# ETSI TS 103 115 V9.0.0 (2013-04)

**Technical Specification**

**Smart Cards;**
**Test specification for UICC Application Programming**
**Interface for Java Card™ for Contactless Applications;**
**Test Environment and Annexes;**
**(Release 9)**

Reference

DTS/SCP-00HCI_API_TESTv900

Keywords

API, NFC, Smart Card, testing

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# Contents

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# Foreword

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# 1 Scope

The present document covers the minimum characteristics considered necessary in order to provide compliance to TS 102 705 [1].

It specifies conformance test cases for the UICC Application Programming Interface for Java Card™ for contactless Applications.

# 2 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.

## 2.1 Normative references

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

[1] ETSI TS 102 705: "Smart Cards; UICC Application Programming Interface for Java Card™ for Contactless Applications".

[2] ISO/IEC 7816-3: "Identification cards - Integrated circuit cards - Part 3: Cards with contacts - Electrical interface and transmission protocols".

[3] ETSI TS 102 622: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Host Controller Interface (HCI)".

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

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

[6] ETSI TS 102 241: "Smart Cards; UICC Application Programming Interface (UICC API) for Java Card (TM)".

[7] ETSI TS 102 223: "Smart Cards; Card Application Toolkit (CAT)".

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

[9] ETSI TS 102 226: "Smart Cards; Remote APDU structure for UICC based applications".

[10] GlobalPlatform: "GlobalPlatform Card Specification Version 2.2, Amendment C: Contactless Services" Version 1.0.

NOTE: See http://www.globalplatform.org/.

[11] Sun Microsystems "Application Programming Interface, Java Card™ Platform, 3.0.1 Classic Edition".

[12]       Sun Microsystems "Runtime Environment Specification, Java Card™ Platform, 3.0.1 Classic Edition".

[13]       Sun Microsystems "Virtual Machine Specification Java Card™ Platform, 3.0.1 Classic Edition".

NOTE:     SUN Java Card Specifications can be downloaded at http://www.oracle.com/technetwork/java/javame/javacard/download/overview/index.html.

[14]       ETSI TS 102 613: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Part 1: Physical and data link layer characteristics".

## 2.2      Informative references

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 following terms and definitions apply:

**applet installation parameters:** values for applet installation parameters in the Install(Install) command

**Conformance Requirement Reference (CRR):** description of the expected HCI API behaviour according to TS 102 705 [1]

**contactless mode:** is used as a generic term for "Card Emulation Mode" and "Reader Mode"

**HCP message:** message as specified in TS 102 622 [3]

NOTE:     An HCP message can be of type "command", "event" or "response to a command".

**test case:** elementary test that checks for compliance with one or more Conformance Requirement References

**test procedure:** sequence of actions/commands to perform all the test cases defined in a test area

**test source file:** file containing methods that will load and install test applet in the card, execute and verify the test results, and restore the Default Initial Conditions on the UICC (when possible)

**RF Technology:** radio frequency technology supported by the HCI (TS 102 622 [3]) protocol specification

## 3.2      Symbols

For the purposes of the present document, the symbols given in TS 102 705 [1] apply.

## 3.3      Abbreviations

For the purposes of the present document, the following abbreviations apply:

AID          Application IDentifier
APDU         Application Protocol Data Unit

NOTE:     According to ISO/IEC 7816-3 [2].

API          Application Programming Interface
CAT          Card Application Toolkit

| CB | Chaining Bit |
| CLF | Contactless Front-end |

NOTE: According to TS 102 622 [3].

| CRR | Conformance Requirements Reference |
| CRRC | Conformance Requirement Reference Context Error |
| CRRN | Conformance Requirement Reference Normal |
| CRRP | Conformance Requirement Reference Parameter Error |
| CRS | Contactless Registry Services |
| DUT | Device Under Test |
| EVT | EVenT |
| FFS | For Further Study |
| GND | GrouND |
| HCI | Host Controller Interface |

NOTE: According to TS 102 622 [3].

| HCP | Host Controller Protocol |

NOTE: According to TS 102 622 [3].

| INS | INStruction |
| ISO | International Organisation for Standardisation |
| JCRE | Java Card™ Run-time Environment |
| RF | Radio Frequency |
| SAA | Service Availability and Access possibility for the different services |
| SDK | Software Development Kit |
| SW | Status Word |
| SWP | Single Wire Protocol |
| TAR | Toolkit Application Reference |
| TBD | To Be Defined |

# 3.4 Formats

## 3.4.1 Format of the table of optional features

The columns in table 4.1 have the following meaning.

| Column | Meaning |
|---|---|
| Option | The optional feature supported or not by the DUT. |
| Status | See clause 3.4.3. |
| Support | The support columns are to be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [8], are used for the support column in table 4.1.<br>Y or y       supported by the implementation.<br>N or n       not supported by the implementation.<br>N/A, n/a or -    no answer required (allowed only if the status is N/A, directly or after evaluation of a conditional status). |
| Mnemonic | The mnemonic column contains mnemonic identifiers for each item. |

## 3.4.2 Format of the applicability table

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

The columns in table 4.2 have the following meaning.

| Column | Meaning |
|---|---|
| Clause | The "Clause" column identifies the clause containing the test case referenced in the "Test case number and description" column. |
| Test case number and description | The "Test case number and description" column gives a reference to the test case number (along with the corresponding description) detailed in the present document and required to validate the DUT. |
| Release | The "Release" column gives the Release applicable and onwards, for the corresponding test case. |
| Execution requirements | The usage of the "Execution requirements" column is described in clause 4.4. |
| 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 is to be completed by the manufacturer in respect of each particular requirement to indicate the choices, which have been made in the implementation. |

## 3.4.3 Status and Notations

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

The following notations, defined in ISO/IEC 9646-7 [8], are used for the status column:

| | |
|---|---|
| M | mandatory - the capability is required to be supported. |
| O | optional - the capability may be supported or not. |
| N/A | not applicable - in the given context, it is impossible to use the capability. |
| X | prohibited (excluded) - there is a requirement not to use this capability in the given context. |
| O.i | qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table. |
| Ci | conditional - the requirement on the capability ("M", "O", "X" or "N/A") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." is to be used to avoid ambiguities. |

References to items

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

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

# 4 Applicability

## 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 | Card emulation, Type A | O | | O_CE_TYPE_A |
| 2 | Card emulation, Type B | O | | O_CE_TYPE_B |
| 3 | Card emulation, Type B' | O | | O_CE_TYPE_B_PRIME |
| 4 | Card emulation, Type F | O | | O_CE_TYPE_F |
| 5 | Reader Mode, Type A | O | | O_RM_TYPE_A |
| 6 | Reader Mode, Type B | O | | O_RM_TYPE_B |
| 7 | HCP message size greater than supported buffer size | O | | O_MSG_GT_BUF |

## 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 4.4 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-9 UICC | Support |
|--------|----------------------------------|---------|------------------------|------------|---------|
| 6.1.1.1 | Method getHCIService (ID2, ID4) | Rel-9 | SAA1 | M | |
| 6.1.1.1 | Method getHCIService (ID1-1) | Rel-9 | SAA1 | M | |
| 6.1.1.1 | Method getHCIService (ID1-2) | Rel-9 | SAA2, SAA1 | M | |
| 6.1.1.1 | Method getHCIService (ID1-3) | Rel-9 | SAA3 | M | |
| 6.1.1.1 | Method getHCIService (ID3-1) | Rel-9 | SAA6 | M | |
| 6.1.1.1 | Method getHCIService (ID3-2) | Rel-9 | SAA7 | M | |
| 6.1.1.1 | Method getHCIService (ID3-3) | Rel-9 | SAA8 | M | |
| 6.1.1.1 | Method getHCIService (ID5-1) | Rel-9 | SAA4 | M | |
| 6.1.1.1 | Method getHCIService (ID5-2) | Rel-9 | SAA5 | M | |
| 6.1.1.2 | Method getPowerMode (ID1, ID2) | Rel-9 | SAA1 | M | |
| 6.1.1.2 | Method getPowerMode (ID3) | Rel-9 | | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID1-1, ID3-1) | Rel-9 | SAA1 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID1-2) | Rel-9 | SAA2, SAA1 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID1-3) | Rel-9 | SAA3 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID2) | Rel-9 | | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID3-2) | Rel-9 | SAA3 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID4-1) | Rel-9 | SAA4 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID4-2) | Rel-9 | SAA5 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID5-1) | Rel-9 | SAA10 | M | |
| 6.1.1.3 | Method isHCIServiceAvailable (ID5-2) | Rel-9 | SAA11 | M | |
| 6.1.2.1 | Method register (ID1-1, ID2, ID3, ID4) | Rel-9 | SAA1 | M | |
| 6.1.2.1 | Method register (ID1, ID2, ID3-1, ID4) | Rel-9 | SAA1 | M | |
| 6.1.2.1 | Method register (ID1-2, ID3-2) | Rel-9 | SAA1, SAA2 | M | |
| 6.1.2.1 | Method register (ID1-3, ID3-3) | Rel-9 | SAA3 | M | |
| 6.1.2.2 | Method deregister (ID1-1, ID1-3) | Rel-9 | SAA1 | M | |
| 6.1.2.2 | Method deregister (ID1-2, ID2) | Rel-9 | SAA1, SAA2 | M | |
| 6.1.2.3 | Method activateEvent (ID1, ID4, ID6, ID7, ID8, ID9, ID10) | Rel-9 | SAA1 | M | |
| 6.1.2.3 | Method activateEvent (ID2) | Rel-9 | SAA3 | M | |

| Clause | Test case number and description | Release | Execution requirements | Rel-9 UICC | Support |
|--------|----------------------------------|---------|------------------------|------------|---------|
| 6.1.2.3 | Method activateEvent (ID3) | Rel-9 | SAA1, SAA2 | M | |
| 6.1.2.3 | Method activateEvent (ID5-1) | Rel-9 | SAA10 | M | |
| 6.1.2.3 | Method activateEvent (ID5-2) | Rel-9 | SAA11 | M | |
| 6.1.2.4 | Method deactivateEvent (ID1, ID4, ID5) | Rel-9 | SAA1 | M | |
| 6.1.2.4 | Method deactivateEvent (ID2, ID7) | Rel-9 | SAA3 | M | |
| 6.1.2.4 | Method deactivateEvent (ID3, ID6) | Rel-9 | SAA1, SAA2 | M | |
| 6.1.2.5 | Method requestCallbackNotification | Rel-9 | SAA1 | M | |
| 6.1.2.6 | Method getEventNotificationStatus(ID1, ID2, ID5-1) | Rel-9 | SAA1 | M | |
| 6.1.2.6 | Method getEventNotificationStatus(ID3,ID4, ID5-2) | Rel-9 | SAA3 | M | |
| 6.1.2.6 | Method getEventNotificationStatus(ID5-3, ID6, ID7) | Rel-9 | SAA2, SAA1 | M | |
| 6.1.3.1 | Method isHeading | Rel-9 | SAA1 | M | |
| 6.1.3.2 | Method isComplete | Rel-9 | SAA1 | M | |
| 6.1.3.3 | Method getType (ID1) | Rel-9 | SAA1 | M | |
| 6.1.3.3 | Method getType (ID2) | Rel-9 | SAA2, SAA1 | M | |
| 6.1.3.4 | Method getInstruction | Rel-9 | SAA1 | M | |
| 6.1.3.6 | Method getReceiveLength | Rel-9 | SAA1 | M | |
| 6.1.3.7 | Method getReceiveBuffer | Rel-9 | SAA1 | M | |
| 6.1.4.1 | Method throwIt | Rel-9 | SAA1 | M | |
| 6.1.5.1 | Method onCallback (ID1, ID2, ID3) | Rel-9 | SAA1 | M | |
| 6.1.5.1 | Method onCallback (ID4) | Rel-9 | SAA1 | C002 | |
| 6.1.5.1 | Method onCallback (ID5) | Rel-9 | SAA1 | C001 | |
| 6.2.1.1.1 | Method prepareAndSendGetParameterCommand (ID1) | Rel-9 | SAA1 | C001 | |
| 6.2.1.1.1 | Method prepareAndSendGetParameterCommand (ID2) | Rel-9 | SAA1 | C002 | |
| 6.2.1.1.1 | Method prepareAndSendGetParameterCommand (ID3-1) | Rel-9 | SAA1 | C001 C007 | |
| 6.2.1.1.1 | Method prepareAndSendGetParameterCommand (ID3-2) | Rel-9 | SAA1 | C002 C007 | |
| 6.2.1.1.2 | Method prepareAndSendSendDataEvent (ID1) | Rel-9 | SAA1 | C001 | |
| 6.2.1.1.2 | Method prepareAndSendSendDataEvent (ID2) | Rel-9 | SAA1 | C002 | |
| 6.2.1.1.2 | Method prepareAndSendSendDataEvent (ID4, ID5) | Rel-9 | SAA1 | M | |
| 6.2.1.1.2 | Method prepareAndSendSendDataEvent (ID3) | Rel-9 | SAA1 | C007 | |
| 6.2.1.1.3 | Method selectingMessage | Rel-9 | SAA1 | M | |
| 6.2.1.2.1 | Method getCardRFType (ID1) | Rel-9 | SAA1 | C001 | |
| 6.2.1.2.1 | Method getCardRFType (ID2) | Rel-9 | SAA1 | C002 | |
| 6.2.1.2.1 | Method getCardRFType (ID4) | Rel-9 | SAA1 | C003 | |
| 6.2.1.2.1 | Method getCardRFType (ID3) | Rel-9 | SAA1 | C004 | |
| 6.2.1.3.1 | Method onCallback (ID1,ID2, ID3, ID5-2) | Rel-9 | SAA1 | C001 | |
| 6.2.1.3.1 | Method onCallback (ID4, ID5, ID6, ID5-3) | Rel-9 | SAA1 | C002 | |
| 6.2.1.3.1 | Method onCallback (ID5-1, ID5-4) | Rel-9 | SAA1 | M | |
| 6.2.2.1.1 | Method prepareAndSendConnectivityEvent (ID1, ID3, ID4, ID5) | Rel-9 | SAA2, SAA1 | M | |
| 6.2.2.1.1 | Method prepareAndSendConnectivityEvent (ID2-1) | Rel-9 | SAA2, SAA1, SAA10 | M | |
| 6.2.2.1.1 | Method prepareAndSendConnectivityEvent (ID2-1) | Rel-9 | SAA2, SAA1, SAA11 | M | |
| 6.2.2.1.1 | Method prepareAndSendConnectivityEvent (ID6) | Rel-9 | SAA2, SAA1, SAA9 | M | |
| 6.2.2.1.2 | Method prepareAndSendTransactionEvent byte[] aid, short aidOffset, short aidLen, byte[] parameters, short parametersOffset, short parametersLen) (ID1, ID3, ID4, ID5) | Rel-9 | SAA1, SAA2 | M | |
| 6.2.2.1.2 | Method prepareAndSendTransactionEvent byte[] aid, short aidOffset, short aidLen, byte[] parameters, short parametersOffset, short parametersLen) (ID2-1) | Rel-9 | SAA2, SAA10 | M | |

| Clause | Test case number and description | Release | Execution requirements | Rel-9 UICC | Support |
|---|---|---|---|---|---|
| 6.2.2.1.2 | Method prepareAndSendTransactionEvent byte[] aid, short aidOffset, short aidLen, byte[] parameters, short parametersOffset, short parametersLen) (ID2-2) | Rel-9 | SAA2, SAA11 | M | |
| 6.2.2.1.3 | Method prepareAndSendTransactionEvent (byte[] parameters, short parametersOffset, short parametersLen ) (ID1, ID3, ID4) | Rel-9 | SAA2 | M | |
| 6.2.2.1.3 | Method prepareAndSendTransactionEvent (byte[] parameters, short parametersOffset, short parametersLen ) (ID2-1) | Rel-9 | SAA2, SAA10 | M | |
| 6.2.2.1.3 | Method prepareAndSendTransactionEvent (byte[] parameters, short parametersOffset, short parametersLen ) (ID2-2) | Rel-9 | SAA2, SAA11 | M | |
| 6.2.3.1.1 | Method restartReaderModeProcedure (ID1) | Rel-9 | SAA3 | C005 | |
| 6.2.3.1.1 | Method restartReaderModeProcedure (ID2) | Rel-9 | SAA3 | C006 | |
| 6.2.3.1.1 | Method restartReaderModeProcedure (ID3, ID4) | Rel-9 | SAA3 | M | |
| 6.2.3.1.1 | Method restartReaderModeProcedure (ID5-1) | Rel-9 | SAA3, SAA10 | M | |
| 6.2.3.1.1 | Method restartReaderModeProcedure (ID5-2) | Rel-9 | SAA3, SAA11 | M | |
| 6.2.3.1.2 | Method prepareAndSendWriteXchgDataCommand (ID1) | Rel-9 | SAA3 | C005 | |
| 6.2.3.1.2 | Method prepareAndSendWriteXchgDataCommand (ID2) | Rel-9 | SAA3 | C006 | |
| 6.2.3.1.2 | Method prepareAndSendWriteXchgDataCommand (ID4, ID5, ID6, ID7) | Rel-9 | SAA3 | M | |
| 6.2.3.1.2 | Method prepareAndSendWriteXchgDataCommand (ID3-1) | Rel-9 | SAA3, SAA10 | M | |
| 6.2.3.1.2 | Method prepareAndSendWriteXchgDataCommand (ID3-2) | Rel-9 | SAA3, SAA11 | M | |
| 6.2.3.1.3 | Method prepareAndSendGetParameterCommand (ID1) | Rel-9 | SAA3 | C005 | |
| 6.2.3.1.3 | Method prepareAndSendGetParameterCommand (ID2) | Rel-9 | SAA3 | C006 | |
| 6.2.3.1.3 | Method prepareAndSendGetParameterCommand (ID3-1) | Rel-9 | SAA3, SAA10 | M | |
| 6.2.3.1.3 | Method prepareAndSendGetParameterCommand (ID3-2) | Rel-9 | SAA3, SAA11 | M | |
| 6.2.3.1.3 | Method prepareAndSendGetParameterCommand (ID4) | Rel-9 | SAA3 | C007 | |
| 6.2.3.1.3 | Method prepareAndSendGetParameterCommand (ID5) | Rel-9 | SAA3 | M | |
| 6.2.3.2.1 | Method onCallback | Rel-9 | SAA3 | M | |
| 6.2.3.2.1 | Method onCallback (ID1, ID2, ID3, ID4) | Rel-9 | SAA3 | C005 | |
| 6.2.3.2.1 | Method onCallback (ID5, ID6, ID7, ID8) | Rel-9 | SAA3 | C006 | |

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

| Conditional item | Description |
|---|---|
| C001 | IF O_CE_TYPE_A THEN M ELSE N/A |
| C002 | IF O_CE_TYPE_B THEN M ELSE N/A |
| C003 | IF O_CE_TYPE_B_PRIME THEN M ELSE N/A |
| C004 | IF O_CE_TYPE_F THEN M ELSE N/A |
| C005 | IF O_RM_TYPE_A THEN M ELSE N/A |
| C006 | IF O_RM_TYPE_B THEN M ELSE N/A |
| C007 | IF O_MSG_GT_BUF THEN M ELSE N/A |

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

| Execution requirement | Description |
|---|---|
| SAA1 | Card emulation service is available |
| SAA2 | Connectivity service is available |
| SAA3 | Reader Mode service is available |
| SAA4 | Access not allowed for Applet for Card Emulation service |
| SAA5 | Access not allowed for Applet for Reader service |
| SAA6 | Card emulation service is not available |
| SAA7 | Connectivity service is not available |
| SAA8 | Reader Mode service not available |
| SAA9 | Proactive functionalty in TS 102 241 [6] is supported |
| SAA10 | Toolkit application is available and registered to the ENVELOPE (EVENT DOWNLOAD - Contactless state request) and allowed to switch on/off HCI interface |
| SAA11 | No CRS on the card and test applet acting like CRS can be loaded |

## 4.3 Information provided by the device supplier

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

**Table 4.3: Information provided by device suppliers**

| Item | Description | Value | Mnemonic |
|---|---|---|---|
| 1 | Presence of an application associated to an contactless applet that can be launched in the terminal host using EVT_TRANSACTION | | AID, Parameters |
| 2 | Supported received message buffer size | | |

## 4.4 Execution requirements

Table 4.2, Applicability of tests, specifies execution requirement (SAAn) for several test cases, to define the service availability and access possibility for the different services. For these test cases, the availability of the different services shall be guaranteed in order to execute the corresponding test procedure against the DUT. In case of absence of a particular (SAAn), the corresponding test case should not be carried out.

# 5 Test environment

This clause specifies requirements that shall be met and the testing rules that shall be followed during the test procedure.

