PIPE or ANY\_SET\_PARAMETER(SESSION\_IDENTITY). | RQ7 |

#### 5.5.4.5 Test case 4: subsequent activation, no session initialization

##### 5.5.4.5.1 Test execution

Run this test procedure in full power mode only.

##### 5.5.4.5.2 Initial conditions

* HCI session initialization has been performed and the SWP interface is DEACTIVATED.
* The UICC has opened at least one card emulation pipe and set the MODE parameter to '02'.

##### 5.5.4.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Perform subsequent interface activation. |  |
| 2 | HUT 🡪 HCS | Do not send ANY\_GET\_PARAMETER(SESSION\_IDENTITY), ADM\_CLEAR\_ALL\_PIPE or ANY\_SET\_PARAMETER(SESSION\_IDENTITY). | RQ7 |

### 5.5.5 Loop back testing

#### 5.5.5.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | A host shall accept the creation of a pipe to its loop back gate from any gate in another host. |
| RQ2 | When a host 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. |
| RQ3 | The loopback gate shall support at least all messages with size up to 250 bytes. |

#### 5.5.5.2 Test case 1: pipe creation from host controller

##### 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 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID as specified and destination GID = GID of loop back gate. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |

#### 5.5.5.3 Test case 2: pipe creation from another host

##### 5.5.5.3.1 Test execution

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

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

##### 5.5.5.3.2 Initial conditions

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

##### 5.5.5.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source HID equal to the HID contained in the host's WHITELIST, source GID as specified and destination GID = GID of loop back gate. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ1 |

#### 5.5.5.4 Test case 3: processing of EVT\_POST\_DATA

##### 5.5.5.4.1 Test execution

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

* EVT\_POST\_DATA data sizes of: 1 byte, 100 bytes, 250 bytes.

##### 5.5.5.4.2 Initial conditions

* The HCI interface is idle; i.e. no further communication is expected.
* A pipe (PIPE\_LOOP\_BACK) has been created to the host's loop back gate, and is open.

##### 5.5.5.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send EVT\_POST\_DATA on PIPE\_LOOP\_BACK containing data of the specified size. |  |
| 2 | HUT 🡪 HCS | Send EVT\_POST\_DATA on PIPE\_LOOP\_BACK containing the same data as in step 1. | RQ2, RQ3 |

## 5.6 Contactless card emulation

### 5.6.1 Overview

#### 5.6.1.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | For each card RF gate it wants to use, the host has one card application gate. |
| RQ2 | For the contactless platform for card emulation mode the pipes to card RF gates shall be created, opened, closed and deleted by the host. |
| RQ3 | The host shall not create more than one pipe to each RF gate. |
| NOTE 1: RQ1 and RQ2 are implicitly tested in clause 5.6.4.  NOTE 2: RQ3 is a non-occurrence RQ. | |

### 5.6.2 Void

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

There are no conformance requirements for the UICC 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 UICC 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.

|  |  |
| --- | --- |
| RQ1 | The host shall adhere to the access condition of RO for LOW\_POWER\_SUPPORT. |
| NOTE: RQ1 is a non-occurrence RQ. | |

#### 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 UICC 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 UICC 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.

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

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 UICC for the referenced clause.

##### 5.6.3.3.4 Registry and subclauses

5.6.3.3.4.1 Registry

Void.

5.6.3.3.4.1.1 Conformance requirements

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

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

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.

|  |  |
| --- | --- |
| RQ1 | The host shall only set values of MODE of 'FF' and '02'. |
| RQ2 | The host shall only set values of UID\_REG with length 0, 4, 7 or 10. |
| RQ3 | The host shall adhere to the access condition of WO for UID\_REG. |
| RQ4 | The host shall only set values of CID\_SUPPORT with value '00' or '01'. |
| RQ5 | The host shall adhere to the access condition of RO for CLT\_SUPPORT. |
| RQ6 | The host shall only set values of DATARATE\_MAX which codes maximum divisor supported with coding as specified in ETSI TS 102 622 []. |
| NOTE: The conformance to ISO/IEC 14443-3 [] and ISO/IEC 14443-4 [] of the values written by the host is out of scope of the present document. | |

5.6.3.3.4.2.2 Test case 1: Type A registry values

5.6.3.3.4.2.2.1 Test execution

Run this test procedure in full power mode only.

5.6.3.3.4.2.2.2 Initial conditions

* The host is not powered up.

5.6.3.3.4.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡨 🡪 HCS | Perform HCI session initialization, up to the point of setting a new value of SESSION\_IDENTITY.  The HCI session initialization shall meet the following requirements for registry parameters for type A:   * For all writeable registry parameters (i.e. RW or WO), any values which the host sets shall be set in accordance with the RQs. * For all non-writeable registry parameters (i.e. RO), the host shall not attempt to write a value. | RQ1,  RQ2,  RQ3,  RQ4,  RQ5,  RQ6 |

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.

|  |  |
| --- | --- |
| RQ1 | The host shall only set values of MODE of 'FF' and '02'. |
| RQ2 | The host shall only set values of PUPI\_REG with length 0 or 4. |
| RQ3 | The host shall adhere to the access condition of WO for PUPI\_REG. |
| RQ4 | The host shall only set values of ATQB with length 4. |
| RQ5 | The host shall only set values of DATARATE\_MAX which codes maximum bit rates supported with coding as specified in ETSI TS 102 622 []. |
| NOTE: The conformance to ISO/IEC 14443-3 [] and ISO/IEC 14443-4 [] of the values written by the host is out of scope of the present document. | |

5.6.3.3.4.3.2 Test case 1: Type B registry values

5.6.3.3.4.3.2.1 Test execution

Run this test procedure in full power mode only.

5.6.3.3.4.3.2.2 Initial conditions

* The host is not powered up.

5.6.3.3.4.3.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡨 🡪 HCS | Perform HCI session initialization, up to the point of setting a new value of SESSION\_IDENTITY.  During the HCI session initialization, for all writeable registry parameters (i.e. RW or WO) for type B, any values which the host sets shall be set in accordance with the RQs. | RQ1,  RQ2,  RQ3,  RQ4,  RQ5 |

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: Since this technology is not publicly disclosed, no conformance requirements have been established.

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.

|  |  |
| --- | --- |
| RQ1 | The host shall only set values of MODE of 'FF' and '02'. |
| RQ2 | The host shall adhere to the access condition of RO for SPEED\_CAP. |
| RQ3 | The host shall adhere to the access condition of RO for CLT\_SUPPORT. |

5.6.3.3.4.5.2 Test case 1: Type F registry values

5.6.3.3.4.5.2.1 Test execution

Run this test procedure in full power mode only.

5.6.3.3.4.5.2.2 Initial conditions

* The host is not powered up.

5.6.3.3.4.5.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡨 🡪 HCS | Perform HCI session initialization, up to the point of setting a new value of SESSION\_IDENTITY.  The HCI session initialization shall meet the following requirements for registry parameters for type F:   * For all writeable registry parameters (i.e. RW), any values which the host sets shall be set in accordance with the RQs. * For all non-writeable registry parameters (i.e. RO), the host shall not attempt to write a value. | RQ1,  RQ2,  RQ3 |

#### 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 UICC 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 UICC 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.

|  |  |
| --- | --- |
| RQ1 | Each card application gate shall support all events as listed. |
| NOTE: This RQ is not tested in this clause, as it is tested in clause 5.6.4. | |

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.

There are no conformance requirements for the UICC for the referenced clause (usage of this event is described in clause 9.4 of ETSI TS 102 622 []).

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.

There are no conformance requirements for the UICC for the referenced clause (usage of this event is described in clause 9.4 of ETSI TS 102 622 []).

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.

There are no conformance requirements for the UICC for the referenced clause (usage of this event is described in clause 9.4 of ETSI TS 102 622 []).

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.

There are no conformance requirements for the UICC for the referenced clause (usage of this event is described in clause 9.4 of ETSI TS 102 622 []).

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.

|  |  |
| --- | --- |
| RQ1 | On receiving EVT\_SEND\_DATA the host shall interpret the last parameter byte as RF error indicator. |
| RQ2 | EVT\_SEND\_DATA shall be discarded by the host when the error indicator is set to '01'. |
| NOTE: These RQs are not tested in this clause, as they are tested in clause 5.6.4. | |

##### 5.6.3.4.4 Registry

###### 5.6.3.4.4.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | 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: Development of test cases for above listed RQs is FFS. | |

### 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 9.4.1, 9.3.4.3 and 9.3.4.3.5.

|  |  |  |
| --- | --- | --- |
| RQ1 | 9.4.1 | In the context of a valid contactless card application sequence as specified in ETSI TS 102 622 [], the host shall reply to received C-APDUs contained in EVT\_SEND\_DATAs by sending the R‑APDUs contained in EVT\_SEND\_DATAs to the card RF gate. |
| RQ2 | 9.4.1 | The host shall accept an EVT\_FIELD\_OFF which is received at any time during the sequence. |
| RQ3 | 9.3.4.3 | Each card application gate shall support all events as listed. |
| RQ4 | 9.3.4.3.5 | On receiving EVT\_SEND\_DATA the host shall interpret the last parameter byte as RF error indicator. |
| RQ5 | 9.3.4.3.5 | EVT\_SEND\_DATA shall be discarded by the host when the error indicator is set to '01'. |
| RQ6 | 9.4.1 | In the context of a valid contactless card application sequence as specified in ETSI TS 102 622 [], if the host receives an empty C-APDU, it shall reply to this with either an empty R-APDU or an R-APDU containing an error code. |
| NOTE 1: RQ2 is only partially tested since the reaction of the UICC upon reception of EVT\_FIELD\_OFF is not specified.  NOTE 2: For RF error indicator = "no error", RQ4 is implicitly tested in all test cases. For RF error indicator = "error", RQ5 applies.  NOTE 3: Development of test cases for RQ5 is FFS. | | |

##### 5.6.4.1.2 Test case 1: full power mode

5.6.4.1.2.1 Test execution

Run this test procedure in full power mode only. The test procedure shall be executed once for each of following parameters.

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.2.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.1.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 2 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 3 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 4 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 5 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 8 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 9 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 10 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 11 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 12 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.1.3 Test case 2: full power mode, no EVT\_CARD\_ACTIVATED and EVT\_CARD\_DEACTIVATED

5.6.4.1.3.1 Test execution

Run this test procedure in full power mode only. The test procedure shall be executed once for each of following parameters.

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.3.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.1.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| NOTE: Sending of EVT\_CARD\_ACTIVATED was optional for the CLF in Rel-9 and earlier, so this test case tests UICCs against that scenario.Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 2 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 3 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 5 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 6 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 7 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 8 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 9 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 10 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.1.4 Test case 3: sequence from DEACTIVATED state

5.6.4.1.4.1 Test execution

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.4.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* For full power mode execution: SWP interface is deactivated.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.1.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For low power mode execution: power up Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface and establish SHDLC link |  |
| 3 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 4 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 5 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 6 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 8 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 9 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 10 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 11 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 12 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 13 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.1.5 Test case 4: sequence from DEACTIVATED state, no EVT\_CARD\_ACTIVATED or EVT\_CARD\_DEACTIVATED

5.6.4.1.5.1 Test execution

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.5.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* For full power mode execution: SWP interface is deactivated.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.1.5.3 Test procedure

NOTE: Sending of EVT\_CARD\_ACTIVATED was optional for the CLF in Rel-9 and earlier, so this test case tests UICCs against that scenario.

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For low power mode execution: power up Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface and establish SHDLC link |  |
| 3 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 4 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 5 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 7 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 8 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 9 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 10 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 11 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.1.6 Test case 5: low power, power down instead of EVT\_FIELD\_OFF

5.6.4.1.6.1 Test execution

Run this test procedure in low power mode only.

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.6.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* The Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.1.6.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS | Power on Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface in low power mode and establish SHDLC link. |  |
| 3 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 4 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 5 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 6 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 7 | HCS | Power down Host. |  |
| 8 | HCS | Power on Host. |  |
| 9 | HCS🡪HUT | Activate SWP interface in low power mode and establish SHDLC link |  |
| 10 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 11 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 12 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 13 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 14 | HCS | Power down Host. |  |

##### 5.6.4.1.7 Test case 6: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation

5.6.4.1.7.1 Test execution

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.7.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.1.7.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 3 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 4 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 5 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 6 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 7 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 8 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.1.8 Test case 7: EVT\_FIELD\_OFF after EVT\_CARD\_ACTIVATED

5.6.4.1.8.1 Test execution

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

Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).

Type B (if supported).

5.6.4.1.8.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.1.8.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 3 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 5 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 6 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 7 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 8 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 9 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.1.9 Test case 8: EVT\_FIELD\_OFF after EVT\_SEND\_DATA

5.6.4.1.9.1 Test execution

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.9.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.1.9.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 3 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event . |  |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_OFF event as soon as possible after event in step 3 (see note). |  |
| 5 | HCS🡪HUT | Send EVT\_FIELD\_ON event after delay of at least 100 ms. |  |
| 6 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 7 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 8 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 9 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 10 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: UICC may send R-APDU with EVT\_SEND\_DATA which may overlap with EVT\_FIELD\_OFF. | | | |

##### 5.6.4.1.10 Test case 9: multiple open card gates

5.6.4.1.10.1 Test execution

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.10.2 Initial conditions

* The host controller simulator is configured to support RF gates for all RF technologies.‬‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe specified in test execution clause and set the MODE parameter to '02'.
* At least one further card application gate is open.

5.6.4.1.10.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event to the open card application gate with the lowest GID.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 3 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 4 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 5 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate with the lowest GID. |  |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_ON event to the open card application gate with the lowest GID. |  |
| 8 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 9 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 10 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 11 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 12 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate used during transaction. |  |
| 13 | HCS🡪HUT | Send EVT\_FIELD\_ON event to the open card application gate with the lowest GID. |  |
| 14 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 15 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 16 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ2 |
| 17 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 18 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate used during transaction. |  |

##### 5.6.4.1.11 Test case 10: empty C-APDU

5.6.4.1.11.1 Test execution

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

* Type A (if supported, and the UICC sets a value of SAK indicating support of ISO/IEC 14443-4 []).
* Type B (if supported).