## 5.1 Test environment description

The general architecture for the test environment is:
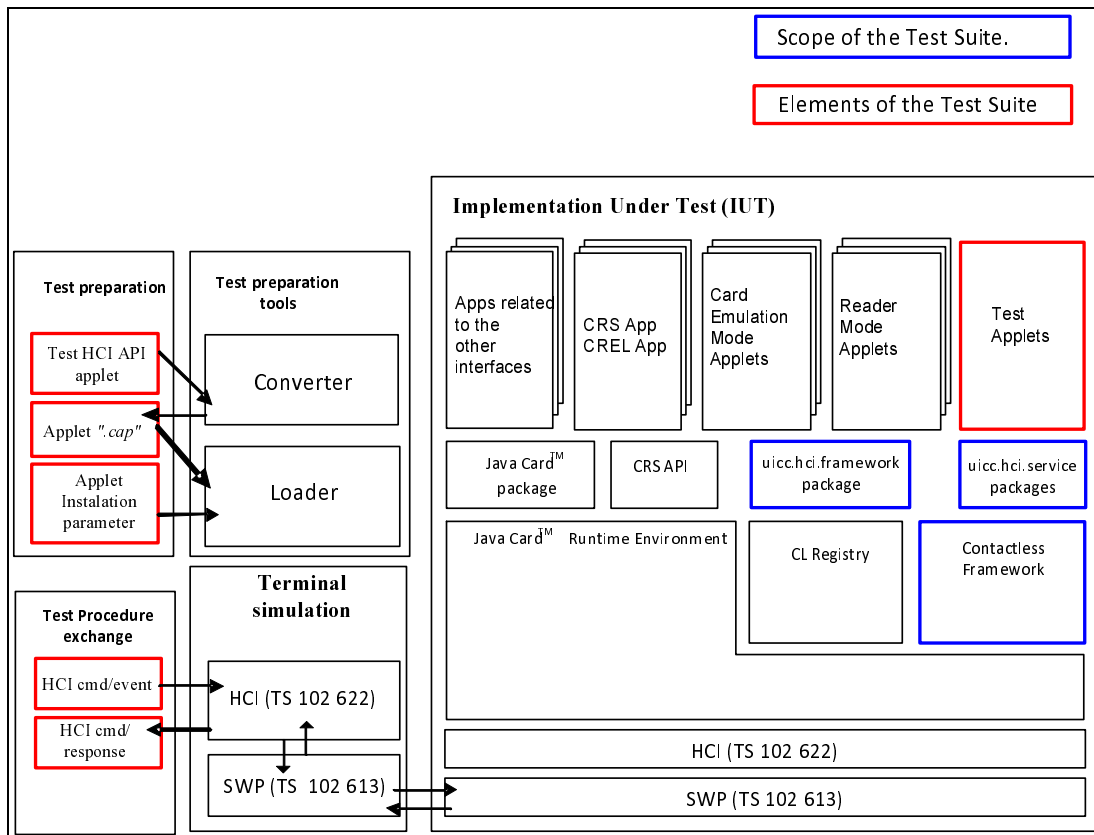


**Figure 5.1**

## 5.2 Tests format

## 5.2.1 Test area reference

Each test area is referenced as follows:

For HCI Framework and HCI services Testing: 'Api_[package name]_[class name]_[method name]' where

- package name:
  - uicc.hci.framework: '1'.
  - uicc.hci.services: '2'.
- class name:
  - yyy: 3 letters for each class/interface.
    - See annex A for full classes/interfaces acronyms list.
- method name:
  - zzz[input parameters]:
    - See annex A for full methods name acronyms list.

### 5.2.1.1 Conformance requirements

The conformance requirements are expressed in the following way:

- Method prototype as listed in TS 102 705 [1].

- Normal execution:

  - Contains normal execution and correct parameters limit values, each referenced as a Conformance Requirement Reference Normal (CRRN).

- Parameters error:

  - Contains parameter errors and incorrect parameter limit values, each referenced as a Conformance Requirement Reference Parameter Error (CRRP).

- Context error:

  - Contains errors due to the context the method is used in, each referenced as a Conformance Requirement Reference Context Error (CRRC).

### 5.2.1.2 Test suite files

Each test suite files contains a table to indicate the correspondence between the applet names and the different test cases.

| Applet Name | Test case ID |
|---|---|
| [Test Area Reference]_[Test applet number].java | Test case |

The test applets and the related Cap Files use the following naming convention:

- Test Applet:     [Test Area Reference]_[Test applet number].java

- Cap File:         [Test Area Reference].cap

The applet numbers start from '1'.

The Cap File format is described in Java Card™ Virtual Machine Specification [13].

All files from the same test area are located in the same subfolder.

### 5.2.1.3 Initial conditions

In addition to the general precondtions defined in clause 5.3, this clause defines the initial conditions prior to the execution of each test case; i.e. for each ID.

### 5.2.1.4 Test procedure

Each test procedure contains a table to indicate the expected responses form the API and APDU as follows.

| Test Case | | | | | |
|---|---|---|---|---|---|
| Id | HCI commands | API Description | API Expectation | HCI Response | CRR |
| | Commands sent on HCI interface | Test Case detailed description | API expected behaviour | Expected behaviour at APDU/HCI level | Conformance Requirements Reference |

## 5.3 Initial conditions

The Initial Conditions are a set of general prerequisites for the UICC prior to the execution of testing. For each test procedure described in the present document, the following rules apply to the Initial Conditions:

- unless otherwise stated, before installing the applet(s) relevant to the current test procedure, all packages specific to other test procedures shall not be present.

Prior to any test the test environment shall have the UICC powered on and performed the session initialization and RF registries updates as described in TS 102 622 [3]. The test can be executed once the HCI interface is idle; i.e. no further communication is expected.

## 5.4 Package name

Java packages integrating this Test Suite shall follow this naming convention:

**uicc.hci.test.framework.[Test Area Reference]:** Java Card packages containing Test Area References for the TS 102 705 [1] uicc.hci.framework package.

**uicc.hci.test.services.cardemulation.[Test Area Reference]:** Java Card packages containing Test Area References for the TS 102 705 [1] uicc.hci.services.cardemulation package.

**uicc.hci.test.services.connectivity.[Test Area Reference]:** Java Card packages containing Test Area References for the TS 102 705 [1] uicc.hci.services.connectivity package.

**uicc.hci.test.services.readermode.[Test Area Reference]:** Java Card packages containing Test Area References for the TS 102 705 [1] uicc.hci.services.readermode package.

where the Test Area Reference is written in lower case.

EXAMPLE: The package *../uicc.hci.test.framework.[Test Area Reference]* creates the following directory structure *../uicc/hci/test/framework/[Test Area Reference]/Api_1_..._[1..n].*,* where '*Api_1_..._[1..n].*'* are the different test applets Java source files used in *[Test Area Reference]*.

## 5.5 AID coding

The AID coding for the Test Packages, Applet classes and Applets shall be as specified in TS 101 220 [4]. In addition, the following TAR and Application Provider specific data values are defined for use within the present document:

AID coding
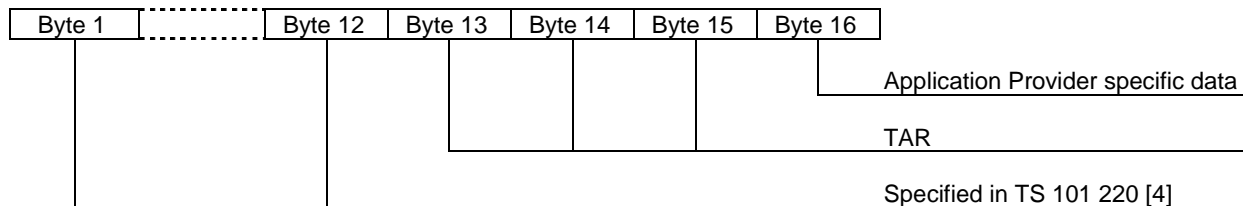


TAR coding (3 bytes / 24 bits):
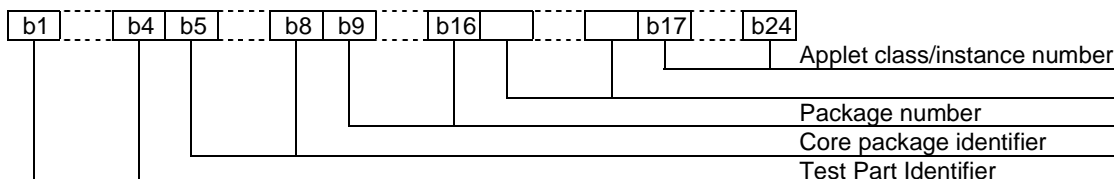
Applet instance number, Applet Class number, Package number:

- For package AID, package number shall start from 0 and class and instance numbers shall be 0.

- For class AID, package number is the number of the class package, class number shall start from 1 and instance shall be 0.

- For instance AID, package and class number are the number of class and package of which instance belongs, and instance number shall start from 1.

Test Part and Core Package Identifier

- 0000 0000 reserved (as TAR= '00.00.00' is reserved for Issuer Security Domain).

- 0010 0001 uicc.hci.test.framework.

- 0010 0100 uicc.hci.test.servces.

- 0010 0101 uicc.hci.test.services.cardemulation.

- 0010 0100 uicc.hci.test.servces.connectivity.

- 0010 0100 uicc.hci.test.servces.readermode.

Application Provider specific data (1 byte):

- '00' for Package.

- '01' for Applet class.

- '02' for Applet Instance.

EXAMPLE:      Annex B.

# 5.6      Test equipment

These clauses recommend a minimum specification for each of the items of test equipment referenced in the tests.

## 5.6.1      Test tool

This test tool shall meet the following requirements:

- be able to send and receive commands  using the underlying HCI resources (e.g. gates and pipes) defined by the HCI protocol as specified in 102 622 [3];

- be able to send and receive the commands correctly on the lower layer; i.e TS 102 613 [14];

- the result of I/O commands shall be presented at the application layer;

- be able to provide results of the tests;

- shall send and/or compare all data specified in test file.

## 5.6.2      Java Software Development Kit

Java Card™ software development kit (SDK) version supported by Java Card 3.0.1 specifications ([11], [12], [13]) is 1.5.

# 6 Test cases

## 6.1 Package uicc.hci.framework

### 6.1.1 Class HCIDevice

#### 6.1.1.1 Method getHCIService

Test Area Reference: Api_1_Hdv_Gsr.

##### 6.1.1.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
public static HCIService getHCIService(short serviceID)
                        throws HCIException,
                               javacard.framework.SystemException
```

###### 6.1.1.1.1.1 Normal execution

- CRRN1: used to retrieve instances that implement one of HCIService subinterfaces defined in the present document.

- CRRN2: returns reference to the permanent JCRE entry point object of the HCIService.

- CRRN3: returns null if not yet registered.

###### 6.1.1.1.1.2 Parameter errors

- CRRP1: javacard.framework.SystemException is thrown with the reason code ILLEGAL_VALUE if the serviceID does not match with the predefined values.

###### 6.1.1.1.1.3 Context errors

- CRRC1: HCIException thrown with reason HCI_ACCESS_NOT_GRANTED if access to the indicated service is not permitted for the Applet.

- CRRC2: HCIException is thrown with reason HCI_SERVICE_NOT_AVAILABLE if the requested service type is not available.

##### 6.1.1.1.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hdv_Gsr_1.java | 1 |
| Api_1_Hdv_Gsr_2.java | 2 |
| Api_1_Hdv_Gsr_1.java | 3 |
| Api_1_Hdv_Gsr_1.java | 4 |
| Api_1_Hdv_Gsr_1.java | 5 |

##### 6.1.1.1.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

### 6.1.1.1.4 Test procedure

<table>
<tr><th colspan="6">Test case</th></tr>
<tr><th>ID</th><th>HCI Command</th><th>API Description</th><th>API Expectation</th><th>HCI Response</th><th>CRR</th></tr>
<tr><td>1</td><td colspan="5" align="center">Select supported and registered service</td></tr>
<tr><td></td><td>1 - EVT_SEND_DATA (INS = '01')</td><td>getHCIService() serviceID = CARD_EMULATION_SERVICE_ID</td><td>No exception shall be thrown</td><td>EVT_SEND_DATA (SW - '90 00')</td><td>N1, N2</td></tr>
<tr><td></td><td>2 - EVT_SEND_DATA (INS = '02')</td><td>getHCIService() serviceID = CONNECTIVITY_SERVICE_ID</td><td>No exception shall be thrown</td><td>EVT_SEND_DATA (SW - '90 00')</td><td>N1, N2</td></tr>
<tr><td></td><td>3 - Send command on ISO interface; the initial conditions in clause 6.1.1.1.3 not applicable here - select applet- INS= '03'</td><td>getHCIService() serviceID = READER_SERVICE_ID</td><td>No exception shall be thrown</td><td>SW - '90 00'</td><td>N1, N2</td></tr>
<tr><td>2</td><td colspan="5" align="center">Applet not registered</td></tr>
<tr><td></td><td>EVT_SEND_DATA (INS = '01')</td><td>Applet.register() has not yet been invoked.

getHCIService() serviceID = CARD_EMULATION_SERVICE_ID</td><td>Return: Null</td><td>EVT_SEND_DATA (SW - '90 00')</td><td>N3</td></tr>
<tr><td>3</td><td colspan="5" align="center">Select not availabile service</td></tr>
<tr><td></td><td>1 - Send command on ISO interface; the initial conditions in clause 6.1.1.1.3 not applicable here - select applet- (INS = '01')</td><td>getHCIService() serviceID = CardEmulationService</td><td>Shall throw uicc.hci.framework.HCIException with error code HCI_SERVICE_NOT_AVAILABLE</td><td>SW - '90 01'</td><td>C2</td></tr>
<tr><td></td><td>2 - EVT_SEND_DATA (INS='02')</td><td>getHCIService() serviceID = ConnectivityService</td><td>Shall throw uicc.hci.framework.HCIException with error code HCI_SERVICE_NOT_AVAILABLE</td><td>EVT_SEND_DATA (SW - '90 01')</td><td>C2</td></tr>
<tr><td></td><td>3 - Send command on ISO interface; the initial conditions in clause 6.1.1.1.3 not applicable here - select applet- (INS = '03')</td><td>getHCIService() serviceID = ReaderService</td><td>Shall throw uicc.hci.framework.HCIException with error code HCI_SERVICE_NOT_AVAILABLE</td><td>SW - '90 01'</td><td>C2</td></tr>
<tr><td>4</td><td colspan="5" align="center">Select undefined service</td></tr>
<tr><td></td><td>EVT_SEND_DATA (INS = '04')</td><td>getHCIService() serviceID = -1</td><td>Shall throw javacard.framework.SystemException with error code ILLEGAL_VALUE</td><td>EVT_SEND_DATA (SW - '90 00')</td><td>P1</td></tr>
</table>

| Test case | | | | | |
|-----------|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 5 | Access not granted | | | | |
|  | 1 - Send command on ISO interface; the initial conditions in clause 6.1.1.1.3 not applicable here - select applet- INS = '01' | `getHCIService() seviceID = CardEmulationService` | Shall throw uicc.hci.framework.HCIException with error code HCI_ACCESS_NOT_GRANTED | SW - '90 02' | C1 |
|  | 2 - Send command on ISO interface; the initial conditions in clause 6.1.1.1.3 not applicable here - select applet-INS='03' | `getHCIService() serviceID = ReaderSevice` | Shall throw uicc.hci.framework.HCIException with error code HCI_ACCESS_NOT_GRANTED | SW - '90 02' | C1 |

## 6.1.1.2 Method getPowerMode

Test Area Reference: Api_1_Hdv_Gpm.

### 6.1.1.2.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
public static byte getPowerMode()
```

#### 6.1.1.2.1.1 Normal execution

- CRRN1: returns the current power mode of the UICC as defined in TS 102 613 [14].

- CRRN2: returns the current power mode or -1 if the power mode cannot be retrieved.

- CRRN3: Applets communicating through the process() method shall also be able to use the API services defined in TS 102 705 [1] which do not require a CardEmulationListener registration (e.g. requesting the power mode or connectivity service).

#### 6.1.1.2.1.2 Parameter errors

- None.

#### 6.1.1.2.1.3 Context errors

- None.

### 6.1.1.2.2 Test suite files

| Applet Name | Test case ID |
|-------------|--------------|
| Api_1_Hdv_Gpm_1.java | 1 |
| Api_1_Hdv_Gpm_1.java | 2 |
| Api_1_Hdv_Gpm_1.java | 3 |

### 6.1.1.2.3 Initial conditions

- The UICC is not powered up.

6.1.1.2.4 Test procedure

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | | **Test case** | | |
| | | | **Verify power mode** | | |
| 1 | - Activate the UICC in full power mode.<br>- EVT_FIELD_ON<br>- EVT_CARD_ACTIVATED<br>- EVT_SEND_DATA (select applet)<br>- EVT_SEND_DATA(INS='05') | `getPowerMode()` | return = FULL_POWER_MODE | EVT_SEND_DATA (SW - '90 03') | N1, N3 |
| 2 | | | **Verify power mode** | | |
| | Activate the UICC in low power mode.<br>- EVT_FIELD_ON<br>- EVT_CARD_ACTIVATED<br>- EVT_SEND_DATA (select applet)<br>- EVT_SEND_DATA(INS='05') | `getPowerMode()` | return = LOW_POWER_MODE | EVT_SEND_DATA (SW - '90 04') | N1, N3 |
| 3 | | | **SWP interface is not activated** | | |
| | sending command on ISO interface:<br>- select applet- INS='05' | `getPowerMode()` | Return '-1' | SW - '90 05' | N2 |

6.1.1.3 Method isHCIServiceAvailable

Test Area Reference: Api_1_Hdv_Isa.

6.1.1.3.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
public static byte isHCIServiceAvailable(short serviceID)
```

6.1.1.3.1.1 Normal execution

- CRRN1: this method is used to retrieve information about the availability of a HCIService more related to user interface.

- CRRN2: this method returns (byte)0x00 if the service is available and can be used, otherwise bit values set to:

  - bit 0 set: interface not supported by terminal;

  - bit 1 set: service not supported by terminal;

  - bit 2 set: access not allowed for Applet;

  - bit 3 set: HCI interface currently disabled in UICC.

6.1.1.3.1.2 Parameter errors

- None.

6.1.1.3.1.3 Context errors

- None.

#### 6.1.1.3.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hdv_Isa_1.java | 1 |
| Api_1_Hdv_Isa_1.java | 2 |
| Api_1_Hdv_Isa_1.java | 3 |
| Api_1_Hdv_Isa_1.java | 4 |
| Api_1_Hdv_Isa_2.java | 5 |

#### 6.1.1.3.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

#### 6.1.1.3.4 Test procedure

| | Test Case | | | | |
|---|---|---|---|---|---|
| ID | HCI/APDU Command | API Description | API Expectation | HCI/APDU Response | CRR |
| 1 | Retrieve information of an available service | | | | |
| | 1 - EVT_SEND_DATA (INS = '06') | `isHCIServiceAvailable()` serviceID = `CARD_EMULATION_SERVICE_ID` | 0x00 | EVT_SEND_DATA (SW - '90 00', data byte set to '00') | N1, N2 |
| | 2 - EVT_SEND_DATA (INS = '07') | `isHCIServiceAvailable()` serviceID = `CONNECTIVITY_SERVICE_ID` | 0x00 | EVT_SEND_DATA (SW - '90 00', data byte set to '00') | N1, N2 |
| | 3 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.3.1.3 not applicable here - send APDU INS='08' | `isHCIServiceAvailable()` serviceID = `READER_SERVICE_ID` | 0x00 | SW - '90 00', data byte set to '00' | N1, N2 |
| 2 | Interface not supported by terminal | | | | |
| | Precondition: SWP interface not supported; the initial conditions in clause 6.1.1.3.1.3 not applicable here, and C6 should be connected to GND:<br><br>Sending command on ISO interface:<br>- select applet<br>- send APDU (INS = '06') | `isHCIServiceAvailable()` | bit 0 set | - SW - '90 00'<br>- SW - '90 00', bit 0 set in the data byte | N2 |

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI/APDU Command | API Description | API Expectation | HCI/APDU Response | CRR |
| 3 | Service not supported by terminal | | | | |
| | 1 - Precondition: disable Connectivity service support in terminal; i.e. connectivity gate is not available in terminal pipe creation is not possible and the terminal shall indicate in TERMINAL PROFILE HCI Connectivity is not supported.<br>- select applet<br>- EVT_SEND_DATA (INS = '07') | `isHCIServiceAvailable()`<br>`serviceID =`<br>`CONNECTIVITY_SERVICE_ID` | bit 1 set | EVT_SEND_DATA (SW - '90 00', bit 1 set in the data byte) | N2 |
| | 2 - Precondition: disable Reader service support in terminal; i.e. reader RF gates are not available in terminal<br>Send command on ISO interface to select applet; the initial conditions in clause 6.1.1.1.3 not applicable here<br>- select applet<br>- send APDU (INS='08') | `isHCIServiceAvailable()`<br>`serviceID =`<br>`READER_SERVICE_ID` | bit 1 set | SW - '90 00', bit 1 set in the data byte | N2 |
| 4 | Access not allowed for Applet | | | | |
| | 1 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.1.1.3 not applicable here<br>- select applet<br>- send APDU (INS = '06') | `isHCIServiceAvailable()`<br>`serviceID =`<br>`CARD_EMULATION_SERVICE_ID` | bit 2 set | SW - '90 00', bit 2 set in the data byte | N2 |
| | 2 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.1.1.3 not applicable here<br>- select applet<br>- send APDU (INS = '08') | `isHCIServiceAvailable()`<br>`serviceID =`<br>`READER_SERVICE_ID` | bit 2 set | SW - '90 00', bit 2 set in the data byte | N2 |
| 5 | HCI interface currently disabled in UICC | | | | |
| | 1 - Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]. Send on ISO interface the following commands:<br>- Send APDU to select the applet.<br>- Send APDU (INS = '06') | `isHCIServiceAvailable()` | bit 3 set | SW - '90 00', bit 3 set in the data byte | N2 |

| ID | HCI/APDU Command | API Description | API Expectation | HCI/APDU Response | CRR |
|----|------------------|----------------|-----------------|-------------------|-----|
| Test Case | | | | | |
| | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands: - Send APDU to select the applet. - Send APDU (INS = '06') - Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface()` `API method of  Global` `Platform Amendment C [10]` `is used to disable HCI` `interface` `isHCIServiceAvailable()` `setCommunicationInterface()` `API method of  Global` `Platform Amendment C [10]` `is used to enable again HCI` `interface` | bit 3 set | SW - '90 04', bit 3 set in the data byte | N2 |

## 6.1.2     Interface HCIService

### 6.1.2.1      Method register

Test Area Reference: Api_1_Hsr_Reg.

#### 6.1.2.1.1      Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void register(HCIListener listener)
          throws HCIException
```

##### 6.1.2.1.1.1      Normal execution

- CRRN1: registers a Listener object to the Service instance.