5.6.4.1.11.2 Initial conditions

* The host controller simulator is configured to support only the RF gate for the RF technology specified in the Test execution clause.‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: The Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.1.11.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: Send EVT\_FIELD\_ON event.  For low power mode execution: Power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_CARD\_ACTIVATED event. |  |
| 3 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 4 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 5 | HCS🡪HUT | Send empty C-APDU with EVT\_SEND\_DATA event, parameters N=0, RF error indicator set to '00'. |  |
| 6 | HUT🡪HCS | Send empty R-APDU or an R-APDU containing an error code as specified in ISO/IEC 7816-4 [] with EVT\_SEND\_DATA event. | RQ6,  RQ3 |
| 7 | HCS🡪HUT | Send C-APDU with EVT\_SEND\_DATA event. |  |
| 8 | HUT🡪HCS | Send R-APDU with EVT\_SEND\_DATA event. | RQ1,  RQ3 |
| 9 | HCS🡪HUT | Send EVT\_CARD\_DEACTIVATED event. |  |
| 10 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

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

##### 5.6.4.2.1 Conformance requirements

Reference: ETSI TS 102 622 [], clauses 9.4.2 and clause 9.3.4.3.

|  |  |  |
| --- | --- | --- |
| RQ1 | 9.4.2 | In the context of a valid contactless card application sequence as specified in ETSI TS 102 622 [], the host shall support communications using the CLT mode as defined in ETSI TS 102 613 []. |
| RQ2 | 9.4.2 | The host shall accept an EVT\_FIELD\_OFF which is received at any time during the sequence. |
| RQ3 | 9.3.4.3 | Each card application gate shall support all events as listed (see note 1).‬‬ |
| NOTE 1: In the context of a non ISO/IEC 14443-4 [] type A transaction only EVT\_FIELD\_ON and EVT\_FIELD\_OFF are used.‬  NOTE 2: RQ2 is only partially tested since the reaction of the UICC upon reception of EVT\_FIELD\_OFF is not specified. | | |

##### 5.6.4.2.2 Test case 1: full power mode

5.6.4.2.2.1 Test execution

Run this test procedure in full power mode only.‬‬

5.6.4.2.2.2 Initial conditions

* The host controller simulator is configured to support only the Type A card RF gate, with CLT\_SUPPORT set to '01' (CLT supported)‬.‬
* HCI session initialization has been performed and the HCI interface is idle.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.2.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 2 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 3 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1 |
| 4 | HCS🡪HUT | Send CLT frame with CLT\_CMD field set to 00000 and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 5 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000. | RQ1 |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 8 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 9 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1,  RQ2,  RQ3 |
| 10 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: This command shall be chosen in a way that the UICC responds data with respect to RF, and without requesting a transition to "HALT" or "IDLE" state as per ISO/IEC 14443-3 []. | | | |

##### 5.6.4.2.3 Test case 2: sequence from DEACTIVATED state

5.6.4.2.3.1 Test execution

Void.

5.6.4.2.3.2 Initial conditions

* The host controller simulator is configured to support only the Type A card RF gate, with CLT\_SUPPORT set to '01' (CLT supported)‬.‬
* For full power mode execution: SWP interface is deactivated.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.2.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For low power mode execution: power up Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface and establish SHDLC link. |  |
| 3 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 4 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1 |
| 5 | HCS🡪HUT | Send CLT frame with CLT\_CMD field set to 00000 and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 6 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000. | RQ1 |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 8 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 9 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 10 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1,  RQ2,  RQ3 |
| 11 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: This command shall be chosen in a way that the UICC responds data with respect to RF, and without requesting a transition to "HALT" or "IDLE" state as per ISO/IEC 14443-3 []. | | | |

##### 5.6.4.2.4 Test case 3: low power mode, power down instead EVT\_FIELD\_OFF

5.6.4.2.4.1 Test execution

Run this test procedure in low power mode only.‬

5.6.4.2.4.2 Initial conditions

* The host controller simulator is configured to support only the Type A card RF gate, with CLT\_SUPPORT set to '01' (CLT supported)‬.‬
* The Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.2.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS | Power on Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface in low power mode and establish SHDLC link. |  |
| 3 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 4 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1 |
| 5 | HCS🡪HUT | Send CLT frame with CLT\_CMD field set to 00000 and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 6 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000. | RQ1 |
| 7 | HCS | Power down Host. |  |
| 8 | HCS | Power on Host |  |
| 9 | HCS🡪HUT | Activate SWP interface in low power mode and establish SHDLC link |  |
| 10 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 11 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1,  RQ2,  RQ3 |
| 12 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: This command shall be chosen in a way that the UICC responds data with respect to RF, and without requesting a transition to "HALT" or "IDLE" state as per ISO/IEC 14443-3 []. | | | |

##### 5.6.4.2.5 Test case 4: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation

5.6.4.2.5.1 Test execution

Void.

5.6.4.2.5.2 Initial conditions

* The host controller simulator is configured to support only the Type A card RF gate, with CLT\_SUPPORT set to '01' (CLT supported)‬.‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.2.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 3 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 4 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 5 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1 |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: This command shall be chosen in a way that the UICC responds data with respect to RF, and without requesting a transition to "HALT" or "IDLE" state as per ISO/IEC 14443-3 []. | | | |

##### 5.6.4.2.6 Test case 5: EVT\_FIELD\_OFF during CLT frames exchange

5.6.4.2.6.1 Test execution

Void.

5.6.4.2.6.2 Initial conditions

* The host controller simulator is configured to support only the Type A card RF gate, with CLT\_SUPPORT set to '01' (CLT supported)‬.‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe and set the MODE parameter to '02'.

5.6.4.2.6.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 3 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1 |
| 4 | HCS🡪HUT | Send CLT frame with CLT\_CMD field set to 00000 and a valid command (see note 1) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 5 | HCS🡪HUT | Send EVT\_FIELD\_OFF event (see note 2). | RQ1 |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_ON event after delay of at least 100 ms. |  |
| 7 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note 1) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 8 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1,  RQ2,  RQ3 |
| 9 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE 1: This command shall be chosen in a way, that the UICC responds data with respect to RF, and without requesting a transition to "HALT" or "IDLE" state as per ISO/IEC 14443-3 [].  NOTE 2: UICC may send CLT response which may overlap with EVT\_FIELD\_OFF. | | | |

##### 5.6.4.2.7 Test case 6: multiple open card gates

5.6.4.2.7.1 Test execution

Void.

5.6.4.2.7.2 Initial conditions

* The host controller simulator is configured to support RF gates for all RF technologies, with CLT\_SUPPORT for the Type A card RF gate set to '01' (CLT supported)‬.‬‬
* For full power mode execution: HCI session initialization has been performed and the HCI interface is idle.
* For low power mode execution: the Host is not powered up.
* The UICC has opened the card emulation pipe specified in test execution clause and set the MODE parameter to '02'.
* At least one further card application gate is open.

5.6.4.2.7.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event to the open card application gate with the lowest GID.  For low power mode execution: power up Host, activate SWP interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 3 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1 |
| 4 | HCS🡪HUT | Send CLT frame with CLT\_CMD field set to 00000 and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 5 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000. | RQ1 |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate with the lowest GID. |  |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_ON event to the open card application gate with the lowest GID. |  |
| 8 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 9 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1,  RQ2,  RQ3 |
| 10 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate used during transaction. |  |
| 11 | HCS🡪HUT | Send EVT\_FIELD\_ON event to the open card application gate with the lowest GID. |  |
| 12 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(A) in the ADMIN\_FIELD and a valid command (see note) for one of the RF protocols supported by the UICC in the DATA\_FIELD. |  |
| 13 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 00000 and at least 1 byte of data in the CLT PAYLOAD field. | RQ1,  RQ2,  RQ3 |
| 14 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate used during transaction. |  |
| NOTE: This command shall be chosen in a way, that the UICC responds data with respect to RF, and without requesting a transition to "HALT" or "IDLE" state as per ISO/IEC 14443-3 []. | | | |

#### 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: Since this technology is not publicly disclosed, no conformance requirements have been established.

#### 5.6.4.4 Type F RF technology

##### 5.6.4.4.1 Conformance requirements

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

|  |  |  |
| --- | --- | --- |
| RQ1 | 9.4.4 | In the context of a valid contactless card application sequence as specified in ETSI TS 102 622 [], and 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 []. |
| RQ2 | 9.4.4 | In the context of a valid contactless card application sequence as specified in ETSI TS 102 622 [], the host shall reply to received ISO/IEC 18092 [] 212 kbps/424 kbps frames contained in EVT\_SEND\_DATAs by sending the ISO/IEC 18092 [] 212 kbps/424 kbps frames contained in EVT\_SEND\_DATAs to the card RF gate. |
| RQ3 | 9.4.4 | The host shall accept an EVT\_FIELD\_OFF which is received at any time during the sequence. |
| RQ4 | 9.3.4.3 | Each card application gate shall support all events as listed (see note 2). |
| RQ5 | 9.3.4.3.5 | On receiving EVT\_SEND\_DATA the host shall interpret the last parameter byte as RF error indicator. |
| RQ6 | 9.3.4.3.5 | EVT\_SEND\_DATA shall be discarded by the host when the error indicator is set to '01'. |
| NOTE 1: RQ3 is only partially tested since the reaction of the UICC upon reception of EVT\_FIELD\_OFF is not specified.  NOTE 2: In the context of a type F transaction only EVT\_SEND\_DATA, EVT\_FIELD\_ON and EVT\_FIELD\_OFF are used.  NOTE 3: For RF error indicator = "no error", RQ5 is implicitly tested in all test cases. For RF error indicator = "error", RQ6 applies. | | |

##### 5.6.4.4.2 Test case 1: RF error indicator

5.6.4.4.2.1 Test execution

Void.

5.6.4.4.2.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* For full power mode execution: HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.4.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP  interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event in which RF error indicator is set to '01'. |  |
| 3 | HCS | Wait 1 s from the end of sending EOF in SWP frame in step 2.  During this time HUT shall not send any ISO/IEC 18092 [] 212 kbps/424 kbps frames. | RQ6 |
| 4 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event in which RF error indicator is set to '00'. |  |
| 5 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ4 |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.4.3 Test case 2: full power mode

5.6.4.4.3.1 Test execution

Run this test procedure in full power mode only.

5.6.4.4.3.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* The state of the card emulation pipe is open, and the MODE parameter is '02' (as set by the UICC).

5.6.4.4.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 2 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to 02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 3 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ4 |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 5 | HCS | Wait over 5 ms from the beginning of sending SOF in SWP frame in step 4. |  |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 7 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 8 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ3 |
| 9 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.4.4 Test case 3: sequence from DEACTIVATED state

5.6.4.4.4.1 Test execution

Void.

5.6.4.4.4.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* For full power mode execution: HCI session initialization has been performed and SWP interface is deactivated.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.4.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For low power mode execution: power up Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface and establish SHDLC link. |  |
| 3 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 4 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ4 |
| 5 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 6 | HCS | Wait over 5 ms from the beginning of sending SOF in SWP frame in step 5. |  |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 8 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 9 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ3 |
| 10 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.4.5 Test case 4: low power, power down instead of EVT\_FIELD\_OFF

5.6.4.4.5.1 Test execution

Run this test procedure in low power mode only.

5.6.4.4.5.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* The Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.4.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS | Power up Host. |  |
| 2 | HCS🡪HUT | Activate SWP interface in low power mode and establish SHDLC link. |  |
| 3 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 4 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ4 |
| 5 | HCS | Power down Host. |  |
| 6 | HCS | Power on Host. |  |
| 7 | HCS🡪HUT | Activate SWP interface in low power mode and establish SHDLC link. |  |
| 8 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 9 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2 |
| 10 | HCS | Power down Host. |  |

##### 5.6.4.4.6 Test case 5: EVT\_FIELD\_OFF after EVT\_FIELD\_ON / SWP interface activation

5.6.4.4.6.1 Test execution

Void.

5.6.4.4.6.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* For full power mode execution: HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.4.6.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP  interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| 3 | HCS | Wait over 5 ms from the beginning of sending SOF in SWP frame in step 2. |  |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_ON event. |  |
| 5 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 6 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ3 |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |

##### 5.6.4.4.7 Test case 6: EVT\_FIELD\_OFF after EVT\_SEND\_DATA

5.6.4.4.7.1 Test execution

Void.

5.6.4.4.7.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* For full power mode execution: HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).

5.6.4.4.7.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP  interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 3 | HCS🡪HUT | Send EVT\_FIELD\_OFF event as soon as possible after event in step 2 (see note). |  |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_ON event after delay of at least 100 ms. |  |
| 5 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 6 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ3 |
| 7 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: UICC may send ISO/IEC 18092 [] 212 kbps/424 kbps frames with EVT\_SEND\_DATA which may overlap with EVT\_FIELD\_OFF. | | | |

##### 5.6.4.4.8 Test case 7: multiple open card gates

5.6.4.4.8.1 Test execution

Void.

5.6.4.4.8.2 Initial conditions

* The host controller simulator is configured to support RF gates for all RF technologies.‬‬
* For full power mode execution: HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* For low power mode execution: the Host is not powered up.
* At the end of the previous activation, the state of the card emulation pipe was open, and the MODE parameter was '02' (as set by the UICC).
* At least one further card application gate is open.

5.6.4.4.8.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event to the open card application gate with the lowest GID.  For low power mode execution: power up Host, activate SWP  interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 3 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ4 |
| 4 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate with the lowest GID. |  |
| 5 | HCS | Wait over 5 ms from the beginning of sending SOF in SWP frame in step 4. |  |
| 6 | HCS🡪HUT | Send EVT\_FIELD\_ON event to the open card application gate with the lowest GID. |  |
| 7 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 8 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ3 |
| 9 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate used during transaction. |  |
| 10 | HCS | Wait over 5 ms from the beginning of sending SOF in SWP frame in step 9. |  |
| 11 | HCS🡪HUT | Send EVT\_FIELD\_ON event to the open card application gate with the lowest GID. |  |
| 12 | HCS🡪HUT | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D8', CMD1 to '00', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. |  |
| 13 | HUT🡪HCS | Send the ISO/IEC 18092 [] 212 kbps/424 kbps frames, where LEN is set to '37', CMD0 to 'D9', CMD1 to '01', and Byte 0 to Byte 51 to '02FE000000000000060708090A0B0C0D0E0F101112131415  161718191A1B1C1D1E1F202122232425262728292A2B2C2D2E2F3031', with EVT\_SEND\_DATA event. | RQ2,  RQ3 |
| 14 | HCS🡪HUT | Send EVT\_FIELD\_OFF event to the open card application gate used during transaction. |  |

##### 5.6.4.4.9 Test case 8: EVT\_FIELD\_OFF during CLT frames exchange

5.6.4.4.9.1 Test execution

Void.