- CRRN2: a certain listener type can only be registered to the same service type.

- CRRN3: The Registration of Listener Interfaces and activation of events shall be persistent.

##### 6.1.2.1.1.2      Parameter errors

- CRRP1: throws HCIException in case the listener Object registered to the service is not implementing the corresponding interface of the HCIService instance with error code:

    - HCIException.HCI_WRONG_LISTENER_TYPE.

##### 6.1.2.1.1.3      Context errors

- CRRC1: throws HCIException with error code HCI_LISTENER_ALREADY_REGISTERED in case a listener Object of the same type has already been registered.

## 6.1.2.1.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hsr_Reg_1.java | 1-1 |
| Api_1_Hsr_Reg_3.java | 1-2 |
| Api_1_Hsr_Reg_5.java | 1-3 |
| Api_1_Hsr_Reg_1.java | 2 |
| Api_1_Hsr_Reg_2.java | 3-1 |
| Api_1_Hsr_Reg_4.java | 3-2 |
| Api_1_Hsr_Reg_6.java | 3-3 |
| Api_1_Hsr_Reg_1.java | 4 |

## 6.1.2.1.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

## 6.1.2.1.4 Test procedure

| ID | HCI Command | Test case | | | |
|---|---|---|---|---|---|
| | | Description | API Expectation | HCI Response | CRR |
| 1 | | **Register Listener to a service** | | | |
| | 1 - EVT_SEND_DATA (INS = '09') | `register() Service = CardEmulationService Listener = CardEmulationListener` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1 |
| | 2 - EVT_SEND_DATA (INS = '09') | `register() Service = ConnectivityService Listener = ConnectivityListener` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1 |
| | 3 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.1.3 not applicable here - send APDU (INS='09') | `register() Service = ReaderService Listener = ReaderListener` | No exception shall be thrown | SW- '90 00' | N1 |
| 2 | | **Register wrong listener type** | | | |
| | EVT_SEND_DATA (INS = '0A') | `register() Service = ConnectivityService Listener = CardEmulationListener` | Shall throw uicc.hci.framework.HCIException with error code HCI_WRONG_LISTENER_TYPE | EVT_SEND_DATA (SW- '90 00') | N2, P1 |
| 3 | | **Listener already registered** | | | |
| | 1 - EVT_SEND_DATA (INS = '0B') | `register() Service = CardEmulationService Listener = CardEmulationListener` | Shall throw uicc.hci.framework.HCIException with error code HCI_LISTENER_ALREADY_REGISTERED | EVT_SEND_DATA (SW- '90 00') | C1 |
| | 2 - EVT_SEND_DATA (INS = '0B') | `register() Service = ConnectivityService Listener = ConnectivityListener` | Shall throw uicc.hci.framework.HCIException with error code HCI_LISTENER_ALREADY_REGISTERED | EVT_SEND_DATA (SW- '90 00') | C1 |

| | | Test case | | | |
|---|---|---|---|---|---|
| **ID** | **HCI Command** | **Description** | **API Expectation** | **HCI Response** | **CRR** |
| | 3 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.1.3 not applicable here<br>- send APDU (INS='0B') | `register()`<br>`Service = ReaderService`<br>`Listener = ReaderListener` | Shall throw uicc.hci.framework.HCIException with error code HCI_LISTENER_ALREADY_REGISTERED | SW- '90 00' | C1 |
| 4 | | Persistent Listener Registration | | | |
| | - Send EVT_SEND_DATA (INS = '09')<br>- EVT_FIELD_OFF<br>- EVT_FIELD_ON<br>- EVT_CARD_ACTIVATED<br>- Select the applet<br>- Send EVT_SEND_DATA (INS = '09') | `register()`<br>`Service = CardEmulationService`<br>`Listener = CardEmulationListener` | Shall throw uicc.hci.framework.HCIException with error code HCI_LISTENER_ALREADY_REGISTERED | EVT_SEND_DATA (SW- '6F 01') | N3 |

## 6.1.2.2 Method deregister

Test Area Reference: Api_1_Hsr_Drg.

### 6.1.2.2.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void deregister(HCIListener listener)
```

#### 6.1.2.2.1.1 Normal execution

- CRRN1: deregisters a Listener object from the Service instance.

- CRRN2: Calling deregister with an argument that does not identify a currently registered HCIListener has no effect.

- CRRN3: Applets communicating through the process() method shall also be able to use the API services defined in TS 102 705 [1] which do not require a CardEmulationListener registration (e.g. requesting the power mode or connectivity service).

#### 6.1.2.2.1.2 Parameter errors

- None.

#### 6.1.2.2.1.3 Context errors

- None.

### 6.1.2.2.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hsr_Drg_1.java | 1 |
| Api_1_Hsr_Drg_2.java | 2 |

### 6.1.2.2.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

### 6.1.2.2.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | Deregister Listener to a Service - CardEmulation | | | | |
| | 1 - EVT_SEND_DATA (INS = '01') | `register()`<br>`Service =`<br>`CardEmulationService`<br>`Listener =`<br>`CardEmulationListener`<br><br>`deregister()`<br>`Service =`<br>`CardEmulationService`<br>`Listener =`<br>`CardEmulationListener` | No exception shall be thrown | EVT_SEND_DATA (SW-'90 00') | N1, N3 |
| | 2 - EVT_SEND_DATA (INS = '02') | `deregister()`<br>`Service =`<br>`ConnectivityService`<br>`Listener =`<br>`CardEmulationListener` | No exception shall be thrown | EVT_SEND_DATA (SW-'90 00') | N2, |
| | 3 - EVT_SEND_DATA (INS = '03') | `deregister()`<br>`Service =`<br>`CardEmulationService`<br>`Listener =`<br>`CardEmulationListener` | No exception shall be thrown | EVT_SEND_DATA (SW-'90 00') | N2, N3 |
| 2 | Deregister Listener to a Service - Connectivity | | | | |
| | 1 - EVT_SEND_DATA (INS = '01') | `register()`<br>`Service =`<br>`ConnectivityService`<br>`Listener =`<br>`ConnectivityListener`<br><br>`deregister()`<br>`Service =`<br>`ConnectivityService`<br>`Listener =`<br>`ConnectivityListener` | No exception shall be thrown | EVT_SEND_DATA (SW-'90 00') | N1 |
| | 2 - EVT_SEND_DATA (INS = '02') | `deregister()`<br>`Service =`<br>`CardEmulationService`<br>`Listener =`<br>`ConnectivityListener` | No exception shall be thrown | EVT_SEND_DATA (SW-'90 00') | N2 |
| | 3 - EVT_SEND_DATA (INS = '03') | `deregister()`<br>`Service =`<br>`ConnectivityService`<br>`Listener =`<br>`ConnectivityListener` | No exception shall be thrown | EVT_SEND_DATA (SW-'90 00') | N2 |

## 6.1.2.3 Method activateEvent

Test Area Reference: Api_1_Hsr_Ace.

### 6.1.2.3.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void activateEvent(byte event)
                throws HCIException
```

#### 6.1.2.3.1.1 Normal execution

- CRRN1: This method is used to activate an event.

- CRRN2: for all service interfaces HCIListener.EVENT_HCI_TRANSMISSION_FAILED is sent to notify the applet when the UICC failed to transmit a message sent by CLF.

- CRRN3: for all service interfaces HCIListener.EVENT_HCI_RECEPTIONS_FAILED is sent to notify the applet when the UICC failed to receive a message sent by CLF.

- CRRN4: Possible values for event for Card emulation service are:

    - EVENT_GET_PARAMETER_RESPONSE.

    - EVENT_ON_SEND_DATA.

    - EVENT_FIELD_OFF.

- CRRN5: Possible values for event for Reader service are:

    - EVENT_GET_PARAMETER_RESPONSE.

    - EVENT_WRITE_EXCHANGE_DATA_RESPONSE.

    - EVENT_TARGET_DISCOVERED.

- CRRN6: Possible value for event for Connectivity service is EVENT_STAND_BY.

- CRRN7: The Registration of Listener Interfaces and activation of events shall be persistent.

- CRRN8: When the contactless interface is disabled (cf. "state of contactless functionality" in TS 102 223 [7] and setCommunicationInterface() API method of "GlobalPlatform Amendment C" [10]), the Contactless Framework shall throw an HCIException with reason code HCI_CURRENTLY_DISABLED.

- CRRN9: The Contactless Framework shall raise an EVENT_FIELD_OFF if this event is activated for this Applet instance, before the invocation of the deselect() method of the Applet instance.

- CRRN10: After the EVENT_FIELD_OFF event the Applet instance shall not be triggered by any other event until the Applet instance is selected again.

- CRRN11: If the current application protocol is APDU based the HCI framework shall handle an application session termination according to TS 102 221 [5] independent of the interface used for message exchange.

- CRRN12: Applet selection and deselection shall be performed by the Contactless Framework according to the rules defined in the "Java Card™ Runtime Environment Specification, 3.0 Classic Edition" [11] and in "GlobalPlatform Amendment C" [10].

- CRRN13: The select() method of the Applet instance shall always be invoked for an Applet selection according to the rules given in "Java Card™ Runtime Environment Specification, 3.0 Classic Edition" [11].

- CRRN14: If the HCI event EVT_FIELD_OFF or EVT_CARD_DEACTIVATED defined by the HCI protocol as specified in [4] is received by the Contactless Framework and the UICC is still powered, the Applet instance shall be deselected according to "GlobalPlatform Amendment C" [10].

#### 6.1.2.3.1.2 Parameter errors

- CRRP1: HCIException with reason code HCI_WRONG_EVENT_TYPE if a wrong event was activated for this service instance.

- CRRP2: HCIException with reason code HCI_CURRENTLY_DISABLED if the interface to the contactless frontend (CLF) is currently disabled and the event is ReaderListener.EVENT_TARGET_DISCOVERED.

#### 6.1.2.3.1.3 Context errors

- None.

6.1.2.3.2        Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hsr_Ace_1.java | 1 |
| Api_1_Hsr_Ace_3.java | 2 |
| Api_1_Hsr_Ace_2.java | 3 |
| Api_1_Hsr_Ace_1.java | 4 |
| Api_1_Hsr_Ace_7.java | 5 |
| Api_1_Hsr_Ace_4.java | 6 |
| Api_1_Hsr_Ace_5.java | 7 |
| Api_1_Hsr_Ace_6.java | 8 |
| Api_1_Hsr_Ace_8.java | 9 |
| Api_1_Hsr_Ace_6.java | 10 |

6.1.2.3.3        Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

6.1.2.3.4        Test procedure

| Test Case |
|---|---|---|---|---|---|
| ID | HCI Command | Description | API Expectation | HCI Response | CRR |
| 1 | | Event activation - CardEmulationService |
| | 1 - EVT_SEND_DATA(INS = '10') | HCIListener = CardEmulationListener HCIService = CardEmulationService<br><br>activateEvent() event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| | 2 - EVT_SEND_DATA(INS = '11') | HCIListener = CardEmulationListener HCIService = CardEmulationService<br><br>activateEvent() event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N3 |
| | 3 - EVT_SEND_DATA(INS = '12') | HCIListener = CardEmulationListener HCIService = CardEmulationService<br><br>activateEvent() event = CardEmulationListener.EVENT_GET_PARAMETER_RESPONSE | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N4 |
| | 4 -<br>- EVT_SEND_DATA(INS = '14') | HCIListener = CardEmulationListener HCIService = CardEmulationService activateEvent() event = CardEmulationListener.EVENT_ON_SEND_DATA | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N4 |

| ID | HCI Command | Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | **Test Case** | | | |
| 2 | | **Event activation - ReaderService** | | | |
| | 1 - EVT_SEND_DATA (INS = '11') | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown. | SW - '90 00' | N1, N3 |
| | 2- Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.3.3 not applicable here - Send APDU INS='11' | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event = EVENT_TARGET_DISCOVERED` | No exception shall be thrown. | SW - '90 00' | N1, N5 |
| | 3 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.3.3 not applicable here - Send APDU INS='12' | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event = EVENT_WRITE_EXCHANGE_DATA_RESPONSE` | No exception shall be thrown. | SW - '90 00' | N1, N5 |
| | 4 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.3.3 not applicable here - Send APDU INS='13' | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown. | SW - '90 00' | N1, N2. |
| | 5 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.3.3 not applicable here - Send APDU INS='14' | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown. | SW - '90 00' | N1, N5 |
| 3 | | **Event activation - ConnectivityListener** | | | |
| | 1 - EVT_SEND_DATA(INS = '10') | `HCIListener = ConnectivityListener`<br>`HCIService = ConnectivityService`<br><br>`activateEvent()`<br>`event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown. | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| | 2 - EVT_SEND_DATA(INS = '11') | `HCIListener = ConnectivityListener`<br>`HCIService = ConnectivityService`<br><br>`activateEvent()`<br>`event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown. | EVT_SEND_DATA (SW- '90 00') | N1, N3 |
| | 3 - EVT_SEND_DATA(INS = '12') | `HCIListener = ConnectivityListener`<br>`HCIService = ConnectivityService`<br><br>`activateEvent()`<br>`event = EVENT_STAND_BY` | No exception shall be thrown. | EVT_SEND_DATA (SW- '90 00') | N1, N6 |
| 4 | | **Wrong event type** | | | |
| | EVT_SEND_DATA (INS = '16') | `HCIListener = CardEmulationListener`<br>`HCIService = CardEmulationService`<br><br>`activateEvent()`<br>`event value = 0x02` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P1 |

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | Description | API Expectation | HCI Response | CRR |
| 5 | HCI is disabled | | | | |
|  | 1- Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]. Send on ISO interface the following commands<br>- Send APDU to select the applet.<br>- Send APDU (INS = '01') on ISO interface | `HCIService = ReaderService activateEvent() event = ReaderListener.EVENT_TARGET_D ISCOVERED` | HCIException with reason code HCI_CURRENTLY _DISABLED shall be thrown | SW- '90 00' | P2, N8 |
|  | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C. Send on ISO interface send the following commands:<br>- Send APDU to select the applet.<br>- Send APDU (INS = '01') on ISO interface<br>- Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface() API method of "GlobalPlatform Amendment C" [10] used to disable HCI interface HCIService = ReaderService activateEvent() event = ReaderListener.EVENT_TARGET_D ISCOVERED` <br><br>`setCommunicationInterface() API method of  Global Platform Amendment C [10] is used to enable again HCI interface` | HCIException with reason code HCI_CURRENTLY _DISABLED shall be thrown | SW- '90 00' | P2, N8 |
| 6 | Persistent Event Activation | | | | |
|  | - Send EVT_SEND_DATA (INS = '01')<br>- EVT_FIELD_OFF<br>- Power off<br>- Power on<br>- EVT_FIELD_ON<br>- EVT_CARD_ACTIVATED<br>- Select the applet<br>- Send EVT_SEND_DATA (INS = '02') | `Service = CardEmulationService Listener = CardEmulationListener` <br><br>`activateEvent(EVENT_FIELD_OFF )` | No exception shall be thrown. getEventNotificatio nStatus() = true | - EVT_SEND_DATA (SW- '90 00')<br>- EVT_SEND_DATA (SW- '90 00') | N7 |
| 7 | Event Field Off before deselect | | | | |
|  | - EVT_FIELD_OFF<br>- EVT_FIELD_ON<br>- EVT_CARD_ACTIVATED<br>- Select the applet<br>- Send EVT_SEND_DATA (INS = '01') | `Service = CardEmulationService Listener = CardEmulationListener activateEvent(EVENT_ON_SEND_D ATA) during the installation onCallback()` <br><br>`activateEvent() event = EVENT_FIELD_OFF` <br><br>`deselect()` | EVENT_FIELD_OF F raised before deselect() | EVT_SEND_DATA (SW- '90 00') | N9, N11, N12, N14 |
| 8 | No triggering after Event Field Off | | | | |
|  | EVT_FIELD_OFF<br>- Send EVT_SEND_DATA (INS = '01') | `Service = CardEmulationService Listener = CardEmulationListener activateEvent(EVENT_ON_SEND_D ATA) during the installation onCallback()` <br><br>`activateEvent() event = EVENT_FIELD_OFF` | EVENT_ON_SEN D_DATA shall not be raised | No response, or EVT_SEND_DATA with any response except: (SW - '90 00') | N1, N4, N10, N11 |
| 9 | Check for Selection | | | | |
|  | Send EVT_SEND_DATA (INS = '01') | `Service = CardEmulationService Listener = CardEmulationListener` | Check for invocation of select() | EVT_SEND_DATA (SW - '90 00') | N12, N13 |

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | Description | API Expectation | HCI Response | CRR |
| 10 | No triggering after Event Card Deactivate | | | | |
| | EVT_CARD_DEACTIVATE - Send EVT_SEND_DATA (INS = '01') | Service = CardEmulationService Listener = CardEmulationListener activateEvent(EVENT_ON_SEND_DATA) during the installation onCallback()<br><br>activateEvent()<br>event = EVENT_FIELD_OFF | EVT_SEND_DATA shall not be raised | No response or EVT_SEND_DATA withany response except: (SW - '90 00' or '6D 00') | N12, N14 |

## 6.1.2.4 Method deactivateEvent

Test Area Reference: Api_1_Hsr_Dae.

### 6.1.2.4.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void deactivateEvent(byte event)
                  throws HCIException
```

#### 6.1.2.4.1.1 Normal execution

- CRRN1: deactivates an event from the list of activated events.

- CRRN2: for all service interfaces HCIListenr.EVENT_HCI_TRANSMISSION_FAILED is sent to notify the applet when the UICC failed to transmit a message sent by CLF.

- CRRN3: for all service interfaces HCIListenr HCIListener.EVENT_HCI_RECEPTIONS_FAILED is sent to notify the applet when the UICC failed to receive a message sent by CLF.

- CRRN4: Possible values for parameter event for Card emulation service are:

  - EVENT_GET_PARAMETER_RESPONSE.

  - EVENT_ON_SEND_DATA.

  - EVENT_FIELD_OFF.

- CRRN5: Possible values for parameter event for Reader service are:

  - EVENT_GET_PARAMETER_RESPONSE.

  - EVENT_WRITE_EXCHANGE_DATA_RESPONSE.

  - EVENT_TARGET_DISCOVERED.

- CRRN6: Possible values for Connectivity service is EVENT_STANDBY.

#### 6.1.2.4.1.2 Parameter errors

- CRRP1: HCIException with reason code HCIException.HCI_WRONG_EVENT_TYPE in case a wrong event was deactivated for this service instance.

- CRRP2: HCIException with reason code.HCI_WRONG_EVENT_TYPE in case the event wasn't activated before.

#### 6.1.2.4.1.3 Context errors

- None.

6.1.2.4.2        Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hsr_Dae_1.java | 1-1 |
| Api_1_Hsr_Dae_1.java | 1-2 |
| Api_1_Hsr_Dae_2.java | 1-3 |
| Api_1_Hsr_Dae_2.java | 1-4 |
| Api_1_Hsr_Dae_5.java | 2 |
| Api_1_Hsr_Dae_4.java | 3 |
| Api_1_Hsr_Dae_1.java | 4 |
| Api_1_Hsr_Dae_3.java | 5 |
| Api_1_Hsr_Dae_6.java | 6 |
| Api_1_Hsr_Dae_7.java | 7 |

6.1.2.4.3        Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

6.1.2.4.4        Test procedure

| | | Test case | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | | Event deactivation - CardEmulationService | | | |
| | 1 - EVT_SEND_DATA(INS='10') | `HCIService = CardEmulationService Event has been successfully activated` <br><br> `deactivateEvent() event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| | 2 - EVT_SEND_DATA(INS='11') | `HCIService = CardEmulationService Event has been successfully activated` <br><br> `deactivateEvent() event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N3 |
| | 3 - EVT_SEND_DATA(INS='12') | `HCIService = CardEmulationService Event has been successfully activated` <br><br> `deactivateEvent() event = CardEmulationListener.EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N4 |
| | 4 - EVT_SEND_DATA(INS='14') | `HCIService = CardEmulationService Event has been successfully activated` <br><br> `deactivateEvent() event = CardEmulationListener.EVENT_ON_SEND_DATA` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N4 |

| | Test case | | | | |
|---|---|---|---|---|---|
| **ID** | **HCI Command** | **API Description** | **API Expectation** | **HCI Response** | **CRR** |
| 2 | Event deactivation - ReaderService | | | | |
| | 1- Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.3.3 not applicable here - Send APDU (INS='09') | `HCIService = ReaderService`<br><br>`deactivateEvent()`<br>`event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown | SW - '90 00' | N1, N2 |
| | 2 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.4.3 not applicable here - Send APDU (INS='10') | `HCIListener = ReaderListener`<br>`HCIService = ReaderService`<br>`Event has been successfully activated`<br><br>`deactivateEvent()`<br>`event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown | SW - '90 00' | N1, N3 |
| | 3 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.4.3 not applicable here - Send APDU (INS='11') | `HCIListener = ReaderListener`<br>`HCIService = ReaderService`<br>`Event has been successfully activated`<br><br>`deactivateEvent()`<br>`event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | SW - '90 00' | N1, N5 |
| | 4 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.4.3 not applicable here - Send APDU (INS='12') | `HCIListener = ReaderListener`<br>`HCIService = ReaderService`<br><br>`deactivateEvent()`<br>`event = EVENT_WRITE_EXCHANGE_DATA_RESPONSE` | No exception shall be thrown | SW - '90 00' | N1, N5 |
| | 5- Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.4.3 not applicable here - Send APDU (INS='13') | `HCIListener = ReaderListener`<br>`HCIService = ReaderServiceEvent has been successfully activated`<br><br>`deactivateEvent()`<br>`event = EVENT_TARGET_DISCOVERED` | No exception shall be thrown | SW - '90 00' | N1, N5 |
| 3 | Event deactivation - ConnectivityService | | | | |
| | 1 - EVT_SEND_DATA(INS='10') | `HCIListener = ConnectivityListener`<br>`HCIService = ConnectivityService`<br>`Event has been successfully activated`<br><br>`deactivateEvent()`<br>`event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| | 2 - EVT_SEND_DATA(INS='11') | `HCIListener = ConnectivityListener`<br>`HCIService = ConnectivityService`<br>`Event has been successfully activated`<br><br>`deactivateEvent()`<br>`event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N3 |

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|----|-------------|-----------------|-----------------|--------------|-----|
| | | **Test case** | | | |
| | 3 - EVT_SEND_DATA(INS='12') | `HCIListener = ConnectivityListener HCIService = ConnectivityService Event has been successfully activated`<br><br>`deactivateEvent() event = EVENT_STAND_BY` | No exception shall be thrown | EVT_SEND_DATA (SW- '90 00') | N1, N6 |
| 4 | | **Wrong event type** | | | |
| | EVT_SEND_DATA (INS = '16') | `HCIService = CardEmulationService Event has been successfully activated`<br><br>`deactivateEvent() event value = 02` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P1 |
| 5 | | **Deactivate an non-active event - CardEmulationService** | | | |
| | 1 - EVT_SEND_DATA (INS = '10') | `HCIService = CardEmulationService Event was not activated before deactivateEvent() event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P2 |
| | 2 - EVT_SEND_DATA (INS = '11') | `HCIService = CardEmulationService Event was not activated before`<br><br>`deactivateEvent() event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P2 |
| | 3 - EVT_SEND_DATA (INS = '12') | `HCIService = CardEmulationService Event was not activated before`<br><br>`deactivateEvent() event = CardEmulationListener.EVENT_GET_PARAMETER_RESPONSE` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P2 |
| | 4 -EVT_SEND_DATA (INS = '13') | `HCIService = CardEmulationService Event was not activated before`<br><br>`deactivateEvent() event = CardEmulationListener.EVENT_FIELD_OFF` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P2 |
| | 5- EVT_SEND_DATA (INS = '14') | `HCIService = CardEmulationService Event was not activated before`<br><br>`deactivateEvent() event = CardEmulationListener.EVENT_ON_SEND_DATA` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P2 |
| 6 | | **Deactivate an non-active event - ConnectivityService** | | | |
| | EVT_SEND_DATA(INS='12') | `HCIListener = ConnectivityListener HCIService = ConnectivityService Event was not activated before`<br><br>`deactivateEvent() event = EVENT_STAND_BY` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P2 |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 7 | Deactivate an non-active event - ReaderService | | | | |
| | 1 - EVT_SEND_DATA(INS='10') | `HCIListener =`<br>`ReaderListener`<br>`HCIService =`<br>`ReaderService`<br>`Event was not activated`<br>`before`<br><br>`deactivateEvent()`<br>`event =`<br>`EVENT_GET_PARAMETER_RESPO`<br>`NSE` | HCIException with reason code HCI_WRONG_EV ENT_TYPE shall be thrown | EVT_SEND_DAT A (SW- '90 00') | P2 |
| | 2 - EVT_SEND_DATA(INS='11') | `HCIListener =`<br>`ReaderListener`<br>`HCIService =`<br>`ReaderService`<br>`Event was not activated`<br>`before`<br><br>`deactivateEvent()`<br>`event =`<br>`EVENT_WRITE_EXCHANGE_DATA`<br>`_RESPONSE` | HCIException with reason code HCI_WRONG_EV ENT_TYPE shall be thrown | EVT_SEND_DAT A (SW- '90 00') | P2 |
| | 3 - EVT_SEND_DATA(INS='12') | `HCIListener =`<br>`ReaderListener`<br>`HCIService =`<br>`ReaderService`<br>`Event was not activated`<br>`before`<br><br>`deactivateEvent()`<br>`event =`<br>`EVENT_TARGET_DISCOVERED` | HCIException with reason code HCI_WRONG_EV ENT_TYPE shall be thrown | EVT_SEND_DAT A (SW- '90 00') | P2 |

### 6.1.2.5 Method requestCallbackNotification

Test Area Reference: Api_1_Hsr_Rcn.

#### 6.1.2.5.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void requestCallbackNotification(byte event)
                           throws HCIException
```

##### 6.1.2.5.1.1 Normal execution

- CRRN1: the call of this method trows HCIException with reason code HCI_ACCESS_NOT_GRANTED.

##### 6.1.2.5.1.2 Parameter errors

- None.

##### 6.1.2.5.1.3 Context errors

- None.

#### 6.1.2.5.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hsr_Rcn_7.java | 1 |

### 6.1.2.5.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

### 6.1.2.5.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | | **Request Callback Notification** | | | |
| | EVT_SEND_DAT A (INS = '10') | Precondition:<br>HCIService =<br>CardEmulationService<br>Corresponding listener<br>registered<br>No event is activated<br><br>requestCallbackNotification ()<br>event =<br>HCIListener.EVENT_HCI_TRANSMISS<br>ION_FAILED | throws HCIexception with reason code HCI_ACCESS_NOT_ GRANTED | EVT_SEND_DAT A (SW- '90 00') | N1 |

## 6.1.2.6 Method getEventNotificationStatus

Test Area Reference: Api_1_Hsr_Gen.

### 6.1.2.6.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
boolean getEventNotificationStatus(byte event)
                            throws HCIException
```

#### 6.1.2.6.1.1 Normal execution

- CRRN1: return the activation state of an event; if true the event is activated for this listener, else false.

- CRRN2: For CardEmulationService:EVENT_GET_PARAMETER_RESPONSE, EVENT_SEND_DATA, and EVENT_FIELD_OFF.

- CRRN3: For ReaderService: EVENT_GET_PARAMETER_RESPONSE, EVENT_WRITE_EXCHANGE_DATA_RESPONSE, and EVENT_TARGET_DISCOVERED.

- CRRN4: For ConnectivityService: ConnectivityListener.EVENT_STANDBY.

- CRRN5: For all service interfaces: HCIListener.EVENT_HCI_TRANSMISSION_FAILED HCIListener.EVENT_HCI_RECEPTIONS_FAILED.

#### 6.1.2.6.1.2 Parameter errors

- CRRP1: HCIException with reason code HCIException.HCI_WRONG_EVENT_TYPE in case the event was not one of the possible values.

#### 6.1.2.6.1.3 Context errors

- None.

### 6.1.2.6.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hsr_Gen_1.java | 1 |
| Api_1_Hsr_Gen_1.java | 2 |
| Api_1_Hsr_Gen_3.java | 3 |
| Api_1_Hsr_Gen_3.java | 4 |
| Api_1_Hsr_Gen_1.java | 5-1 |
| Api_1_Hsr_Gen_3.java | 5-2 |
| Api_1_Hsr_Gen_2.java | 5-3 |
| Api_1_Hsr_Gen_2.java | 6 |
| Api_1_Hsr_Gen_2.java | 7 |

### 6.1.2.6.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

### 6.1.2.6.4 Test procedure

| | Test case | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | | Event notification status false - CardEmulationService | | | |
| | 1 - EVT_SEND_DATA (INS = '10') | `HCIService = CardEmulationService` `getEventNotificationStatus()` `event = HCIListener.EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DATA (SW- '90 00') | N1, N5 |
| | 2 - EVT_SEND_DATA (INS = '11') | `HCIService = CardEmulationService` `getEventNotificationStatus()` `event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DATA (SW- '90 00') | N1, N5 |
| | 3 - EVT_SEND_DATA (INS = '12') | `HCIService = CardEmulationService` `getEventNotificationStatus()` `event = CardEmulationListener.EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| | 4 - EVT_SEND_DATA (INS = '13') | `4 HCIService = CardEmulationService` `getEventNotificationStatus()` `event = CardEmulationListener. EVENT_FIELD_OFF` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| | 5 - EVT_SEND_DATA (INS = '14') | `HCIService = CardEmulationService` `getEventNotificationStatus()` `event = CardEmulationListener. EVENT_ON_SEND_DATA` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DATA (SW- '90 00') | N1, N2 |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 2 | Event notification status true - CardEmulationService | | | | |
| | EVT_SEND_DATA (INS = '15') | `HCIService = CardEmulationService activateEvent() event = CardEmulationListener.EVENT_ON_SEND_DATA`<br><br>`getEventNotificationStatus()`<br>`event = CardEmulationListener.EVENT_ON_SEND_DATA` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | EVT_SEND_DATA (SW- '90 00') | N1, N2 |
| 3 | Event notification status true - ReaderService | | | | |
| | 1 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS = '21') | `HCIService = ReaderService activateEvent() event = ReaderListener. EVENT_WRITE_EXCHANGE_DATA_RESPONSE`<br><br>`getEventNotificationStatus() event = ReaderListener. EVENT_WRITE_EXCHANGE_DATA_RESPONSE` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | SW - '90 00' | N1, N3 |
| | 2 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here Send APDU (INS = '22') | `HCIService = ReaderService`<br><br>`activateEvent() event = ReaderListener.EVENT_TARGET_DISCOVERED`<br><br>`getEventNotificationStatus() event = ReaderListener.EVENT_TARGET_DISCOVERED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | SW - '90 00' | N1, N3 |
| | 3 - Send APDU (INS = '23') | `HCIService = ReaderService activateEvent() event = ReaderListener. EVENT_GET_PARAMETER_RESPONSE`<br><br>`getEventNotificationStatus() event = ReaderListener. EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | SW - '90 00' | N1, N3 |
| | 4 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS = '24') | `HCIService = ReaderService activateEvent() event = ReaderListener. EVENT_HCI_RECEPTIONS_FAILED`<br><br>`getEventNotificationStatus() event = ReaderListener. EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | SW - '90 00' | N1, N5 |
| | 5- Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS = '25') | `HCIService = ReaderService activateEvent() event = ReaderListener. EVENT_HCI_TRANSMISSION_FAILED`<br><br>`getEventNotificationStatus() event = ReaderListener. EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | SW - '90 00' | N1, N5 |

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|----|-------------|-----------------|-----------------|--------------|-----|
| | | **Test case** | | | |
| 4 | **Event notification status false - ReaderService** | | | | |
| | 1 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS='10') | `HCIListener = ReaderListener HCIService = ReaderServiceEvent has been successfully activated`<br><br>`deactivateEvent() event = HCIListener. EVENT_HCI_TRANSMISSION_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | SW - '90 00' | N1, N5 |
| | 2 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS = '11') | `HCIListener = ReaderListener HCIService = ReaderServiceEvent has been successfully activated`<br><br>`deactivateEvent() event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | SW - '90 00' | N1, N3 |
| | 3 - Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS='12') | `HCIListener = ReaderListener HCIService = ReaderServiceEvent has been successfully activated`<br><br>`deactivateEvent() event = EVENT_WRITE_EXCHANGE_DATA_RE SPONSE` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | SW - '90 00' | N1, N3 |
| | 4- Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS = '13') | `HCIListener = ReaderListener HCIService = ReaderServiceEvent has been successfully activated`<br><br>`deactivateEvent() event = EVENT_TARGET_DISCOVERED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | SW - '90 00' | N1, N3 |
| | 5- Send command on ISO interface to select applet; the initial conditions in clause 6.1.2.6.5 not applicable here - Send APDU (INS='14') | `HCIListener = ReaderListener HCIService = ReaderServiceEvent has been successfully activated`<br><br>`deactivateEvent() event = EVENT_HCI_RECEPTION_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | SW - '90 00' | N1, N3 |
| 5 | **Wrong event type** | | | | |
| | 1- EVT_SEND_DATA (INS = '16') | `HCIService = CardEmulationService`<br><br>`getEventNotificationStatus() event = 0x02` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DATA (SW- '90 00') | P1 |
| | 2- Send on ISO interface - Send APDU (INS = '16') | `HCIService = ReaderService`<br><br>`getEventNotificationStatus() event = 0x84` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | SW - '90 00' | P1 |
| | 3 - EVT_SEND_DATA (INS = '16') | `HCIService = ConnectivityService`<br><br>`getEventNotificationStatus() event = 0x02` | HCIException with reason code HCI_WRONG_EVENT_TYPE shall be thrown | EVT_SEND_DAT A (SW - '90 00') | P1 |

| | | | Test case | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 6 | | | Event notification status false - ConnectivityService | | |
| | 1 -<br>EVT_SEND_DATA<br>(INS = '10') | `HCIListener =`<br>`ConnectivityListener`<br>`HCIService =`<br>`ConnectivityService`<br><br>`getEventNotificationStatus()`<br>`event =`<br>`HCIListener.EVENT_HCI_TRANSM`<br>`ISSION_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DAT A (SW - '90 00') | N1, N5 |
| | 2 -<br>EVT_SEND_DATA<br>(INS = '11') | `HCIListener =`<br>`ConnectivityListener`<br>`HCIService =`<br>`ConnectivityService`<br><br>`getEventNotificationStatus()`<br>`event =`<br>`HCIListener.EVENT_HCI_RECEPT`<br>`IONS_FAILED` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DAT A (SW - '90 00') | N1, N5 |
| | 3 -<br>EVT_SEND_DATA<br>(INS = '12') | `HCIListener =`<br>`ConnectivityListener`<br>`HCIService =`<br>`ConnectivityService`<br><br>`getEventNotificationStatus()`<br>`event =`<br>`ConnectivityListener.EVENT_S`<br>`TAND_BY` | No exception shall be thrown.<br><br>getEventNotificationStatus() = false | EVT_SEND_DAT A (SW - '90 00') | N1, N4 |
| 7 | | | Event notification status true - ConnectivityService | | |
| | EVT_SEND_DATA<br>(INS = '15') | `HCIListener =`<br>`ConnectivityListener`<br>`HCIService =`<br>`ConnectivityService`<br><br>`activateEvent()`<br>`event =`<br>`ConnectivityListener.EVENT_S`<br>`TAND_BY`<br><br>`getEventNotificationStatus()`<br>`event =`<br>`ConnectivityListener.EVENT_S`<br>`TAND_BY` | No exception shall be thrown.<br><br>getEventNotificationStatus() = true | EVT_SEND_DAT A (SW - '90 00') | N1, N4 |

## 6.1.3 Interface HCIMessage

### 6.1.3.1 Method isHeading

Test Area Reference: Api_1_Hme_Mhd.

#### 6.1.3.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
boolean isHeading()
```

##### 6.1.3.1.1.1 Normal execution

- CRRN1: Checks if the current content is the heading part of an HCP message The heading information indicates the first part of an HCP message; with the isComplete() method it is possible to check whether the complete message has already been received.

- CRRN2: returns true if the current message is the heading part of the message.

- CRRN3: An HCIMessage object shall encapsulate one HCP message according to the HCI protocol as specified in [3].

- CRRN4: HCI message for the different contactless modes shall be identified by different types of interfaces.

- CRRN5: In case the Applet instance has registered the CardEmulationListener and has activated the EVENT_ON_SEND_DATA the process() method of this Applet instance shall not be invoked during the selection.

### 6.1.3.1.1.2 Parameter errors

- None.

### 6.1.3.1.1.3 Context errors

- None.

### 6.1.3.1.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hme_Mhd_1.java | 1 |

### 6.1.3.1.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

### 6.1.3.1.4 Test procedure

<table>
<tr><th colspan="6">Test case</th></tr>
<tr><th>ID</th><th>HCI Command</th><th>API Description</th><th>API Expectation</th><th>HCI Response</th><th>CRR</th></tr>
<tr><td>1</td><td colspan="5" align="center">message is complete</td></tr>
<tr><td></td><td>EVT_SEND_DATA (INS ='01')</td><td>onCallback()<br>event = EVENT_ON_SEND_DATA<br>HCIMessage.isHeading()</td><td>No exception shall be thrown.<br><br>isHeading() = true</td><td>EVT_SEND_DATA (SW - '90 00')<br><br>Result returned in the first response byte of the R-APDU data: b1 is set</td><td>N1, N2, N3, N4, N5</td></tr>
</table>

## 6.1.3.2 Method isComplete

Test Area Reference: Api_1_Hme_Mco.

### 6.1.3.2.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
boolean isComplete()
```

### 6.1.3.2.1.1 Normal execution

- CRRN1: this method checks for the completeness of the HCP message, i.e. the last received HCP packet had the chaining bit CB set to 1. It returns true if the message is complete.

- CRRN2: the framework shall copy data into the receive buffer up to the end of the buffer. When the HCI message is longer than the available buffer length the HCIMessage shall be set as not complete.

### 6.1.3.2.1.2 Parameter errors

- None.

6.1.3.2.1.3 Context errors

- None.

6.1.3.2.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hme_Mco_1.java | 1 |

6.1.3.2.3 Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

6.1.3.2.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | message is complete | | | | |
| | EVT_SEND_DATA (INS = '01') | `onCallback() event = EVENT_ON_SEND_DATA HCIMessage.isComplete()` | No exception shall be thrown.<br><br>`isComplete() = true` | EVT_SEND_DATA (SW - '90 00')<br><br>Result returned in the second response byte of the R-APDU data: b1 is set | N1 |

## 6.1.3.3 Method getType

Test Area Reference: Api_1_Hme_Mty.

### 6.1.3.3.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
byte getType()
```

6.1.3.3.1.1 Normal execution

- CRRN1: Returns the type of the incoming HCI message, it shall be one of constant values TYPE_defined in this interface.The returned type possibilities are: TYPE_COMMAND Indicates the HCI message type "command", TYPE_EVENT Indicates the HCI message type "event" and TYPE_RESPONSE indicates the HCI message type "response".

- CRRN2: In the case of a fragmented incoming message this method shall return the HCI message type coded in the first part of the HCI message.

6.1.3.3.1.2 Parameter errors

- None.

6.1.3.3.1.3 Context errors

- None.