5.6.4.4.9.2 Initial conditions

* The host controller simulator is configured to support only the Type F RF gate.‬
* For full power mode execution: HCI session initialization has been performed, the HCI interface is idle and the SWP interface is not DEACTIVATED.
* For low power mode execution: the HUT is not powered up.
* At the end of the previous activation of the HUT, the state of the card emulation pipe was open, and the MODE parameter was '02'.
* Only one Type F Application shall be activated in the HUT.

5.6.4.4.9.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS🡪HUT | For full power mode execution: send EVT\_FIELD\_ON event.  For low power mode execution: power up Host, activate SWP  interface and establish SHDLC link. |  |
| 2 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(F) in the ADMIN\_FIELD and the RF data representing the initialization command 'POLLING REQUEST' where the Length is set to '06', 1st byte to '00', 2nd and 3rd bytes to 'FFFF', 4th byte to '00', 5th byte to '00', and RF CRC to '0921', which matches the application available on the UICC in the DATA\_FIELD. |  |
| 3 | HCS🡪HUT | Send EVT\_FIELD\_OFF event within 100µs after the end of CLT frame in step 2 (see note). |  |
| 4 | HCS | Wait over 5 ms from the beginning of sending SOF in SWP frame in step 3. |  |
| 5 | HCS🡪HUT | Send EVT\_FIELD\_ON. |  |
| 6 | HCS🡪HUT | Send CLT frame with CL\_PROTO\_INF(F) in the ADMIN\_FIELD and the RF data representing the initialization command 'POLLING REQUEST' which has the same data as step2. |  |
| 7 | HUT🡪HCS | Respond CLT frame with CLT\_CMD field set to 10000 and RF data representing the initialization response 'POLLING RESPONSE'  where the Length is set to '12', 1st byte to '01', 2nd to 9th bytes to '02FE000000000000',10th to 17th byte to 'FFFFFFFFFFFFFFFF', and RF CRC to 'A87D'. | RQ1,  RQ3 |
| 8 | HCS🡪HUT | Send EVT\_FIELD\_OFF event. |  |
| NOTE: UICC may send CLT response which may overlap with EVT\_FIELD\_OFF or after receiving this event. This is not a failure of the UICC and the test procedure is not stopped. | | | |

#### 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 UICC 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.

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

## 5.7 Contactless reader

### 5.7.1 Overview

#### 5.7.1.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | For each reader RF gate it wants to use, the host has one reader application gate. |
| RQ2 | The host shall not create more than one pipe to each reader RF gate. |
| NOTE: Development of test cases for above listed RQs 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 UICC 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.

|  |  |
| --- | --- |
| RQ1 | The host shall have at least one byte in parameter of WR\_XCHG\_DATA. |
| RQ2 | In the CTR field of WR\_XCHG\_DATA, bit b8 to b6 shall set to 0. |
| RQ3 | In the CTR field of WR\_XCHG\_DATA, if bit b5 is set to one, the host shall use timeout value between 0 and 14. |
| RQ4 | On receiving value '00' of RF error indicator, the host shall interpret the received data having no error. |
| RQ5 | On receiving value '01' of RF error indicator, the host shall interpret the received data having an error. |
| NOTE: Development of test cases for above listed RQs 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.

|  |  |
| --- | --- |
| RQ1 | The host shall adhere to the access condition of RO for UID. |
| RQ2 | The host shall adhere to the access condition of RO for ATQA. |
| RQ3 | The host shall adhere to the access condition of RO for APPLICATION\_DATA. |
| RQ4 | The host shall adhere to the access condition of RO for SAK. |
| RQ5 | The host shall adhere to the access condition of RO for FWI, SFGT. |
| RQ6 | The host shall only set values of DATARATE\_MAX as specified in ETSI TS 102 622 []. |
| NOTE 1: Conformance to ISO/IEC 14443-3 [] and ISO/IEC 14443-4 [] of the values written by the host is out of scope of the present document.  NOTE 2: Development of test cases for above listed RQs 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 10.2.3.2.

|  |  |
| --- | --- |
| RQ1 | The host shall adhere to the access condition of RO for PUPI. |
| RQ2 | The host shall adhere to the access condition of RO for APPICATION\_DATA. |
| RQ3 | The host shall adhere to the access condition of RO for HIGHER\_LAYER\_RESPONSE. |
| NOTE 1: Conformance to ISO/IEC 14443-3 [] and ISO/IEC 14443-4 [] of the values written by the host is out of scope of the present document.  NOTE 2: Development of test cases for above listed RQs 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.

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

##### 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.

|  |  |
| --- | --- |
| RQ1 | When the host sends EVT\_READER\_REQUESTED, it shall contain no parameters. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

##### 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.

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

#### 5.7.2.5 Responses

##### 5.7.2.5.1 Conformance requirements

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

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

### 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 UICC 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 UICC 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.

|  |  |
| --- | --- |
| RQ1 | 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: Development of test cases for above listed RQs is FFS. | |

#### 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.

|  |  |
| --- | --- |
| RQ1 | The reader application gates support the event name EVT\_TARGET\_DISCOVERED. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

##### 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.

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

### 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.

|  |  |
| --- | --- |
| RQ1 | The host shall send the EVT\_READER\_REQUESTED event on a single pipe only. |
| RQ2 | In the context of a valid contactless reader application sequence as specified in ETSI TS 102 622 [], the host shall only send WR\_XCHG\_DATA commands after receiving an EVT\_TARGET\_DISCOVERED event which indicates that there is a single target in the reader field. |
| RQ3 | In the context of a valid contactless reader application sequence as specified in ETSI TS 102 622 [], if the host receives an EVT\_TARGET\_DISCOVERED event which indicates that there are several targets in the field, the host shall not send WR\_XCHG\_DATA commands. |
| RQ4 | The host shall send the EVT\_END\_OPERATION event on a single pipe only. |
| RQ5 | In the context of a valid contactless reader application sequence as specified in ETSI TS 102 622 [], if the host sends an EVT\_END\_OPERATION event, it shall not send further WR\_XCHG\_DATA commands until it has received a further EVT\_TARGET\_DISCOVERED event. |
| RQ6 | In the context of a valid contactless reader application sequence as specified in ETSI TS 102 622 [], the host shall send the EVT\_END\_OPERATION. |
| 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 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.

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

#### 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.

|  |  |
| --- | --- |
| RQ1 | The Host shall not try to interact with any other host except the host controller before receiving the response of PRO\_HOST\_REQUEST. |
| RQ2 | The Host shall not try to interact with another host if the response of PRO\_HOST\_REQUEST is not ANY\_OK. |
| RQ3 | The Host shall not try to interact with the host after the expired activation duration time. |
| RQ4 | The Host shall not put the host controller or the terminal host in the list of host identifiers. |
| RQ5 | When the Host sends a PRO\_HOST\_REQUEST, it shall use at least 3 bytes parameters. |
| 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 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.

|  |  |
| --- | --- |
| RQ1 | When the Host sends EVT\_CONNECTIVITY, it shall contain no parameters. |
| 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 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.

|  |  |
| --- | --- |
| RQ1 | When the Host send EVT\_OPERATION\_ENDED, it shall not contain parameters. |
| RQ2 | The Host shall only EVT\_OPERATION\_ENDED in the context of a PRO\_HOST\_REQUEST command. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

##### 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.

|  |  |
| --- | --- |
| RQ1 | When the Host sends the EVT\_TRANSACTION, it shall use BER-TLV parameters as defined in ETSI TS 102 622 []. |
| NOTE: Development of test cases for above listed RQs is FFS. | |

#### 5.8.2.4 Registry

##### 5.8.2.4.1 Conformance requirements

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

|  |  |
| --- | --- |
| RQ1 | 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: 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 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 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 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.

|  |  |
| --- | --- |
| RQ1 | When the Host receives the EVT\_STANDBY, it shall stop any ongoing communication with the other hosts and the host controller within 100 ms. |
| 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 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 Host for the referenced clause.