#### 6.1.3.3.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hme_Mty_1.java | 1 |
| Api_1_Hme_Mty_2.java | 2 |

#### 6.1.3.3.3 Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

#### 6.1.3.3.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | message of type event - Card emulation | | | | |
| | EVT_SEND_DATA (INS = '01') | `onCallback()`<br>`event = EVENT_ON_SEND_DATA`<br>`HCIMessage.getType()` | No exception shall be thrown.<br><br>getType () = TYPE_EVENT | EVT_SEND_DATA (SW - '90 00')<br><br>third response byte of the R-APDU data is '40' | N1 |
| 2 | message of type event - Connectivity | | | | |
| | - Send command on ISO interface to select applet; the initial conditions in clause 6.1.3.3.3 not applicable here<br><br>- EVT_STANDBY<br>- Send on ISO interface (INS = '01') | `extends ConnectivityListener`<br>`activateEvent()`<br>`event = EVENT_STAND_BY`<br><br>`onCallback()`<br>`event = EVENT_STAND_BY`<br>`HCIMessage.getType()` | No exception shall be thrown.<br><br>getType () = TYPE_EVENT | SW = '90 00'<br><br>third response byte of the R-APDU data is '40' | N1 |

### 6.1.3.4 Method getInstruction

Test Area Reference: Api_1_Hme_Min.

#### 6.1.3.4.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
byte getInstruction()
```

##### 6.1.3.4.1.1 Normal execution

- CRRN1: returns the instruction part of the HCP message header of the current incoming HCP message, see TS 102 622 [3] for further information. It returns the message instruction, b8,b7 of the return value are set to zero.

##### 6.1.3.4.1.2 Parameter errors

- None.

##### 6.1.3.4.1.3 Context errors

- None.

#### 6.1.3.4.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hme_Min_1.java | 1 |
| Api_1_Hme_Min_2.java | 2 |

#### 6.1.3.4.3 initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

#### 6.1.3.4.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | message of type event: Card emulation | | | | |
| | EVT_SEND_DATA (INS = '01') | `onCallback()` `event = EVENT_ON_SEND_DATA` `HCIMessage.getInstruction()` | No exception shall be thrown. getInstruction() = '10' | EVT_SEND_DATA (SW - '90 00') the 4th response byte of the R-APDU data is '10' | N1 |
| 2 | message of type response: Card emulation | | | | |
| | - EVT_SEND_DATA (INS = '01') - ANY_OK(ATQA) - EVT_SEND_DATA (arbitrary data) | `onCallback()` `prepareAndSendGetParameterComman d()` `parameter =` `PARAM_ID_TYPE_A_CARD_ATQA` `onCallback()` `event =` `EVENT_GET_PARAMETER_RESPONSE` `HCIMessage.getInstruction()` | No exception shall be thrown. getInstruction() = '00' | - EVT_SEND_DATA (SW - '90 00') - ANY_GET_PARAM TER(ATQA) - EVT_SEND_DATA (SW - '90 00') the 4th response byte of the R-APDU data is '00' | N1 |

### 6.1.3.5 Method getReceiveOffset

Test Area Reference: Api_1_Hme_Mro.

#### 6.1.3.5.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
short getReceiveOffset()
```

##### 6.1.3.5.1.1 Normal execution

- CRRN1: this method returns the offset of the received HCI message data in the receive buffer, retrieved via getReceiveBuffer().

##### 6.1.3.5.1.2 Parameter errors

- None.

##### 6.1.3.5.1.3 Context error

- None.

NOTE: This method is implicitly tested in clause 6.1.3.7.

### 6.1.3.6 Method getReceiveLength

Test Area Reference: Api_1_Hme_Mrl.

#### 6.1.3.6.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
short getReceiveLength()
```

##### 6.1.3.6.1.1 Normal execution

- CRRN1: this method returns the length of the received HCI message data. It is the size of the message data available in the receive buffer.

##### 6.1.3.6.1.2 Parameter errors

- None.

##### 6.1.3.6.1.3 Context error

- None.

#### 6.1.3.6.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hme_Mrl_1.java | 1 |

#### 6.1.3.6.3 Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

#### 6.1.3.6.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | Get received message length: CardEmulationService | | | | |
| | EVT_SEND_DATA: Send message with the length '0A' message is complete | `onCallback()` `event = EVENT_ON_SEND_DATA` `HCIMessage.getReceiveLength()` | No exception shall be thrown.<br><br>getReceiveLength() = '0A' | EVT_SEND_DATA (SW - '90 00')<br><br>Result returned in the 7th and 8th response byte of the R-APDU data ('00 0A') | N1 |

### 6.1.3.7 Method getReceiveBuffer

Test Area Reference: Api_1_Hme_Mrb.

#### 6.1.3.7.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
byte[] getReceiveBuffer()
```

6.1.3.7.1.1 Normal execution

- CRRN1: returns a reference to the underlying HCI message receive buffer. The length of this buffer is system dependent; it is guaranteed to be at least 270 bytes.

- CRRN2: it returns the buffer holding the current HCI message.

- CRRN3: the content of the array starts at the location indicated by getReceiveOffset() and has the length indicated by getReceiveLength().

6.1.3.7.1.2 Parameter errors

- None.

6.1.3.7.1.3 Context errors

- None.

6.1.3.7.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hme_Mrb_1.java | 1 |

6.1.3.7.3 Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

6.1.3.7.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | Message length < 270 bytes | | | | |
| | EVT_SEND_DATA (message with the length = 09: '00 01 02 03 04 05 06 07 08') | onCallback()<br>event =<br>EVENT_ON_SEND_DATA<br>getReceiveBuffer()<br>getReceiveOffset()<br>getReceiveLength() | No exception shall be thrown.<br>First 9 bytes of getReceiveBuffer() shall be '01 02 03 04 05 06 07 08 09' | EVT_SEND_DATA ()<br><br>First 9 bytes of the response data shall be '00 01 02 03 04 05 06 07 08' | N1, N2, N3 |

# 6.1.4 Class HCIException

## 6.1.4.1 Method throwIt

Test Area Reference: Api_1_Hxp_Trw.

### 6.1.4.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
public static void throwIt(short reason)
                  throws HCIException
```

6.1.4.1.1.1 Normal execution

- CRRN1: Throws the JCRE owned instance of the HCIException with the specified reason code.

6.1.4.1.1.2 Parameter errors

- None.

6.1.4.1.1.3 Context errors

- None.

6.1.4.1.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hxp_Trw_1.java | 1 |

6.1.4.1.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI Interface.

6.1.4.1.4 Test procedure

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | | **Throw Exception** | | | |
| | 1 - EVT_SEND_DATA (INS = '01') | `throwIt()`<br>`reason = HCI_ACCESS_NOT_GRANTED` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 2 - EVT_SEND_DATA (INS = '02') | `throwIt()`<br>`reason = HCI_CONDITIONS_NOT_SATISFIED` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 3 - EVT_SEND_DATA (INS = '03') | `throwIt()`<br>`reason = HCI_CURRENTLY_DISABLED` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 4 - EVT_SEND_DATA (INS = '04') | `throwIt()`<br>`reason = HCI_FRAGMENTED_MESSAGE_ONGOING` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 5 - EVT_SEND_DATA (INS = '05') | `throwIt()`<br>`reason = HCI_INVALID_LENGTH` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 6 - EVT_SEND_DATA (INS = '06') | `throwIt()`<br>`reason = HCI_LISTENER_ALREADY_REGISTERED` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 7 - EVT_SEND_DATA (INS = '07') | `throwIt()`<br>`reason = HCI_NOT_AVAILABLE` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 8 - EVT_SEND_DATA (INS = '08') | `throwIt()`<br>`reason = HCI_RESOURCES_NOT_AVAILABLE` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 9 - EVT_SEND_DATA (INS = '09') | `throwIt()`<br>`reason = HCI_SERVICE_NOT_AVAILABLE` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| | 10 - EVT_SEND_DATA (INS = '0A') | `throwIt()`<br>`reason = HCI_WRONG_EVENT_TYPE` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |
| | 11 - EVT_SEND_DATA (INS = '0B') | `throwIt()`<br>`reason = HCI_WRONG_LISTENER_TYPE` | Throw exception with corresponding reason code | EVT_SEND_DATA (SW - '90 00') | N1 |

## 6.1.5 Interface HCIListener

### 6.1.5.1 Method onCallback

Test Area Reference: Api_1_Hln_Ocb.

#### 6.1.5.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void onCallback(byte event, HCIMessage message)
```

##### 6.1.5.1.1.1 Normal execution

- CRRN1: The Contactless Framework shall invoke the method `*typeListener.onCallback` only with events which are defined in this particular listener or `HCIListener` and only with message objects of this listener type.

- CRRN2: The Applet instance shall activate the events with CardEmulationService.activateEvent before it will receive any event notification.

- CRRN3: The context as defined in the Java Card™ specification [11], [12] and [13] shall be set to the context of the Applet which implements the onCallback() method. The previous context (context of the caller) shall be the context of the Contactless Framework.

- CRRN4: Upon return from the onCallback() method a pending transaction shall be aborted.

- CRRN5: As stated in TS 102 622 [3], a reset of the underlying data link layer shall be transparent to the application layer if the data link layer recovers without any loss of data.

- CRRN6: The Contactless Framework shall be able to receive one or more HCI messages while waiting for a response related to a command originated by the Applet (e.g. processing a request for parameters) especially for the EVT_FIELD_OFF case.

##### 6.1.5.1.1.2 Parameter errors

- None.

##### 6.1.5.1.1.3 Context errors

- None.

6.1.5.1.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_1_Hln_Ocb_4.java | 1 |
| Api_1_Hln_Ocb_5.java | 2 |
| Api_1_Hln_Ocb_6.java | 3 |
| Api_1_Hln_Ocb_2.java | 4 |
| Api_1_Hln_Ocb_3.java | 5 |

6.1.5.1.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

6.1.5.1.4 Test procedure

| | | | Test case | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | | | **Get context** | | |
| | 1 - Send EVT_SEND_DAT A (Select applet) Send EVT_SEND_DAT A (INS = '01') ) | `Service = CardEmulationService` `Listener =` `CardEmulationListener` `process():` `JCSystem.getAID();` | No exception shall be thrown<br><br>expected AID = current AID | EVT_SEND_DATA (SW '90 00') | N3 |
| | 2 - Send EVT_SEND_DAT A (Select applet)<br><br>Send EVT_SEND_DAT A (INS = '02') | `Service = CardEmulationService` `Listener =` `CardEmulationListener` `process():` `JCSystem.getPreviousContextAID(` `);` | No exception shall be thrown<br><br>previous AID = null | EVT_SEND_DATA (SW '90 00') | N3 |
| 2 | | | **Abort transaction** | | |
| | Send EVT_SEND_DAT A (Select applet) - Send EVT_SEND_DAT A (INS = '01') - Send ENVELOPE_UN RECOGNIZED | `Service = CardEmulationService` `Listener =` `CardEmulationListener` `onCallback():` `JCsystem.beginTransaction();` `Set up test array` `//no` `JCSystem.commitTransaction!!` `processToolkit():` `check array modification` | No exception shall be thrown<br><br>Test array shall not be modifed | EVT_SEND_DATA (SW '90 00') | N4 |
| 3 | | | **Data link layer recovery** | | |
| | - Send EVT_SEND_DAT A (Select applet) - Send EVT_SEND_DAT A (INS = '01') - reset the underlying data link layer while receiving the reponse | `Service = CardEmulationService` `Listener =` `CardEmulationListener` `activateEvent(EVENT_ON_SEND_DAT` `A) during the installation` `onCallback()` `prepareAndSendSendDataEvent()` ` data = {0x00, 0x00, 0x00,` `0x00, 0x00, 0x0, 0x00, 0x00,` `0x00, …. , 0x90, 0x00}` `length = 256B` | No exception shall be thrown | - EVT_SEND_DATA (SW - '90 00') in the response to selecting applet - EVT_SEND_DATA (0x00, 0x00, 0x00, 0x00, 0x00, 0x0, 0x00, 0x00, 0x00, …., 0x90, 0x00)<br><br>No loss of data expected | N5 |

| | Test case | | | | |
|---|---|---|---|---|---|
| **ID** | **HCI Command** | **API Description** | **API Expectation** | **HCI Response** | **CRR** |
| 4 | Receive messages while waiting for get parameter | | | | |
| | - EVT_SEND_DATA (Select applet) - EVT_FIELD_OFF before ANY_OK | `Listener = CardEmulationListener activateEvent() event = EVENT_GET_PARAMETER_RESPONSE prepareAndSendGetParameterComma nd() paramID = PARAM_ID_TYPE_B_CARD_ATQB`⬜ | No exception shall be thrown onCallback() shall receive ANY_OK as EVENT_GET_PARAM ETER_RESPONSE | EVT_SEND_DATA () ANY_GET_PARAMETE R(ATQB) No error after EVT_FIELD_OFF | N1, N2, N6 |
| 5 | Receive messages while waiting for get parameter | | | | |
| | - EVT_SEND_DATA (Select applet) - EVT_FIELD_OFF before ANY_OK | `Listener = CardEmulationListener activateEvent() event = EVENT_GET_PARAMETER_RESPONSE prepareAndSendGetParameterComma nd() paramID = PARAM_ID_TYPE_A_CARD_ATQA`⬜ | No exception shall be thrown onCallback() shall receive ANY_OK as EVENT_GET_PARAM ETER_RESPONSE | EVT_SEND_DATA () ANY_GET_PARAMETE R(ATQA) No error after EVT_FIELD_OFF | N1, N2, N6 |

# 6.2 Package uicc.hci.services

## 6.2.1 Package CardEmulation Service

### 6.2.1.1 Interface CardEmulationMessage

#### 6.2.1.1.1 Method prepareAndSendGetParameterCommand

Test Area Reference: Api_2_CEm_ Sgp.

##### 6.2.1.1.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendGetParameterCommand(byte paramID)
                                    throws HCIException
```

###### 6.2.1.1.1.1.1 Normal execution

- CRRN1: this non-blocking method builds the HCI command ANY_GET_PARAMETER for the indicated information and sends it to the appropriate Card RF Gate of the CLF.

- CRRN2: the paramID indicates a constant parameter of the requested value.

- CRRN3: The CardEmulationListener.onCallback method shall be called by the Contactless Framework. The HCI message that resulted in the selection of this Applet according to the rules defined in "GlobalPlatform Amendment C" [10] shall be provided by the CardEmulationMessage.

###### 6.2.1.1.1.1.2 Parameter errors

- CRRP1: throws HCIException with the reason code HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

###### 6.2.1.1.1.1.3 Context errors

- CRRC1: throws HCIException with the reason code HCI_FRAGMENTED_MESSAGE_ONGOING if the Contactless Framework is still receiving a fragmented HCI Message.

- CRRC2: throws HCIException with the reason code HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

6.2.1.1.1.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_CEm_Sgp_1.java | 1-1 |
| Api_2_CEm_Sgp_2.java | 1-2 |
| Api_2_CEm_Sgp_3.java | 1-3 |
| Api_2_CEm_Sgp_4.java | 1-4 |
| Api_2_CEm_Sgp_5.java | 1-5 |
| Api_2_CEm_Sgp_6.java | 1-6 |
| Api_2_CEm_Sgp_7.java | 1-7 |
| Api_2_CEm_Sgp_8.java | 1-8 |
| Api_2_CEm_Sgp_9.java | 2-1 |
| Api_2_CEm_Sgp_10.java | 2-2 |
| Api_2_CEm_Sgp_11.java | 2-3 |
| Api_2_CEm_Sgp_12.java | 2-4 |
| Api_2_CEm_Sgp_13.java | 2-5 |
| Api_2_CEm_Sgp_2.java | 3-1 |
| Api_2_CEm_Sgp_10.java | 3-2 |

6.2.1.1.1.3 Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

6.2.1.1.1.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | Get parameter: Type A | | | | |
| | 1 - EVT_SEND_DATA (Sele | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_APPLICATION_DATA☐` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 2 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_ATQA☐` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 3 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_CID_SUPPORT` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 4 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_CLT_SUPPORT` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 5 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_DATARATE_MAX` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 6 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_FWI_SFGI` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 7 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_MODE` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 8 - EVT_SEND_DATA (Select applet) | `prepareAndSendGetParameterCommand()` `paramID = PARAM_ID_TYPE_A_CARD_SAK` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |

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| | | | Test case | | |
|---|---|---|---|---|---|
| **ID** | **HCI Command** | **API Description** | **API Expectation** | **HCI Response** | **CRR** |
| 2 | | | **Get parameter: Type B** | | |
| | 1- EVT_SEND_DAT A (Select applet) | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_B_CARD_AFI`□□ | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 2 - EVT_SEND_DAT A (Select applet) | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_B_CARD_ATQB` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 3 - EVT_SEND_DAT A (Select applet) | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_B_CARD_DATARATE_MAX` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 4 - EVT_SEND_DAT A (Select applet) | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_B_CARD_HIGHER_LAYER_` `RESPONSE` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| | 5 - EVT_SEND_DAT A (Select applet) | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_B_CARD_MODE` | No exception shall be thrown | GET_PARAMETER with the predefined parameter value | N1, N2, N3 |
| 3 | | | **The Contactless Framework is receiving fragmented HCI Message** | | |
| | 1 - Select applet on ISO interface<br><br>Send as fragmented HCI Message:<br>- EVT_SEND_DAT A (data length = supported buffer size + 5 bytes, message not complete)<br>With CB = 1 for the last sent frame EVT_SEND_DAT A sent without waiting for response | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_A_CARD_ATQA` | Shall throw uicc.hci.framework.HCIExc eption with error code HCI_FRAGMENTED_M ESSAGE_ONGOING | - SW - '90 00' on ISO interface<br>- EVT_SEND_DATA (No data)<br>- EVT_SEND_DATA (one byte with second least significant bit set) | C1 |
| | 2 - Select applet on ISO interface<br><br>Send as fragmented HCI Message:<br>EVT_SEND_DAT A (data length = supported buffer size + 5 bytes, message not complete)<br><br>EVT_SEND_DAT A sent without waiting for response | `prepareAndSendGetParameterCommand(` `)` `paramID =` `PARAM_ID_TYPE_B_CARD_ATQB` | Shall throw uicc.hci.framework.HCIExc eption with error code HCI_FRAGMENTED_M ESSAGE_ONGOING | - SW - '90 00' on ISO interface<br>- EVT_SEND_DATA (No data)<br>- EVT_SEND_DATA (one byte with second least significant bit set) | C1 |

## 6.2.1.1.2 Method prepareAndSendSendDataEvent

Test Area Reference: Api_2_CEm_ Ssd.

### 6.2.1.1.2.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendSendDataEvent(byte[] data,
                                 short offset,
                                 short len)
                         throws HCIException,
                                 java.lang.NullPointerException,
                                 java.lang.ArrayIndexOutOfBoundsException
```

#### 6.2.1.1.2.1.1 Normal execution

- CRRN1: This non-blocking method builds the the HCI event EVT_SEND_DATA sends it to the Contactless Card Emulation Gate of the CLF.

- CRRN2: the data to be sent should be formatted according to the HCI specification, the offset define the offset of data into the data buffer and the len define the length of data in the data buffer.

- CRRN3: Applet instances shall receive CardEmulationMessages after the registration of a CardEmulationListener interface to a CardEmulationService only if the EVENT_ON_SEND_DATA is activated for the Applet instance.

- CRRN4: The CardEmulationListener.onCallback method shall be called by the Contactless Framework. The HCI message that resulted in the selection of this Applet according to the rules defined in "GlobalPlatform Amendment C" [10] shall be provided by the CardEmulationMessage.

#### 6.2.1.1.2.1.2 Parameter errors

- CRRP1: throws java.lang.NullPointerException - if data is null.

- CRRP2: throws java.lang.ArrayIndexOutOfBoundsException - if operation would cause access of data outside array bounds.

#### 6.2.1.1.2.1.3 Context errors

- CRRC1: throws HCIException with the reason code HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

- CRRC2: throws HCIException with the reason code HCI_FRAGMENTED_MESSAGE_ONGOING if the Contactless Framework is still receiving a fragmented HCI Message.

- CRRC3: throws HCIException with the reason code HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

### 6.2.1.1.2.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_CEm_Ssd_1.java | 1 |
| Api_2_CEm_Ssd_1.java | 2 |
| Api_2_CEm_Ssd_1.java | 3 |
| Api_2_CEm_Ssd_4.java | 4 |
| Api_2_CEm_Ssd_2.java | 5-1 |
| Api_2_CEm_Ssd_3.java | 5-2 |

6.2.1.1.2.3     Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

6.2.1.1.2.4     Test procedure

| ID | HCI Commnad | API Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | | **Test case** | | |
| 1 | | | **Send data - Type A** | | |
| | EVT_SEND_DATA (Select applet) | `prepareAndSendSendDataEvent( )`<br>`data = {0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09}`<br>`offset = 2`<br>`length = 5` | No exception shall be thrown | EVT_SEND_DATA ({0x03, 0x04, 0x05, 0x06, 0x07}) | N1, N2, N3, N4 |
| 2 | | | **Send data - Type B** | | |
| | EVT_SEND_DATA (Select applet) | `prepareAndSendSendDataEvent( )`<br>`data = {0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09}`<br>`offset = 2`<br>`length = 5` | No exception shall be thrown | EVT_SEND_DATA ({0x03, 0x04, 0x05, 0x06, 0x07}) | N1, N2, N3, N4 |
| 3 | | | **Recption of fragmented HCI Message** | | |
| | - EVT_SEND_DATA to select applet Send as fragmented HCI Message:<br>- EVT_SEND_DATA (data length = supported buffer size + 5 bytes, message not complete)<br>- EVT_SEND_DATA (INS = '01') without waiting for response<br><br>- Send EVT_SEND_DATA (INS = '01') | `prepareAndSendSendDataEvent( )`<br>`data = {0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09}`<br>`offset = 2`<br>`length = 5` | Shall throw uicc.hci.framework.HCIException with error code HCI_FRAGMENTED_MESSAGE_ONGOING | - EVT_SEND_DATA (SW - '90 00')<br>- EVT_SEND_DATA (No data)<br><br>- EVT_SEND_DATA (SW- '90 02') | C2 |
| 4 | | | **Send no data** | | |
| | EVT_SEND_DATA (Select applet) | `prepareAndSendSendDataEvent( )`<br>`data = null`<br>`offset = 2`<br>`length = 5` | Shall throw java.lang exception with error code NullPointerException | EVT_SEND_DATA ({0xFF, 0xFF, 0xFF, 0xFF, 0xFF }) | P1 |
| 5 | | | **Array Index Out Of Bounds** | | |
| | 1 - EVT_SEND_DATA (Select applet) | `prepareAndSendSendDataEvent( )`<br><br>`1 - data = {0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09}`<br>`offset = 2`<br>`length = 15` | Shall throw java.lang exception with error code ArrayIndexOutOfBoundsException | EVT_SEND_DATA ({0xFF, 0xFF, 0xFF, 0xFF, 0xFF }) | P2 |
| | 2 - EVT_SEND_DATA (Select applet) | `prepareAndSendSendDataEvent( )`<br>`data = {0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09}`<br>`offset = 15`<br>`length = 5` | Shall throw java.lang exception with error code ArrayIndexOutOfBoundsException | EVT_SEND_DATA ({0xFF, 0xFF, 0xFF, 0xFF, 0xFF }) | P2 |

### 6.2.1.1.3 Method selectingMessage

Test Area Reference: Api_2_CEm_ Scm

#### 6.2.1.1.3.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
boolean selectingMessage()
```

##### 6.2.1.1.3.1.1 Normal execution

- CRRN1: This method is used by the applet to distinguish the HCI Message command which selected this applet from all other HCI messages.

- CRRN2: returns true if the current HCI message caused the selection of the Applet according to the rules in GlobalPlatform Amendment C [10].

##### 6.2.1.1.3.1.2 Parameter errors

- None.

##### 6.2.1.1.3.1.3 Context errors

- None.

#### 6.2.1.1.3.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_CEm_Scm_1.java | 1 |
| Api_2_CEm_Scm_1.java | 2 |

#### 6.2.1.1.3.3 Initial condition

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

#### 6.2.1.1.3.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | Select Applet | | | | |
| | EVT_SEND_DATA (Select applet) | `selectingMessage()` | No exception shall be thrown.<br><br>selectingMessage()= true | EVT_SEND_DATA (SW - '90 00') | N1, N2 |
| 2 | Arbitrary Command | | | | |
| | - EVT_SEND_DATA (Select applet)<br>- EVT_SEND_DATA (INS = '01') | `selectingMessage()` | No exception shall be thrown.<br><br>selectingMessage() = false | - EVT_SEND_DATA(SW - '90 00')<br>- EVT_SEND_DATA ('01 02 03 90 00') | N1, N2 |

## 6.2.1.2 Interface CardEmulationService

### 6.2.1.2.1 Method getCardRFType

Test Area Reference: Api_2_CEs_RFt.

#### 6.2.1.2.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
byte getCardRFType()
```

##### 6.2.1.2.2.1.1 Normal execution

- CRRN1: returns the reader RF type on which the service is connected, shall be one of the TYPE_* constant values defined in this interface, or -1 if the RF type can not be evaluated.

- CRRN2: Applets communicating through the process() method shall also be able to use the API services defined in the present document which do not require a CardEmulationListener registration (e.g. requesting the power mode or connectivity service).

##### 6.2.1.2.2.1.2 Parameter errors

- None.

##### 6.2.1.2.2.1.3 Context errors

- None.

#### 6.2.1.2.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_2_CEs_RFt_1.java | 1 |
| Api_2_CEs_RFt_1.java | 2 |
| Api_2_CEs_RFt_1.java | 3 |
| Api_2_CEs_RFt_1.java | 4 |

#### 6.2.1.2.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

##### 6.2.1.2.3.1 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | RF type A | | | | |
| | EVT_SEND_DATA (INS = '01') | getCardRFType() | No exception shall be thrown getCardRFType() = TYPE_A_CARD_RF | EVT_SEND_DATA (SW = '90 01') | N1 N2 |
| 2 | RF type B | | | | |
| | EVT_SEND_DATA (INS = '01') | getCardRFType() | No exception shall be thrown getCardRFType() = TYPE_B_CARD_RF | EVT_SEND_DATA (SW = '90 02') | N1 N2 |
| 3 | RF type F | | | | |
| | EVT_SEND_DATA (INS = '01') | getCardRFType() | No exception shall be thrown getCardRFType() = TYPE_F_CARD_RF | EVT_SEND_DATA (SW = '90 04') | N1 N2 |
| 4 | RF type B' | | | | |
| | EVT_SEND_DATA (INS = '01') | getCardRFType() | No exception shall be thrown getCardRFType() = TYPE_B_PRIM_CARD_RF | EVT_SEND_DATA (SW = '90 03') | N1 N2 |

## 6.2.1.3 Interface CardEmulationListener

### 6.2.1.3.1 Method onCallback

Test Area Reference: Api_2_CEl_Ocb.

#### 6.2.1.3.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void onCallback(byte event, HCIMessage message)
```

##### 6.2.1.3.1.1.1 Normal execution

- CRRN1: The Contactless Framework shall invoke the method CardEmulationListener.onCallback only with events which are defined in this particular listener or CardEmulationListener and only with CardEmulationMessage objects.

- CRRN2: The Applet instance shall activate the events with CardEmulationService.activateEvent before it will receive any event notification.

- CRRN3: If the EVENT_ON_SEND_DATA is deactivated for the Applet instance the javacard.framework.APDU class and the process() method shall be used if the current application protocol is APDU based. Otherwise, if the EVENT_ON_SEND_DATA is deactivated and the current application protocol is not APDU based the process() method will not be invoked, i.e. the Applet will not receive any messages from the external reader.

- CRRN4: It shall not be possible to switch between the usage of the CardEmulationListener interface and the invocation through the process() method within a contactless application session, i.e. not before the Applet has been deselected and selected again.

##### 6.2.1.3.1.1.2 Parameter errors

- None.

##### 6.2.1.3.1.1.3 Context errors

- None.

#### 6.2.1.3.1.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_2_CEl_Ocb_1.java | 1 |
| Api_2_CEl_Ocb_2.java | 2 |
| Api_2_CEl_Ocb_3.java | 3 |
| Api_2_CEl_Ocb_1.java | 4 |
| Api_2_CEl_Ocb_2.java | 5 |
| Api_2_CEl_Ocb_4.java | 6 |
| Api_2_CEl_Ocb_5.java | 7-1 |
| Api_2_CEl_Ocb_6.java | 7-2 |
| Api_2_CEl_Ocb_7.java | 7-3 |
| Api_2_CEl_Ocb_8.java | 7-4 |

#### 6.2.1.3.1.3 Initial conditions

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

6.2.1.3.1.4 Test procedure

| | | | Test case | | |
|---|---|---|---|---|---|
| **ID** | **HCI Command** | **API Description** | **API Expectation** | **HCI Response** | **CRR** |
| 1 | | | EVT_SEND_DATA - Type A | | |
| | - EVT_SEND_DATA(INS = '14')<br><br>- EVT_SEND_DATA(INS = '24')-<br><br>- deselect the applet<br>- select the applet | `HCIListener = CardEmulationListener`<br>`HCIService = CardEmulationService`<br>`activateEvent()`<br>`event = CardEmulationListener.EVENT_ON_ SEND_DATA` | - No exception shall be thrown<br><br>- No exception shall be thrown<br><br>onCallback() method shall notice the event EVENT_ON_SEND_D ATA | - EVT_SEND_DATA (SW- '90 00')<br><br>- EVT_SEND_DATA (SW- '90 00')<br><br>- No response or no data in the response to the select applet command | N1, N2, N3, N4, |
| 2 | | | EVENT_HCI_RECEPTIONS_FAILED - Type A | | |
| | - EVT_SEND_DATA(INS = '11')<br><br>- EVT_SEND_DATA(INS = '14')<br><br>- deselect/select the applet<br><br>- EVT_SEND_DATA(INS = '11', RF error indicator is set to '01')<br><br>- deselect/select the applet<br><br>- EVT_SEND_DATA(INS = '21') | `HCIListener = CardEmulationListener`<br>`HCIService = CardEmulationService`<br>`activateEvent()`<br>`event = HCIListener.EVENT_HCI_RECEPTION S_FAILED` | No exception shall be thrown<br><br>onCallback() method shall notice the event | -EVT_SEND_DATA (SW- '90 00')<br>- EVT_SEND_DATA (SW- '90 00')<br>- EVT_SEND_DATA (SW- '90 00')<br><br>- Response to RF error message not verified<br><br>- EVT_SEND_DATA (SW- '90 00')<br><br>- EVT_SEND_DATA (SW- '90 00') | N1, N2, N3, N4 |
| 3 | | | EVENT_GET_PARAMETER_RESPONSE - Type A | | |
| | - EVT_SEND_DATA (INS = '01')<br>- ANY_OK as response to GET_PARAMET ER<br><br>- deselect/select the applet<br><br>- EVT_SEND_DATA(INS='22') | `Listener = CardEmulationListener`<br>`activateEvent()`<br>`event = EVENT_GET_PARAMETER_RESPONSE`<br>`prepareAndSendGetParameterComma nd()`<br>`paramID = PARAM_ID_TYPE_A_CARD_ATQA`□ | No exception shall be thrown<br><br>onCallback() shall receive ANY_OK as EVENT_GET_PARAM ETER_RESPONSE | GET_PARAMETER with the PARAM_ID_TYPE_A_C ARD_ATQA<br>- No exception after ANY_OK reception<br><br>- EVT_SEND_DATA (SW- '90 00')<br><br>- EVT_SEND_DATA (SW- '90 00') | N1, N2, N3, N4, |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 4 | EVT_SEND_DATA - Type B | | | | |
| | - EVT_SEND_DATA(INS = '14') <br><br> - EVT_SEND_DATA(INS = '24')- <br><br> - deselect the applet <br> - select the applet | `HCIListener = CardEmulationListener HCIService = CardEmulationService activateEvent() event = CardEmulationListener.EVENT_ON_SEND_DATA` | - No exception shall be thrown <br><br> - No exception shall be thrown <br><br> onCallback() method shall notice the event EVENT_ON_SEND_DATA | - EVT_SEND_DATA (SW- '90 00') <br><br> - EVT_SEND_DATA (SW- '90 00') <br><br> - No response or no data in the response to the select applet command | N1, N2, N3, N4, |
| 5 | EVENT_HCI_RECEPTIONS_FAILED - Type B | | | | |
| | - EVT_SEND_DATA(INS = '11') <br><br> - EVT_SEND_DATA(INS = '14') <br><br> - deselect/select the applet <br><br> - EVT_SEND_DATA(INS = '11', RF error indicator is set to '01') <br><br> - deselect/select the applet <br><br> - EVT_SEND_DATA(INS = '21') | `HCIListener = CardEmulationListener HCIService = CardEmulationService` <br><br> `activateEvent() event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown <br><br> onCallback() method shall notice the event | -EVT_SEND_DATA (SW- '90 00') <br> - EVT_SEND_DATA (SW- '90 00') <br> - EVT_SEND_DATA (SW- '90 00') <br><br> - Response to RF error message not verified <br><br> - EVT_SEND_DATA (SW- '90 00') <br><br><br> - EVT_SEND_DATA (SW- '90 00') | N1, N2, N3, N4 |
| 6 | EVENT_GET_PARAMETER_RESPONSE - Type B | | | | |
| | - EVT_SEND_DATA (INS = '01') <br> - ANY_OK as response to GET_PARAMETER <br> - deselect/select the applet <br><br> - EVT_SEND_DATA(INS = '22') | `Listener = CardEmulationListener activateEvent() event = EVENT_GET_PARAMETER_RESPONSE` <br><br> `prepareAndSendGetParameterCommand()` <br> `paramID = PARAM_ID_TYPE_B_CARD_ATQB▯` | No exception shall be thrown. <br><br> onCallback() shall receive ANY_OK as EVENT_GET_PARAMETER_RESPONSE | - GET_PARAMETER with the PARAM_ID_TYPE_B_CARD_ATQB <br> - No exception after ANY_OK reception <br> - EVT_SEND_DATA (SW- '90 00') <br><br><br> - EVT_SEND_DATA (SW- '90 00') | N1, N2, N3, N4 |
| 7 | Deactivate events | | | | |
| | 1 - EVT_SEND_DATA(INS='11') <br><br> - deselect/select the applet <br> - EVT_SEND_DATA(INS='20', RF error indicator is set to '01') <br><br> - deselect/select the applet <br> - EVT_SEND_DATA(INS='20') | `HCIService = CardEmulationService Event has been successfully activated` <br><br> `deactivateEvent() event = HCIListener.EVENT_HCI_RECEPTIONS_FAILED` | No exception shall be thrown. <br><br> onCallback() method shall not notice the event | EVT_SEND_DATA (SW- '90 00') <br><br> - EVT_SEND_DATA (SW- '90 00') <br><br> - Response to RF error message not verified <br><br> - EVT_SEND_DATA (SW- '90 00') <br><br> - EVT_SEND_DATA (SW- '90 00') | N2 |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| | 2 - EVT_SEND_DATA(INS='12')<br><br>- ANY_OK as response to GET_PARAMETER<br><br>- deselect/select the applet<br><br>- EVT_SEND_DATA(INS='20') | `HCIService = CardEmulationService` Event has been successfully activated<br><br>`deactivateEvent()` `event = CardEmulationListener.EVENT_GET _PARAMETER_RESPONSE`<br><br>`prepareAndSendGetParameterComma nd()` `paramID = PARAM_ID_TYPE_A_CARD_ATQA`☐ | No exception shall be thrown<br><br>onCallback() method shall not notice the event | - ignore the first response<br><br>- EVT_SEND_DATA (SW- '90 00')<br><br>- EVT_SEND_DATA (SW- '90 00') | N2 |
| | 3 - EVT_SEND_DATA(INS='12')<br><br>- ANY_OK as response to GET_PARAMETER<br><br>- deselect/select the applet<br><br>- EVT_SEND_DATA(INS='20') | `HCIService = CardEmulationService` Event has been successfully activated<br><br>`deactivateEvent()` `event = CardEmulationListener.EVENT_GET _PARAMETER_RESPONSE`<br><br>`prepareAndSendGetParameterComma nd()` `paramID = PARAM_ID_TYPE_B_CARD_ATQB`☐ | No exception shall be thrown<br><br>onCallback() method shall not notice the event | - ignore the first response<br><br>- EVT_SEND_DATA (SW- '90 00')<br><br>- EVT_SEND_DATA (SW- '90 00') | N2 |
| | 4 -<br>- EVT_SEND_DATA(INS='14')<br>- deselect /select the applet<br>- EVT_SEND_DATA(INS='20') | `HCIService = CardEmulationService` Event has been successfully activated<br><br>`deactivateEvent()` `event = CardEmulationListener.EVENT_ON_ SEND_DATA` | No exception shall be thrown<br><br>onCallback() method shall not notice the event | - EVT_SEND_DATA (SW- '90 00')<br>- EVT_SEND_DATA (SW- '90 00')<br>- EVT_SEND_DATA (SW- '90 01') | N2 |

## 6.2.2 Package Connectivity Service

### 6.2.2.1 Interface ConnectivityService

#### 6.2.2.1.1 Method prepareAndSendConnectivityEvent

Test Area Reference: Api_2_CNs_Sce.

##### 6.2.2.1.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendConnectivityEvent()
                              throws HCIException
```

6.2.2.1.1.1.1 Normal execution

- CRRN1: This non-blocking method builds the HCI event EVT_CONNECTIVITY which notifies the terminal host that it shall send a "HCI connectivity event" as defined in TS 102 223 [7].

- CRRN2: If the Applet wants to use proactive functionality it shall use the Connectivity Service defined above to send an HCI event EVT_CONNECTIVITY to the terminal, register for EVENT_EVENT_DOWNLOAD_HCI_CONNECTIVITY and return. All the proactive functionality of the UICC API defined in TS 102 241 [6] is then available to the Applet when that Applet instance is triggered with the processToolkit() method defined in TS 102 241 [6].

- CRRN3: the contactless runtime environment shall bind the services defined in uicc.hci.services.connectivity to the corresponding resources (e.g. gates and pipes) specified by the HCI protocol [3] for the connectivity service.

- CRRN4: The Contactless Framework shall only send the HCI event EVT_CONNECTIVITY or EVT_TRANSACTION specified by the HCI protocol [3] to an Applet instance, when it is the selected Applet, which is in card emulation mode or when it is in the state ACTIVATED (according to "GlobalPlatform Amendment C" [10]) for the reader mode.

- CRRN5: The ProactiveHandler defined in TS 102 241 [6] shall not be available when the contactless Applet is invoked with the callback methods defined in the present document, or when the Applet is invoked with the process() method of the Applet class defined in Application Programming Interface, Java Card™ Platform [6] (in card emulation mode).

6.2.2.1.1.1.2 Parameter errors

- None.

6.2.2.1.1.1.3 Context errors

- CRRC1: throw HCIException with error code reason HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

- CRRC2: throw HCIException with error code reason HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

- CRRC3: throw HCIException with error code reason HCI_CONDITIONS_NOT_SATISFIED if the conditions to call this method are not satisfied.

6.2.2.1.1.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_CNs_Sce_1.java | 1 |
| Api_2_CNs_Sce_1.java | 2 |
| Api_2_CNs_Sce_2.java | 3 |
| Api_2_CNs_Sce_3.java | 4 |
| Api_2_CNs_Sce_4.java | 5 |
| Api_2_CNs_Sce_5.java | 6 |

6.2.2.1.1.3 Initial condition

- Prior to this test the Terminal shall have been powered on and performed the PROFILE DOWNLOAD procedure.

- In terminal profile set the 25th byte, 'b6' indicates that class m is supported.

- In terminal profile 5th byte, b1 indicates proactive UICC: SET UP EVENT LIST.

- Pipe has been created and opened to connectivity gate in the terminal host.

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

### 6.2.2.1.1.4 Test procedure

| | | Test case | | | |
|---|---|---|---|---|---|
| ID | HCI commands | API Description | API Expectation | HCI Response | CRR |
| 1 | | **Send HCI Connectivity Event** | | | |
| | - Send EVT_SEND_DATA (Select applet) - Send EVT_SEND_DATA (INS = '01') | `Listener = CardEmulationListener process(): prepareAndSendConnectivityEvent()` | No exception shall be thrown | SW - '90 00' HCI event EVT_CONNECT IVITY sent | N1 N3 |
| 2 | | **HCI interface disabled** | | | |
| | 1 - Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]. Send on ISO interface: - Select applet - Send APDU (INS = '02') | `Listener = CardEmulationListener process(): prepareAndSendConnectivityEvent()` | throw HCIException with error code reason HCI_CURRENTLY_D ISABLED | SW - '90 00' No EVT_ CONNECTIVITY shall be sent | C1 N3 |
| | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands: - Send APDU to select the applet. - Send APDU (INS = '02') - Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface() API method of  Global Platform Amendment C [10] is used to disable HCI interface in the CRS`<br><br>`Listener = CardEmulationListener process(): prepareAndSendConnectivityEvent()`<br><br>`setCommunicationInterface() API method of  Global Platform Amendment C [10] is used to enable again HCI interface` | throw HCIException with error code reason HCI_CURRENTLY_D ISABLED | SW - '90 00' No EVT_ CONNECTIVITY shall be sent | C1 N3 |
| 3 | | **Wrong Precondition Connectivity Event** | | | |
| | Send on ISO: - Select applet - Send  APDU with (INS = '01') | `Service = ConnectivityService Listener = ConnectivityListener`<br><br>`process() ConnectivityService. prepareAndSendConnectivityEvent()` | Shall throw exception with error code reason HCI_CONDITIONS_ NOT_SATISFIED | No EVT_ CONNECTIVITY shall be sent | N4, C3 |
| 4 | | **No Proactive Handler** | | | |
| | - Send EVT_SEND_DATA (Select applet) - Send EVT_SEND_DATA (INS = '01') | `Service = CardEmulationService Listener = CardEmulationListener`<br><br>`process() ProactiveHandlerSystem.getTheHandle r()` | ProactiveHandler shall not be available | SW - '90 00' | N5 |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI commands | API Description | API Expectation | HCI Response | CRR |
| 5 | | No Proactive Handler onCallback | | | |
| | - Send EVT_SEND_DATA (Select applet) - Send EVT_SEND_DATA (INS = '01') | `Service = CardEmulationService` `Listener = CardEmulationListener` `activateEvent(EVENT_ON_SEND_DATA)` `during the installation` `onCallback()` `ProactiveHandlerSystem.getTheHandle r()` | ProactiveHandler shall not be available | SW - '90 00' | N5 |
| 6 | | Use proactive functionality | | | |
| | - Send EVT_SEND_DATA (Select applet) - Send EVT_SEND_DATA with INS = '01' - Send ENVELOPE (HCI Connectivity) on ISO interface after receiving HCI Connectivity Event | `Listener = CardEmulationListener` `process():` `prepareAndSendConnectivityEvent()` `register for` `EVENT_EVENT_DOWNLOAD_HCI_CONNECTIVI TY` `processToolkit():` `use arbitrary method of the UICC` `API (TS 102 241 [6])` | No exception shall be thrown | - SW - '90 00' - HCI event EVT_CONNECT IVITY sent - response to ENVELOPE | N1 N2 N3 |

### 6.2.2.1.2 Method prepareAndSendTransactionEvent(byte[] aid, short aidOffset, short aidLen, byte[] parameters, short parametersOffset, short parametersLen)

Test Area Reference: Api_2_CNs_Ste.