Annex A (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 |

Annex B: Additional test cases (normative)

B.1 Overview

The Annex provides test cases that can only be implemented in a standardised way if the information in Table B.3 is provided. As this information is proprietary, the execution of these tests is optional.

B.2 Applicability table

Table B.1 specifies the applicability of each test case introduced in this Annex. See clause 3.4 for the format of table 4.2 and B.1.

Table B.1 : Applicability of tests

| Clause | Test case number and description | Release | Execution requirements | Rel‑7 UICC | Rel‑8 UICC | Rel‑9 UICC | Rel‑10 UICC | Support |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B.4.1 | Test case 1: registry creation | Rel-7 | SR901 | M | M | M | M |  |
| B.4.2 | Test case 2: registry deletion | Rel-7 | SR902 | M | M | M | M |  |
| B.4.3 | Test case 3: ANY\_GET\_PARAMETER reception - WO registry parameter | Rel-7 | SR903 | M | M | M | M |  |
| B.4.4 | Test case 4: ANY\_OPEN\_PIPE transmission | Rel-7 | TR901 | M | M | M | M |  |
| B.4.5 | Test case 5: ANY\_CLOSE\_PIPE transmission | Rel-7 | TR902 | M | M | M | M |  |
| B.4.6 | Test case 6: responses received out of order, previous command sent by host | Rel-7 | TR901 | M | M | M | M |  |
| B.4.7 | Test case 7: WHITELIST | Rel-7 | TR903 | M | M | M | M |  |
| B.4.8 | Test case 8: REC\_ERROR | Rel-7 | TR904 | C901 | C901 | C901 | C901 |  |
| B.4.9 | Test case 9: REC\_ERROR after HCI session initialization | Rel-7 | ICR901 | C901 | C901 | C901 | C901 |  |
| B.4.10 | Test case 10: ADM\_CREATE\_PIPE | Rel-7 | TR905 | M | M | M | M |  |
| B.4.11 | Test case 11: sending ADM\_DELETE\_PIPE | Rel-7 | TR906 | M | M | M | M |  |
| B.4.12 | Test case 12: ADM\_CLEAR\_ALL\_PIPE - registry parameters | Rel-7 | ICR901 | C901 | C901 | C901 | C901 |  |

Table B.2: Conditional items referenced by table B.1

| Conditional item | Condition | Description |
| --- | --- | --- |
| C901 | IF 4.1/1 THEN M ELSE N/A | O\_LINK\_MAN |

Table B.3: Execution requirements referenced by table B.1

| Execution requirement | Description |
| --- | --- |
| SR901 | A gate which accepts multiple dynamic pipes and has a RW registry parameter; the default value of the registry parameter shall be known. |
| SR902 | A gate which has a RW registry parameter; the default value of the registry parameter shall be known. |
| SR903 | A gate which contains at least one WO registry parameter. |
|  |  |
| TR901 | Trigger the host to open PIPE\_ID\_MAN. |
| TR902 | Trigger the host to close PIPE\_ID\_MAN. |
| TR903 | Trigger the host to write its value of WHITELIST into the registry of the host controller's administration gate. |
| TR904 | Trigger the host to write a value of REC\_ERROR into the registry of the host controller's link management gate in order to restart an error rate measure. |
| TR905 | Trigger the host to create a pipe. |
| TR906 | Trigger the host to send ADM\_DELETE\_PIPE on PIPE1 to delete PIPE\_LOOP\_BACK. |
|  |  |
| ICR901 | The last value of REC\_ERROR in the host's registry for PIPE0 is not '0000'. |

NOTE: Clause 4.5.2 should be referenced for the meaning and usage of the execution requirements which are described in table B.3.

B.3 Conformance requirements

Reference: ETSI TS 102 622 [1], clause 4.5, 6.1.2.2, 6.1.2.3, 6.1.2.4, 6.1.3.1, 6.1.3.3, 6.1.3.5, 6.2, 7.1.1.1 and 7.1.2.1.

|  |  |  |
| --- | --- | --- |
| RQ1 | 4.5 | A new instance of the registry is created for every pipe that connects to the gate. |
| RQ2 | 4.5 | When a pipe is deleted its registry instance is also deleted. |
| RQ3 | 6.1.2.2 | A host 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). |
| RQ5 | 6.1.2.3 | When a host sends an ANY\_OPEN\_PIPE command, it shall contain no command parameters. |
| RQ6 | 6.1.2.3 | When a host receives ANY\_OK in response to an ANY\_OPEN\_PIPE command, it shall open the pipe. |
| RQ7 | 6.1.2.4 | When a host sends an ANY\_CLOSE\_PIPE command, it shall contain no command parameters. |
| RQ8 | 6.1.2.4 | When a host receives ANY\_OK in response to an ANY\_CLOSE\_PIPE command, it shall close the pipe. |
| RQ9 | 6.2 | Responses received out of order (i.e. if no command was sent previously) shall be discarded. |
| RQ10 | 7.1.1.1 | The host shall only set values of WHITELIST containing valid host identifiers (including proprietary host identifiers but excluding RFU host identifiers) as specified in table 1 in ETSI TS 102 622 [1], and not containing the host controller's host identifier and the host's own host identifier; an empty array is allowed. |
| RQ11 | 7.1.2.1 | The host shall only set values of REC\_ERROR with length 2 bytes. |
| RQ12 | 7.1.2.1 | The host shall use a default value for REC\_ERROR of '0000'. |
| RQ13 | 7.1.2.1 | The host shall apply the access condition of RW to REC\_ERROR. |
| RQ14 | 7.1.2.1 | The host shall only accept values of REC\_ERROR of length 2 bytes. |
| RQ15 | 6.1.3.1 | When a host sends an ADM\_CREATE\_PIPE command, the command parameters shall be 3 bytes long, and contain valid GIDs and HID. |
| RQ16 | 6.1.3.3 | When a host sends an ADM\_DELETE\_PIPE command, the command parameters shall be 1 byte long. |
| RQ17 | 6.1.3.5 | When the host receives ANY\_OK in response to an ADM\_CLEAR\_ALL\_PIPE command, it shall consider that all dynamic pipes connected to it are deleted, all static pipes connected to it are closed, and all registry values related to static pipes connected to it are set to their default values. |

B.4 Test cases

#### B.4.1 Test case 1: registry creation

##### B.4.1.1 Test execution

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

##### B.4.1.2 Initial conditions

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

##### B.4.1.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '01' and destination GID = GATE\_X; designate the created pipe PIPEa. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPEa. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked) |  |
| 5 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER(REG\_PARAM) on PIPEa, with a value different from the default value. |  |
| 6 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 7 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATE on PIPE1, with source GID = '01' and destination GID = GATE\_X; designate the created pipe PIPEb. |  |
| 8 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 9 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPEb. |  |
| 10 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked) |  |
| 11 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPEb. |  |
| 12 | HUT 🡪 HCS | Send ANY\_OK with parameter value equal to the default value of REG\_PARAM. | RQ1 |
| 13 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER(REG\_PARAM) on PIPEb, with a value different from the default value, and different to the value set in step 5. |  |
| 14 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 15 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPEa. |  |
| 16 | HUT 🡪 HCS | Send ANY\_OK with parameter value equal to the value set in step 5. | RQ1 |

#### B.4.2 Test case 2: registry deletion

##### B.4.2.1 Test execution

Assignment of terms to entities referenced in SR2: GID of gate = GATE\_X, registry parameter   
identifier = REG\_PARAM.

##### B.4.2.2 Initial conditions

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

##### B.4.2.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with source GID = '01' and destination GID = GATE\_X; designate the created pipe PIPEa. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 3 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPEa. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 5 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER(REG\_PARAM) on PIPEa, with a value different from the default value. |  |
| 6 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 7 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_DELETED(PIPEa) on PIPE1. |  |
| 8 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 9 | HCS 🡪 HUT | Send ADM\_NOTIFY\_PIPE\_CREATED on PIPE1, with GID = GATE\_X; designate the created pipe PIPEb. |  |
| 10 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 11 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPEb. |  |
| 12 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 13 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPEb. |  |
| 14 | HUT 🡪 HCS | Send ANY\_OK with parameter value equal to the default value of REG\_PARAM. | RQ2 |

B.4.3 Test case 3: ANY\_GET\_PARAMETER reception - WO registry parameter

B.4.3.1 Test execution

Assignment of terms to entities referenced in SR4: GID of gate = GATE\_X, registry parameter   
identifier = REG\_PARAM.

B.4.3.2 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.

B.4.3.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REG\_PARAM) on PIPE\_X. |  |
| 2 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ3 |

B.4.4 Test case 4: ANY\_OPEN\_PIPE transmission

B.4.4.1 Test execution

Void.

B.4.4.2 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's identity management gate, and is open.

B.4.4.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 3 | User 🡪 HUT | Trigger the host to open PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. | RQ5 |
| 5 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 6 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 7 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ6 |

B.4.5 Test case 5: ANY\_CLOSE\_PIPE transmission

B.4.5.1 Test execution

Void.

B.4.5.2 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's identity management gate, and is open.

B.4.5.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HUT | Trigger the host to close PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. | RQ7 |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 4 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 5 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ8 |

#### B.4.6 Test case 6: responses received out of order, previous command sent by host

##### B.4.6.1 Test execution

Void.

##### B.4.6.2 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's identity management gate, and is open.

##### B.4.6.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Send ANY\_CLOSE\_PIPE on PIPE\_ID\_MAN. |  |
| 2 | HUT 🡪 HCS | Send ANY\_OK. |  |
| 3 | User 🡪 HUT | Trigger the host to open PIPE\_ID\_MAN. |  |
| 4 | HUT 🡪 HCS | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 5 | HCS 🡪 HUT | Send ANY\_OK on PIPE\_ID\_MAN. |  |
| 6 | HCS 🡪 HUT | Send ANY\_E\_NOK on PIPE\_ID\_MAN. |  |
| 7 | HUT | No message on PIPE\_ID\_MAN. | RQ9 |
| 8 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(GATES\_LIST) on PIPE\_ID\_MAN. |  |
| 9 | HUT 🡪 HCS | Send response with ANY\_OK and value of GATES\_LIST on PIPE\_ID\_MAN. | RQ9 |

B.4.7 Test case 7: WHITELIST

B.4.7.1 Test execution

Void.

B.4.7.2 Initial conditions

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

B.4.7.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HUT | Trigger the host to write its value of WHITELIST into the registry of the host controller's administration gate. |  |
| 2 | HUT 🡪 HCS | Send ANY\_SET\_PARAMETER(WHITELIST) on PIPE1. | RQ10 |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |

B.4.8 Test case 8: REC\_ERROR

B.4.8.1 Test execution

Void.

B.4.8.2 Initial conditions

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

B.4.8.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HUT | Trigger the host to write a value of REC\_ERROR into the registry of the host controller's link management gate in order to restart an error rate measure. |  |
| 2 | HUT 🡪 HCS | Send ANY\_SET\_PARAMETER(REC\_ERROR) on PIPE0. | RQ11 |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |

B.4.9 Test case 9: REC\_ERROR after HCI session initialization

B.4.9.1 Test execution

Run this test procedure in full power mode only.

B.4.9.2 Initial conditions

* The last value of REC\_ERROR in the host's registry for PIPE0 is not '0000'.
* The interface is powered down.

B.4.9.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡨 🡪 HCS | Perform HCI session initialization, up to and including setting new value of SESSION\_IDENTITY. |  |
| 3 | HCS | Wait until the HCI interface is idle; i.e. no further communication is expected. |  |
| 4 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE0. |  |
| 5 | HUT 🡪 HCS | Send response (contents are not checked) |  |
| 6 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REC\_ERROR) on PIPE0. |  |
| 7 | HUT 🡪 HCS | Send ANY\_OK with parameter value '0000' (see note). | RQ12, RQ13 |
| 8 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER(REC\_ERROR, '0000') on PIPE0. |  |
| 9 | HUT 🡪 HCS | Send ANY\_OK. | RQ13 |
| 10 | HCS 🡪 HUT | Send ANY\_SET\_PARAMETER(REC\_ERROR, '000000') on PIPE0. |  |
| 11 | HUT 🡪 HCS | Send response containing an allowed error response code for the command. | RQ14 |
| 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. | | | |

##### B.4.10 Test case 10: ADM\_CREATE\_PIPE

B.4.10.1 Test execution

Void.

B.4.10.2 Initial conditions

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

B.4.10.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HUT | Trigger the host to create a pipe. |  |
| 2 | HUT 🡪 HCS | Send ADM\_CREATE\_PIPE on PIPE1; designate the created pipe PIPE\_ID\_MAN. | RQ15 |
| 3 | HCS 🡪 HUT | Send ANY\_OK with valid response parameters. |  |
| 4 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_ID\_MAN. |  |
| 5 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). | RQ15 |

##### B.4.11 Test case 11: sending ADM\_DELETE\_PIPE

B.4.11.1 Test execution

Void.

B.4.11.2 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's loop back gate, and is open.

B.4.11.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | User 🡪 HUT | Trigger the host to send ADM\_DELETE\_PIPE on PIPE1 to delete PIPE\_LOOP\_BACK. |  |
| 2 | HUT 🡪 HCS | Send ADM\_DELETE\_PIPE on PIPE1, with parameter value of length 1 and equal to PIPE\_LOOP\_BACK. | RQ16 |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 4 | HCS 🡪 HUT | Send EVT\_POST\_DATA containing '01 02 03 04' on PIPE\_LOOP\_BACK. |  |
| 5 | HUT 🡪 HCS | No messages on PIPE\_LOOP\_BACK. | RQ16 |
| 6 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE\_LOOP\_BACK. |  |
| 7 | HUT 🡪 HCS | Send no response, or a response containing an allowed error response code for the command. | RQ16 |

##### B.4.12 Test case 12: ADM\_CLEAR\_ALL\_PIPE - registry parameters

B.4.12.1 Test execution

Run this test procedure in full power mode only.

B.4.12.2 Initial conditions

* REC\_ERROR in the registry of the host for PIPE0 has a value which is different from the default value.
* The host is not powered up.