#### 6.2.2.1.2.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendTransactionEvent(byte [] aid,
                                    short aidOffset,
                                    short aidLen,
                                    byte[] parameters,
                                    short parametersOffset,
                                    short parametersLen)
                                    throws HCIException
                                           java.lang.ArrayIndexOutOfBoundsException,
                                           java.lang.NullPointerException
```

##### 6.2.2.1.2.1.1 Normal execution

- CRRN1: this non-blocking method builds the HCI event EVT_TRANSACTION which notifies the terminal host that it shall launch an application on the terminal which is associated to an Applet in the UICC host identified.

- CRRN2: the contactless runtime environment shall bind the services defined in uicc.hci.services.connectivity to the corresponding resources (e.g. gates and pipes) specified by the HCI protocol [3] for the connectivity service.

- CRRN3: The Contactless Framework shall only send the HCI event EVT_CONNECTIVITY or EVT_TRANSACTION specified by the HCI protocol [3] to an Applet instance, when it is the selected Applet, which is in card emulation mode or when it is in the state ACTIVATED (according to "GlobalPlatform Amendment C" [10]) for the reader mode.

##### 6.2.2.1.2.1.2 Parameter errors

- CRRP1: throw HCIException with error code reason HCI_INVALID_LENGTH if the parameter length or the AID is not compliant to TS 102 622 [3].

- CRRP2: throw java.lang.ArrayIndexOutOfBoundsException - if operation would cause access of data outside array bounds.

- CRRP3: throw java.lang.NullPointerException - if parameters is null.

### 6.2.2.1.2.1.3 Context errors

- CRRC1: throw HCIException with error code reason HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

- CRRC2: throw HCIException with error code reason HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

- CRRC3: throw HCIException with error code reason HCI_CONDITIONS_NOT_SATISFIED if the conditions to call this method are not satisfied.

### 6.2.2.1.2.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_CNs_Ste_1.java | 1 |
| Api_2_CNs_Ste_1.java | 2 |
| Api_2_CNs_Ste_4.java | 3 |
| Api_2_CNs_Ste_2.java | 4 |
| Api_2_CNs_Ste_3.java | 5 |

### 6.2.2.1.2.3 Initial condition

- Prior to this test the Terminal shall have been powered on and performed the PROFILE DOWNLOAD procedure.

- In terminal profile set the 25th byte, 'b6' indicates that class m is supported.

- In terminal profile 5th byte, b1 indicates proactive UICC: SET UP EVENT LIST.

- Pipe has been created and opened to connectivity gate in the terminal host.

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

### 6.2.2.1.2.4 Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI commands | API Description | API Expectation | HCI Response | CRR |
| 1 | **Send HCI Transaction Event** | | | | |
| | Send EVT_SEND_DATA with INS = '01' | `extends CardEmulationListener process(): prepareAndSendTransactionEvent() aid = 'A00000000901…01' aidOffset = 0 aidLen = 16 parameters = '01…01' parametersOffset = 0 parametersLen = 10` | No exception shall be thrown | EVT_SEND_DATA (SW - '90 00')<br><br>HCI event EVT_TRANSACTION sent | N1, N2, |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI commands | API Description | API Expectation | HCI Response | CRR |
| 2 | HCI interface disabled | | | | |
| | 1 - Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]. Send on ISO interface: - Send APDU to select the applet - Send APDU (INS = '02') | `extends CardEmulationListener`<br>`process():`<br>`prepareAndSendTransactionEvent()` | throw HCIException with error code reason HCI_CURRENTLY_DISABLED | SW - '90 00' No EVT_ CONNECTIVITY shall be sent | C1 |
| | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands: - Send APDU to select the applet. - Send APDU (INS = '02') - Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface() API`<br>`method of  Global Platform Amendment`<br>`C [10] is used to disable HCI`<br>`interface`<br><br>`extends CardEmulationListener`<br>`process():`<br>`prepareAndSendTransactionEvent()`<br><br>`setCommunicationInterface() API`<br>`method of  Global Platform Amendment`<br>`C [10] is used to enable again HCI`<br>`interface` | throw HCIException with error code reason HCI_CURRENTLY_DISABLED | SW - '90 00' No EVT_ CONNECTIVITY shall be sent | C1 |
| 3 | Wrong conditions | | | | |
| | Send on ISO: - Select applet - Send  APDU with (INS = '03') | `Service = ConnectivityService`<br>`Listener = ConnectivityListener`<br>`process():`<br>`prepareAndSendTransactionEvent()` | throw HCIException with error code reason HCI_CONDITIONS_NOT _SATISFIED | SW - '90 00' No EVT_ TRANSACTION shall be sent | C3 |
| 4 | Wrong parameters | | | | |
| | 1 - Send EVT_SEND_DATAwith INS = '01' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`aid = 'A00000000901…01'`<br>`aidOffset = 20`<br>`aidLen = 16`<br>`parameters = '01…01'`<br>`parametersOffset = 0`<br>`parametersLen = 10` | throw java.lang.ArrayIndexOutOfBoundsException | EVT_SEND_DATA (SW - '90 00') No EVT_ TRANSACTION shall be sent | P2, P3 |
| | 2 - Send EVT_SEND_DATAwith INS = '02' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`aid = 'A00000000901…01'`<br>`aidOffset = 0`<br>`aidLen = 20`<br>`parameters = '01…01'`<br>`parametersOffset = 0`<br>`parametersLen = 10` | throw java.lang.ArrayIndexOutOfBoundsException | EVT_SEND_DATA (SW - '90 00') No EVT_ TRANSACTION shall be sent | P2, P3 |

| Test case | | | | | |
|---|---|---|---|---|---|
| **ID** | **HCI commands** | **API Description** | **API Expectation** | **HCI Response** | **CRR** |
| | 3 - Send EVT_SEND_DAT Awith INS = '03' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`aid = 'A00000000901…01'`<br>`aidOffset = 0`<br>`aidLen = 16`<br>`parameters = '01…01'`<br>`parametersOffset =  20`<br>`parametersLen = 10` | throw java.lang.ArrayIndexOut OfBoundsException | EVT_SEND_DA TA (SW - '90 00') No EVT_ TRANSACTION shall be sent | P2, P3 |
| | 4 - Send EVT_SEND_DAT Awith INS = '04' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`aid = 'A00000000901…01'`<br>`aidOffset = 0`<br>`aidLen = 16`<br>`parameters = '01…01'`<br>`parametersOffset = 0`<br>`parametersLen =  20` | throw java.lang.ArrayIndexOut OfBoundsException | EVT_SEND_DA TA (SW - '90 00') No EVT_ TRANSACTION shall be sent | P2, P3 |
| | 5 - Send EVT_SEND_DAT Awith INS = '05' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`aid = null`<br>`aidOffset = 0`<br>`aidLen = 16`<br>`parameters = '01…01'`<br>`parametersOffset = 0`<br>`parametersLen = 10` | throw java.lang.NullPointerExc eption | EVT_SEND_DA TA (SW - '90 00') No EVT_ TRANSACTION shall be sent | P2, P3 |
| | 6 - Send EVT_SEND_DAT AINS = '06' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`aid = 'A00000000901…01'`<br>`aidOffset = 0`<br>`aidLen = 16`<br>`parameters = null`<br>`parametersOffset = 0`<br>`parametersLen = 10` | throw java.lang.NullPointerExc eption | EVT_SEND_DA TA (SW - '90 00') No EVT_ TRANSACTION shall be sent | P2, P3 |
| 5 | **Wrong Precondition Transaction Event** | | | | |
| | - Send EVT_SEND_DAT A (INS = '01') | `Service = ConnectivityService`<br>`Listener = ConnectivityListener`<br><br>`process()`<br>`ConnectivityService.`<br>`prepareAndSendTransactionEvent()` | Shall throw exception | EVT_SEND_DA TA (SW - '90 00') No EVT_ TRANSACTION shall be sent | N3 |

### 6.2.2.1.3 Method prepareAndSendTransactionEvent (byte[] parameters, short parametersOffset, short parametersLen)

Test Area Reference: Api_2_CNs_Stt.

#### 6.2.2.1.3.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendTransactionEvent(byte[] parameters,
                            short parametersOffset,
                            short parametersLen)
                        throws HCIException,
                            java.lang.ArrayIndexOutOfBoundsException,
                            java.lang.NullPointerException
```

*ETSI*

#### 6.2.2.1.3.1.1 Normal execution

- CRRN1: this non-blocking method builds the HCI event EVT_TRANSACTION which notifies the terminal host that it shall launch an application on the terminal which is associated to an Applet in the UICC host identified.

- CRRN2: the contactless runtime environment shall bind the services defined in uicc.hci.services.connectivity to the corresponding resources (e.g. gates and pipes) specified by the HCI protocol [3] for the connectivity service.

#### 6.2.2.1.3.1.2 Parameter errors

- CRRP1: throw HCIException with error code reason HCI_INVALID_LENGTH if the parameter length or the AID is not compliant to TS 102 622 [3].

- CRRP2: throw java.lang.ArrayIndexOutOfBoundsException - if operation would cause access of data outside array bounds.

- CRRP3: throw java.lang.NullPointerException - if parameters is null.

#### 6.2.2.1.3.1.3 Context errors

- CRRC1: throw HCIException with error code reason HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

- CRRC2: throw HCIException with error code reason HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

- CRRC3: throw HCIException with error code reason HCI_CONDITIONS_NOT_SATISFIED if the conditions to call this method are not satisfied.

#### 6.2.2.1.3.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_CNs_Stt_1.java | 1 |
| Api_2_CNs_Stt_1.java | 2 |
| Api_2_CNs_Stt_3.java | 3 |
| Api_2_CNs_Stt_2.java | 4 |

#### 6.2.2.1.3.3 Initial condition

- Prior to this test the Terminal shall have been powered on and performed the PROFILE DOWNLOAD procedure.

- In terminal profile set the 25th byte, 'b6' indicates that class m is supported.

- In terminal profile 5th byte, b1 indicates proactive UICC: SET UP EVENT LIST.

- Pipe has been created and opened to connectivity gate in the terminal host.

- EVT_FIELD_ON has been sent on HCI interface.

- EVT_CARD_ACTIVATED has been sent on HCI interface.

- According applet has been successfully installed and selected using HCI interface.

6.2.2.1.3.4 Test procedure

<table>
<tr><td colspan="6" align="center">**Test case**</td></tr>
<tr><td>**ID**</td><td>**HCI commands**</td><td>**API Description**</td><td>**API Expectation**</td><td>**HCI Response**</td><td>**CRR**</td></tr>
<tr><td>1</td><td colspan="5" align="center">**Send HCI Transaction Event**</td></tr>
<tr><td></td><td>Send EVT_SEND_DATA with INS = '01'</td><td>`extends CardEmulationListener`<br>`process():`<br>`prepareAndSendTransactionEvent()`<br>`parameters = '01…01'`<br>`parametersOffset = 0`<br>`parametersLen = 10`</td><td>No exception shall be thrown</td><td>SW - '90 00'<br><br>HCI event EVT_TRANSACTION sent</td><td>N1, N2</td></tr>
<tr><td>2</td><td colspan="5" align="center">**HCI interface disabled**</td></tr>
<tr><td></td><td>1 - Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]. Send on ISO interface:<br>- Send APDU to select applet<br>- Send APDU (INS = '02')</td><td>`extends CardEmulationListener`<br>`process():`<br>`prepareAndSendTransactionEvent()`</td><td>throw HCIException with error code reason HCI_CURRENTLY_DISABLED</td><td>SW - '90 00'<br>No EVT_ CONNECTIVITY shall be sent</td><td>C1</td></tr>
<tr><td></td><td>2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands:<br>- Send APDU to select the applet.<br>- Send APDU (INS = '02')<br>- Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C</td><td>`setCommunicationInterface() API`<br>`method of  Global Platform Amendment`<br>`C [10] is used to disable HCI`<br>`interface`<br><br>`extends CardEmulationListener`<br>`process():`<br>`prepareAndSendTransactionEvent()`<br><br>`setCommunicationInterface() API`<br>`method of  Global Platform Amendment`<br>`C [10] is used to enable again HCI`<br>`interface`</td><td>throw HCIException with error code reason HCI_CURRENTLY_DISABLED</td><td>SW - '90 00'<br>No EVT_ CONNECTIVITY shall be sent</td><td>C1</td></tr>
<tr><td>3</td><td colspan="5" align="center">**Wrong conditions**</td></tr>
<tr><td></td><td>Send on ISO interface:<br>- Select applet<br>- APDU data with INS = '03'</td><td>`Service = ConnectivityService`<br>`Listener = ConnectivityListener`<br><br>`process():`<br>`prepareAndSendTransactionEvent()`</td><td>throw HCIException with error code reason HCI_CONDITIONS_NOT _SATISFIED</td><td>SW - '90 00'<br>No EVT_ TRANSACTION shall be sent</td><td>C3</td></tr>
<tr><td>4</td><td colspan="5" align="center">**Wrong parameters**</td></tr>
<tr><td></td><td>1 - Send EVT_SEND_DATA with INS = '01'</td><td>`extends CardEmulationListener`<br>`process():`<br>`prepareAndSendTransactionEvent()`<br>`parameters = '01…01'`<br>`parametersOffset =  20`<br>`parametersLen = 10`</td><td>throw java.lang.ArrayIndexOutOfBoundsException</td><td>SW - '90 00'<br>No EVT_ TRANSACTION shall be sent</td><td>P2, P3</td></tr>
</table>

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI commands | API Description | API Expectation | HCI Response | CRR |
| | 2 - Send EVT_SEND_DATA with INS = '02' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`parameters = '01…01'`<br>`parametersOffset = 0`<br>`parametersLen =   20` | throw java.lang.ArrayIndexOutOfBoundsException | SW - '90 00' No EVT_ TRANSACTION shall be sent | P2, P3 |
| | 3 - Send EVT_SEND_DATA with INS = '03' | `extends CardEmulationListener`<br>`process():`<br><br>`prepareAndSendTransactionEvent()`<br>`parameters = null`<br>`parametersOffset = 0`<br>`parametersLen = 10` | throw java.lang.NullPointerException | SW - '90 00' No EVT_ TRANSACTION shall be sent | P2, P3 |

## 6.2.3 Package Reader Service

### 6.2.3.1 Interface ReaderMessage

#### 6.2.3.1.1 Method restartReaderModeProcedure

Test Area Reference: Api_2_RMm_Rrp.

##### 6.2.3.1.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void restartReaderModeProcedure()
                         throws HCIException
```

###### 6.2.3.1.1.1.1 Normal execution

- CRRN1: this method sends first the HCI event EVT_END_OPERATION and then the HCI event EVT_READER_REQUESTED.

- CRRN2: this method is intended to recover from the following error states:

    - reception of EVT_TARGET_DISCOVERED with a MULTIPLE_TARGET_STATUS.

    - reception of RESP_WR_RF_ERROR.

    - reception of RESP_ANY_E_TIMEOUT.

- CRRN3: an Applet shall only be able to activate ReaderListener.EVENT_TARGET_DISCOVERED or to use the restartReadermodeProcedure method if it is in lifecycle state ACTIVATED.

###### 6.2.3.1.1.1.2 Parameter errors

- None.

###### 6.2.3.1.1.1.3 Context errors

- CRRC1: throw HCIException with error code reason HCI_CURRENTLY_DISABLED if the HCI interface is disabled.

- CRRC2: throw HCIException with error code reason HCI_CONDITIONS_NOT_SATISFIED if the Applet is not ACTIVATED.

6.2.3.1.1.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_RMm_Rrp_1.java | 1 |
| Api_2_RMm_Rrp_1.java | 2 |
| Api_2_RMm_Rrp_1.java | 3 |
| Api_2_RMm_Rrp_2.java | 4 |
| Api_2_RMm_Rrp_2.java | 5 |

6.2.3.1.1.3 Initial condition

- According applet has been successfully installed and selected using ISO Interface and the applet is set into ACTIVATED state.

- The event ReaderListener.EVENT_TARGET_DISCOVERED has been activated in the applet.

6.2.3.1.1.4 Test procedure

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | **Test case** | | | |
| 1 | | **MULTIPLE_TARGET_STATUS is received - Type A** | | | |
| | Send EVT_TARGET_DISCOVERED(Status = '03') | `restartReaderModeProcedure()`<br><br>`event = EVT_END_OPERATION`<br>`event = EVT_READER_REQUESTED` | No exception shall be thrown | - EVT_END_OPERATION<br><br>- EVT_READER_REQUESTED | N1, N2, N3 |
| 2 | | **MULTIPLE_TARGET_STATUS is received - Type B** | | | |
| | Send EVT_TARGET_DISCOVERED(Status = '03') | `restartReaderModeProcedure()`<br><br>`event = EVT_END_OPERATION`<br>`event = EVT_READER_REQUESTED` | No exception shall be thrown | - EVT_END_OPERATION<br><br>- EVT_READER_REQUESTED | N1, N2, N3 |
| 3 | | **RESP_WR_RF_ERROR is received** | | | |
| | - Send EVT_TARGET_DISCOVERED (status = '00') -WR_RF_ERROR | `- prepareAndSendWriteXchgDataCommand()`<br>`timeout = -1`<br>`data = '01…01'`<br>`offset = 0`<br>`len = 10`<br><br>`- restartReaderModeProcedure()`<br>`event = EVT_END_OPERATION`<br>`event = EVT_READER_REQUESTED` | No exception shall be thrown | - WR_XCHG_DATA<br>- EVT_END_OPERATION<br>- EVT_READER_REQUESTED | N1, N2, N3 |
| 4 | | **RESP_ANY_E_TIMEOUT is received** | | | |
| | - Send EVT_TARGET_DISCOVERED (status = '00') - ANY_E_TIMEOUT | `- prepareAndSendWriteXchgDataCommand()`<br>`timeout = -1`<br>`data = '01…01'`<br>`offset = 0`<br>`len = 10`<br><br>`- restartReaderModeProcedure()`<br>`event = EVT_END_OPERATION`<br>`event = EVT_READER_REQUESTED` | No exception shall be thrown | - WR_XCHG_DATA<br><br>- EVT_END_OPERATION<br>- EVT_READER_REQUESTED | N1, N2, N3 |

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | **Test case** | | | |
| 5 | | **HCI interface is disabled** | | | |
| | 1 - Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]<br>- Send APDU to select the applet.<br>- Send EVT_TARGET_DISCOVERED (status = '03')<br>- Send APDU on ISO interface ('01') | `restartReaderModeProcedure()`<br><br>`event = EVT_END_OPERATION`<br>`event = EVT_READER_REQUESTED` | Shall throw uicc.hci.framework. HCIException with error code HCI_CURRENTLY_DISABLED | - SW - '90 03'<br>No EVT_READER_REQUESTED shall be sent | C1 |
| | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands:<br>- Send EVT_TARGET_DISCOVERED (status = '03')<br>- Send APDU on ISO interface ('01')<br>- Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface()` API method of Global Platform Amendment C [10] is used to disable HCI interface<br><br>`- restartReaderModeProcedure()`<br><br>`event = EVT_END_OPERATION`<br>`event = EVT_READER_REQUESTED`<br><br>`setCommunicationInterface()` API method of Global Platform Amendment C [10] is used to enable again HCI interface | Shall throw uicc.hci.framework. HCIException with error code HCI_CURRENTLY_DISABLED | - SW - '90 03'<br>No EVT_READER_REQUESTED shall be sent | C1 |

### 6.2.3.1.2 Method prepareAndSendWriteXchgDataCommand

Test Area Reference: Api_2_RMm_Srx

#### 6.2.3.1.2.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendWriteXchgDataCommand(byte timeout,
                                        byte[] data,
                                        short offset,
                                        short len)
                                        throws HCIException,
                                                java.lang.NullPointerException,
                                                java.lang.ArrayIndexOutOfBoundsException,
                                                javacard.framework.SystemException
```

6.2.3.1.2.1.1 Normal execution

- CRRN1: this non-blocking method builds the HCI command WR_XCHG_DATA with the data passed in the parameter data and sends it to the Contactless Reader Gate of the CLF.