B.4.12.3 Test procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Description | RQ |
| 1 | HCS 🡪 HUT | Power up host; behave as if lower layer identity check has failed (i.e. enter inhibited state). |  |
| 2 | HUT 🡪 HCS | Send ADM\_CLEAR\_ALL\_PIPE on PIPE1; parameter value is not checked (see note 1). |  |
| 3 | HCS 🡪 HUT | Send ANY\_OK. |  |
| 4 | HCS 🡪 HUT | Send ANY\_OPEN\_PIPE on PIPE0. |  |
| 5 | HUT 🡪 HCS | Send ANY\_OK (parameters are not checked). |  |
| 6 | HCS 🡪 HUT | Send ANY\_GET\_PARAMETER(REC\_ERROR) on PIPE0. |  |
| 7 | HUT 🡪 HCS | Send ANY\_OK with parameter value '0000' (see note 2). | RQ17 |
| NOTE 1: Other commands may be sent prior to the ADM\_CLEAR\_ALL\_PIPE command.  NOTE 2: 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. | | | |

Annex B (informative):  
Change history

This annex lists all Changes Requests (CR) applied to the present document.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Change history | | | | | | | | |
| Date | Meeting | Plenary Doc | CR | Rev | Cat | Subject/Comment | Old | New |
| 2009-07 | SCP #42 | SCP-090256 |  |  |  | Creation of the specification | 2.2.0 | 7.0.0 |
| 2010-03 | SCP #44 | SCP(10)0012 | 001 | - | F | Change of allowed response to command on deleted pipe | 7.0.0 | 7.1.0 |
| SCP(10)0012 | 002 | - | F | Change of response to ANY\_OPEN\_PIPE after pipe created | 7.0.0 | 7.1.0 |
| SCP(10)0012 | 003 | - | F | Change of response to ANY\_OPEN\_PIPE after pipe created | 7.0.0 | 7.1.0 |
| SCP(10)0012 | 004 | - | F | Correction of UICC reaction to event sent on closed pipe | 7.0.0 | 7.1.0 |
| SCP(10)0012 | 005 | - | F | Remove the step " Change locally stored value of SESSION\_IDENTITY" from the related test cases. | 7.0.0 | 7.1.0 |
| 2010-07 | SCP #45 | SCP(10)0121 | 006 | - | F | Correction of test cases 5.4.1.2 applicability | 7.1.0 | 7.2.0 |
| SCP(10)0193 | 007 | 1 | F | Definition of the network's initial state | 7.1.0 | 7.2.0 |
| 2010-01 | SCP #46 | SCP(10)0225 | 008 | - | F | Deletion of RFU Gates test procedure 5.1.3.3 | 7.2.0 | 7.3.0 |
| 2011-03 | SCP #48 | SCP(11)0116 | 009 | - | F | Editorial corrections | 7.2.0 | 7.3.0 |
| SCP(11)0117 | 010 | - | F | Essential corrections | 7.2.0 | 7.3.0 |
| SCP(11)0118 | 011 | - | F | Addition of test cases for contactless card emulation | 7.2.0 | 7.3.0 |
| SCP(11)0119 | 012 | - | F | Update of conformance requirements to latest Rel-7 version of ETSI TS 102 622 | 7.2.0 | 7.3.0 |
| 2011-09 | SCP #48 | SCP(11)0120 | 013 | - | F | Creation of Rel-8 specification | 7.4.0 | 8.0.0 |
| 2012-03 | SCP #54 | SCP(12)000041 | 015 | - | F | Modification of session id test procedure | 8.0.0 | 8.1.0 |
| SCP(12)000042r1 | 016 | 1 | F | Correction of test case 5.3.1.2.3.2 | 8.0.0 | 8.1.0 |
| 2012-06 | SCP #55 | SCP(12)000113 | 017 | - | F | Introduction of new Execution Requirements | 8.0.0 | 8.1.0 |
| 2012-09 | SCP #56 | SCP(12)000186 | 018 | - | F | Execution requirement for the verification of the Host's settings of registry parameters | 8.0.0 | 8.1.0 |
| SCP(12)000189 | 021 | - | F | Correction of SAK requirement for CLT test cases | 8.0.0 | 8.1.0 |
| SCP(12)000190 | 022 | - | F | Test cases from DEACTIVATED state - correction of low power mode execution to start from UICC powered down | 8.0.0 | 8.1.0 |
| SCP(12)000191 | 023 | - | F | Low power mode test cases - making low power mode more explicit | 8.0.0 | 8.1.0 |
| SCP(12)000192 | 024 | - | F | Addition of CLT\_SUPPORT='01' for CLT test cases | 8.0.0 | 8.1.0 |
| SCP(12)000193 | 025 | - | F | Correction of registry name | 8.0.0 | 8.1.0 |
| SCP(12)000194 | 026 | - | F | Modify the applicability of test case 5.3.1.2.1.2 | 8.0.0 | 8.1.0 |
| SCP(12)000195 | 027 | - | F | Corrections of test cases to only run in full power mode | 8.0.0 | 8.1.0 |
| SCP(12)000187 | 019 | - | B | Creation of Rel-9 specification, and addition of latest conformance requirements | 8.1.0 | 9.0.0 |
| 2013-02 | SCP #58 | SCP(13)000033 | 028 | - | F | Correction of invalid EVT\_FIELD\_ON in low power mode test cases | 9.0.0 | 9.1.0 |
| 2013-07 | SCP #60 | SCP(13)000136 | 029 | - | F | Addition of testing of SYNC\_ID value | 9.1.0 | 9.2.0 |
| 2013-10 | SCP #61 | SCP(13)000224r1 | 030 | 1 | F | Definition of time to wait for no response | 9.2.0 | 9.3.0 |
| 2014-04 | SCP #63 | SCP(14)000113r1 | 031 | 1 | B | Addition of test procedures for Type F | 9.3.0 | 10.0.0 |
| 2014-06 | SCP #64 | SCP(14)000157r1 | 032 | 1 | B | Addition of test procedures for Type F (EVT\_FIELD\_OFF during CLT frames exchange) | 9.3.0 | 10.0.0 |
| 2014-12 | SCP #66 | SCP(14)000314 | 033 | - | F | Modification for the test data of Type-F | 10.0.0 | 10.1.0 |
| SCP(14)000315 | 034 | - | B | Add test case on empty C-APDU reception. | 10.0.0 | 10.1.0 |
| 2015-02 | SCP #67 | SCP(15)000025 | 035 | - | F | Clarification of SR2 | 10.0.0 | 10.1.0 |
| SCP(15)000026 | 036 | - | F | Test case 5.5.1.3.2: update to allow HCI session initialisation to complete | 10.0.0 | 10.1.0 |
| 2015-04 | SCP#68 | SCP(15)000101r1 | 038 | 1 | F | Moving of un-implementable test cases from clause 5 to Annex X | 10.1.0 | 10.2.0 |
| 2015-09 | SCP#70 | SCP(15)000230 | 039 | - | B | Addition of Rel-10 requirements and test cases | 10.2.0 | 10.3.0 |

# History

|  |  |  |
| --- | --- | --- |
| **Document history** | | |
| V10.0.0 | September 2014 | Publication |
| V10.1.0 | March 2015 | Publication |
| V10.2.0 | September 2017 | Publication |
| V10.3.0 | September 2017 | Publication |
|  |  |  |