- CRRN2: The response data from the CLF will be transferred to the UICC with the event ReaderListener.EVENT_WRITE_EXCHANGE_DATA_RESPONSE.

- CRRN3: to be able to receive and send messages over the contactless interface in reader mode the applet shall activate the ReaderListener.EVENT_TARGET_DISCOVERED.

- CRRN4: an Applet has to be in the selectable state (according to the Java Card™ specification [11], [12] and [13]) to act as a contactless Applet in reader mode.

6.2.3.1.2.1.2 Parameter errors

- CRRP1: throw java.lang.NullPointerException if data is null.

- CRRP2: throw java.lang.ArrayIndexOutOfBoundsException if operation would cause access of data outside array bounds.

- CRRP3: throw javacard.framework.SystemException with the error code ILLEGAL_VALUE if the timeout value does not match with the predefined values.

6.2.3.1.2.1.3 Context errors

- CRRC1: throw HCIException with error code reason HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

- CRRC2: throw HCIException with error code reason HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

- CRRC3: throw HCIException with error code reason HCI_FRAGMENTED_MESSAGE_ONGOING if the Contactless Framework is still receiving a fragmented HCI Message.

6.2.3.1.2.2 Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_RMm_Srx_1.java | 1 |
| Api_2_RMm_Srx_1.java | 2 |
| Api_2_RMm_Srx_2.java | 3 |
| Api_2_RMm_Srx_2.java | 4 |
| Api_2_RMm_Srx_2.java | 5 |
| Api_2_RMm_Srx_2.java | 6 |
| Api_2_RMm_Srx_2.java | 7 |

6.2.3.1.2.3 Initial condition

- According applet has been successfully installed and selected using ISO Interface and the applet is set into ACTIVATED state.

- The event ReaderListener.EVENT_TARGET_DISCOVERED has been activated in the applet.

6.2.3.1.2.4 Test procedure

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | **Test case** | | | |
| 1 | | **Send Data - Type A** | | | |
| | - Send EVT_TARGET_DISCOVERED (status = '00') - Send ANY_OK | `prepareAndSendWriteXchgDataCommand()` `timeout = -1` `data = '01…01'` `offset = 0` `len = 10` | No exception shall be thrown | - command WR_XCHG_DATA Is received | N1, N2, N3, N4 |
| 2 | | **Send Data - Type B** | | | |
| | - Send EVT_TARGET_DISCOVERED (status = '00') - Send ANY_OK | `prepareAndSendWriteXchgDataCommand()` `timeout = -1` `data = '01…01'` `offset = 0` `len = 10` | No exception shall be thrown | - command WR_XCHG_DATA Is received | N1, N2, N3, N4 |
| 3 | | **HCI interface is disabled** | | | |
| | 1 - Precondition: Contactless functionality stateis disabled in the UICC as defined in TS 102 223 [7] - Send APDU on ISO interface to select the applet - Send EVT_TARGET_DISCOVERED (status = '00') - Send APDU on ISO interface (INS = '11') | `prepareAndSendWriteXchgDataCommand()` `timeout = 14` `data = '01…01'` `offset = 0` `len = 10` | Shall throw uicc.hci.framework.HCIException with error code HCI_CURRENTLY_DISABLED | - SW - '90 01' | C1 |
| | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands: - Send APDU on ISO interface to select the applet - Send EVT_TARGET_DISCOVERED (status = '00') - Send APDU on ISO interface (INS = '01') - Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface() API method` `of  Global Platform Amendment C [10]` `is used to disable HCI interface` `prepareAndSendWriteXchgDataCommand()` `timeout = 14` `data = '01…01'` `offset = 0` `len = 10` `setCommunicationInterface() API method` `of  Global Platform Amendment C [10]` `is used to enable again HCI interface` | Shall throw uicc.hci.framework.HCIException with error code HCI_CURRENTLY_DISABLED | - SW - '90 01' | C1 |

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 4 | Data is null | | | | |
| | - Send APDU on ISO interface (INS = '02')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send APDU on ISO interface ('12') | `prepareAndSendWriteXchgDataCommand()`<br>`timeout = 14`<br>`data = null`<br>`offset = 0`<br>`len = 10` | Shall throw java.lang.NullPointerException | - SW - '90 02' | P1 |
| 5 | ArrayIndexOutOfBounds Exception | | | | |
| | - Send APDU on ISO interface (INS = '03')<br>- Send EVT_TARGET_DISCOVERED (status = 00)<br>- Send APDU on ISO interface ('13') | `prepareAndSendWriteXchgDataCommand()`<br>`timeout = 14`<br>`data = '01…01'`<br>`offset = -1`<br>`len = 10` | Shall throw java.lang. ArrayIndexOutOfBoundsException | - SW - '90 03' | P2 |
| 6 | ArrayIndexOutOfBounds Exception | | | | |
| | - Send APDU on ISO interface (INS = '03')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send APDU on ISO interface (INS = '13') | `prepareAndSendWriteXchgDataCommand()`<br>`timeout = 14`<br>`data = '01…01'`<br>`offset = 0`<br>`len = 11` | Shall throw java.lang. ArrayIndexOutOfBoundsException | - SW - '90 04' | P2 |
| 7 | Timeout has illegal value | | | | |
| | - Send EVT_TARGET_DISCOVERED (status = 00)<br>- Send APDU on ISO interface (INS = '01') | `prepareAndSendWriteXchgDataCommand()`<br>`timeout = -2`<br>`data = '01…01'`<br>`offset = 0`<br>`len = 10` | Shall throw uicc.hci.framework.HCIException with error code ILLEGAL_VALUE | - SW - '90 05' | P3 |

### 6.2.3.1.3 Method prepareAndSendGetParameterCommand

Test Area Reference: Api_2_RMm_Sgp.

#### 6.2.3.1.3.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void prepareAndSendGetParameterCommand(byte paramid)
                              throws HCIException,
                                     javacardframework.SystemException
```

##### 6.2.3.1.3.1.1 Normal execution

- CRRN1: This non-blocking method builds the HCI command ANY_GET_PARAMETER for the indicated information and sends it to the Contactless Reader Gate of the CLF.

- CRRN2: this method should only be called when the CLF has successfully discovered a card in the field, i.e. after reception of the HCI event EVT_TARGET_DISCOVERED.

- CRRN3: paramid shall be one of the PARAM_* values defined in this interface.

6.2.3.1.3.1.2        Parameter errors

- CRRP1: throw javacard.framework.SystemException - with the following reason code ILLEGAL_VALUE if the paramID does not match with the predefined values.

6.2.3.1.3.1.3        Context errors

- CRRC1: throw HCIException with error code reason HCI_CURRENTLY_DISABLED if the HCI interface was disabled.

- CRRC2: throw HCIException with error code reason HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command.

- CRRC3: throw HCIException with error code reason HCI_FRAGMENTED_MESSAGE_ONGOING if the Contactless Framework is still receiving a fragmented HCI Message.

6.2.3.1.3.2        Test suite files

| Applet Name | Test case ID |
|---|---|
| Api_2_RMm_Sgp_1.java | 1 |
| Api_2_RMm_Sgp_1.java | 2 |
| Api_2_RMm_Sgp_2.java | 3 |
| Api_2_RMm_Sgp_2.java | 4 |
| Api_2_RMm_Sgp_2.java | 5 |

6.2.3.1.3.3        Initial condition

- According applet has been successfully installed and selected using ISO Interface and the applet is set into ACTIVATED state.

- The event ReaderListener.EVENT_TARGET_DISCOVERED has been activated in the applet.

6.2.3.1.3.4        Test procedure

| Test case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | | **Get Parameter: Type A** | | | |
| | 1 - Send APDU on ISO interface (INS = '01') - Send EVT_TARGET_DISCOVERED (status = '00') - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` `paramid  = PARAM_ID_TYPE_A_READER_UID` `Response received:` `onCallback()` `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0100' | N1, N2, N3 |
| | 2 - Send APDU on ISO interface (INS = '02') - Send EVT_TARGET_DISCOVERED (status = '00') - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` `paramid = PARAM_ID_TYPE_A_READER_ATQA` `Response received:` `onCallback()` `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0200' | N1, N2, N3 |
| | 3 - Send APDU on ISO interface (INS = '03') - Send EVT_TARGET_DISCOVERED (status = '00') - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` `paramid = PARAM_ID_TYPE_A_READER_APPLICATION_DATA` `Response received:` `onCallback()` `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0300' | N1, N2, N3 |

| | | Test case | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| | 4 - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_A_READER_SAK` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown. | - GET_PARAMETER with the predefined parameter value - APDU-Response '0400' | N1, N2, N3 |
| | 5 - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `- prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_A_READER_FWI` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0500' | N1, N2, N3 |
| | 6 - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_A_READER_DATARATE_MAX` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0600' | N1, N2, N3 |
| 2 | | **Get Parameter: Type B** | | | |
| | 1 - Send APDU on ISO interface (INS = '07') <br> - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_B_READER_PUPI` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0700' | N1, N2, N3 |
| | 2 - Send APDU on ISO interface (INS = '08') <br> - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_B_READER_APPLICATION_DATA` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0800' | N1, N2, N3 |
| | 3 - Send APDU on ISO interface (INS = '09') <br> - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_B_READER_AFI` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0900' | N1, N2, N3 |
| | 4 - Send APDU on ISO interface (INS = '0A') <br> - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_B_READER_HIGHER_LAYER_RESPONSE` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0A00' | N1, N2, N3 |
| | 5 - Send APDU on ISO interface (INS = '0B') <br> - Send EVT_TARGET_DISCOVERED (status = '00') <br> - Send APDU on ISO interface (INS = '20') | `prepareAndSendGetParameterCommand()` <br> `paramid =` <br> `PARAM_ID_TYPE_B_READER_HIGHER_LAYER_DATA` <br><br> Response received: <br> `onCallback()` <br> `event = EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown | - GET_PARAMETER with the predefined parameter value - APDU-Response '0B00' | N1, N2, N3 |

| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
|---|---|---|---|---|---|
| | | **Test case** | | | |
| 3 | | **HCI interface is disabled** | | | |
| | 1 - Precondition: Contactless functionality state is disabled in the UICC as defined in TS 102 223 [7]<br>- Send APDU on ISO interface (INS = '01')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send APDU on ISO interface (INS = '11') | `- prepareAndSendGetParameterCommand() paramid = PARAM_ID_TYPE_A_READER_UID` | Shall throw uicc.hci.framework. HCIException with error code HCI_CURRENTLY_ DISABLED | - SW - '90 03' | C1 |
| | 2 - Precondition: Contactless functionality state is disabled in the UICC as defined in Global Platform Amendment C Send on ISO interface send the following commands:<br>- Send APDU on ISO interface to select the applet<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send APDU on ISO interface (INS = '11')<br>- Postcondition: Contactless functionality state is enabled again in the UICC as defined in Global Platform Amendment C | `setCommunicationInterface() API method of Global Platform Amendment C [10] is used to disable HCI interface`<br><br>`prepareAndSendGetParameterCommand() paramid = PARAM_ID_TYPE_A_READER_UID`<br><br>`setCommunicationInterface() API method of Global Platform Amendment C [10] is used to enable again HCI interface` | Shall throw uicc.hci.framework. HCIException with error code HCI_CURRENTLY_ DISABLED | - SW - '90 03' | C1 |
| 4 | | **The Contactless Framework is receiving fragmented HCI Message** | | | |
| | - Send APDU on ISO interface (INS = '02')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br><br>- Send ANY_OK as fragmented HCI Message (data length = supported buffer size + 5 bytes, message not complete)<br><br>- Send APDU on ISO interface (INS = '12') | `- prepareAndSendGetParameterCommand() paramid = PARAM_ID_TYPE_A_READER_UID` | Shall throw uicc.hci.framework. HCIException with error code HCI_FRAGMENTE D_MESSAGE_ONG OING | - SW - '90 04' | C3 |
| 5 | | **The parameter has an illegal value** | | | |
| | - Send APDU on ISO interface (INS = '05')<br><br>- Send EVT_TARGET_DISCOVERED (status = '00')<br><br>- Send APDU on ISO interface (INS = '15') | `- prepareAndSendGetParameterCommand() paramid = -1` | Shall throw uicc.hci.framework. HCIException with error code ILLEGAL_VALUE | - SW - '90 05' | P1 |

## 6.2.3.2 Interface ReaderListener

### 6.2.3.2.1 Method onCallback

Test Area Reference: Api_2_Rml_Ocb.

#### 6.2.3.2.1.1 Conformance requirements

The method with the following header shall be compliant to its definition in the API.

```
void onCallback(byte event, HCIMessage message)
```

##### 6.2.3.2.1.1.1 Normal execution

- CRRN1: The Contactless Framework shall invoke the method ReaderListener.onCallback only with events which are defined in ReaderListener or HCIListener and only with ReaderMessage objects.

- CRRN2: The Applet instance shall activate the events with ReaderService.activateEvent before it will receive any event notification.

##### 6.2.3.2.1.1.2 Parameter errors

- None.

##### 6.2.3.2.1.1.3 Context errors

- None.

#### 6.2.3.2.1.2 Test Suite Files

| Applet Name | Test case ID |
|---|---|
| Api_2_Rml_Ocb_1.java | 1 |
| Api_2_Rml_Ocb_1.java | 2 |
| Api_2_Rml_Ocb_1.java | 3 |
| Api_2_Rml_Ocb_1.java | 4 |
| Api_2_Rml_Ocb_1.java | 5 |
| Api_2_Rml_Ocb_1.java | 6 |
| Api_2_Rml_Ocb_1.java | 7 |
| Api_2_Rml_Ocb_1.java | 8 |

#### 6.2.3.2.1.3 Initial conditions

- According applet has been successfully installed and selected using ISO Interface and the applet is set into ACTIVATED state.

- The event ReaderListener.EVENT_TARGET_DISCOVERED has been activated in the applet.

#### 6.2.3.2.1.4 Test procedure

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| 1 | EVENT_TARGET_DISCOVERED - Type A | | | | |
| | Send command on ISO interface to select applet.<br>- select applet APDU (INS = '10')<br>- Send EVENT_TARGET_DISCOVERED (status = '00') | `HCIService = ReaderService`<br>`activateEvent()`<br>`event =`<br>`EVENT_TARGET_DISCOVERED` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | WR_XCHG_DATA ('00 01 00 00') is received | N1, N2 |

| Test Case | | | | | |
|---|---|---|---|---|---|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| **EVENT_WRITE_EXCHANGE_DATA_RESPONSE - Type A** | | | | | |
| 2 | Send command on ISO interface to select applet.<br>- select applet APDU(INS = '11')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send ANY_OK () | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`EVENT_WRITE_EXCHANGE_DATA_RES`<br>`PONSE` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | Start bulk data transfer on HCI interface. | N1, N2 |
| **HCIListener.EVENT_HCI_TRANSMISSION_FAILED - Type A** | | | | | |
| 3 | Send command on ISO interface to select applet.<br>- select applet APDU (INS = '12')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send ANY_OK ('11 22 33 44 00'), RF error indicator is set to '01'<br>- Send APDU (INS = '2') on ISO interface | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`HCIListener.EVENT_HCI_TRANSMI`<br>`SSION_FAILED` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | - No WR_XCHG_DATA () is received.<br><br>- SW - '90 00' | N1, N2. |
| **EVENT_GET_PARAMETER_RESPONSE - Type A** | | | | | |
| 4 | Send command on ISO interface to select applet.<br>- select applet APDU(INS = '13')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send ANY_OK () | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | ANY_GET_PARAMETER is received | N1, N2 |
| 5 | **EVENT_TARGET_DISCOVERED - Type B** | | | | |
| | Send command on ISO interface to select applet.<br>- select applet APDU (INS = '10')<br>- Send EVENT_TARGET_DISCOVERED (status = '00') | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`EVENT_TARGET_DISCOVERED` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | WR_XCHG_DATA ('00 01 00 00') is received | N1, N2 |
| **EVENT_WRITE_EXCHANGE_DATA_RESPONSE - Type B** | | | | | |
| 6 | Send command on ISO interface to select applet.<br>- select applet APDU(INS = '11')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send ANY_OK () | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`EVENT_WRITE_EXCHANGE_DATA_RES`<br>`PONSE` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | Start bulk data transfer on HCI interface. | N1, N2 |
| **HCIListener.EVENT_HCI_TRANSMISSION_FAILED - Type B** | | | | | |
| 7 | Send command on ISO interface to select applet.<br>- select applet APDU (INS = '12')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send ANY_OK ('11 22 33 44 00'), RF error indicator is set to '01'<br>- Send APDU (INS = '2') on ISO interface | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`HCIListener.EVENT_HCI_TRANSMI`<br>`SSION_FAILED` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | - No WR_XCHG_DATA () is received.<br><br>- SW - '90 00' | N1, N2. |

| Test Case | | | | | |
|----|-------------|-----------------|-----------------|--------------|-----|
| ID | HCI Command | API Description | API Expectation | HCI Response | CRR |
| EVENT_GET_PARAMETER_RESPONSE - Type B | | | | | |
| 8 | Send command on ISO interface to select applet.<br>- select applet APDU(INS = '13')<br>- Send EVT_TARGET_DISCOVERED (status = '00')<br>- Send ANY_OK () | `HCIService = ReaderService`<br><br>`activateEvent()`<br>`event =`<br>`EVENT_GET_PARAMETER_RESPONSE` | No exception shall be thrown.<br><br>onCallback() method shall notice the event | ANY_GET_PARAMETER is received | N1,<br>N2 |

# Annex A (normative):
# Class, methods and tests acronyms

## A.1 HCI framework

| Class name | Acronyms |
|---|---|
| HCIDevice | Hdv |
| HCISevice | HSr |
| HCIMessage | Hme |
| HCIListener | Hln |
| HCIException | Hxp |

### A.1.1 Class HCIDevice

| Method name | Acronyms |
|---|---|
| `public static HCIService getHCIService()` | Gsr |
| `public static byte getPowerMode()` | Gpm |
| `public static byte isHCIServiceAvailable()` | Isa |

### A.1.2 Interface HCIService

| Method name | Acronyms |
|---|---|
| `void register()` | Reg |
| `void deregister()` | Drg |
| `void activateEvent()` | Ace |
| `void deactivateEvent()` | Dae |
| `void requestCallbackNotification()` | Rcn |
| `boolean getEventNotificationStatus()` | Gen |

### A.1.3 Interface HCIMessage

| Method Name | Acronyms |
|---|---|
| `boolean isHeading()` | Mhd |
| `boolean isComplete()` | Mco |
| `byte getType()` | Mty |
| `byte getInstruction()` | Min |
| `short getReceiveOffset()` | Mro |
| `short getReceiveLength()` | Mrl |
| `byte[] getReceiveBuffer()` | Mrb |

### A.1.4 Interface HCIListener

| Method Name | Acronyms |
|---|---|
| `void onCallback()` | Ocb |

## A.1.5    Class HCIException

| Method Name | Acronyms |
|---|---|
| public static void throwIt() | Trw |

# A.2    HCI Services

## A.2.1    Package cardemulation

| Interface Name | Acronyms |
|---|---|
| CardEmulationMessage | CEm |
| CardEmulationService | CEs |

### A.2.1.1    Interface CardEmulationListener

| Method Name | Acronyms |
|---|---|
| void onCallback() | Ocb |

### A.2.1.2    Interface CardEmulationMessage

| Method Name | Acronyms |
|---|---|
| void prepareAndSendGetParameterCommand() | Sgp |
| void prepareAndSendSendDataEvent() | Ssd |
| boolean selectingMessage() | Scm |

### A.2.1.3    Interface CardEmulationService

| Method Name | Acronyms |
|---|---|
| byte getCardRFType() | Rft |

## A.2.2    Package connectivity

| Interface Name | Acronyms |
|---|---|
| ConnectivityMessage | CNm |
| ConnectivityService | CNs |

### A.2.2.1    Interface ConnectivityListener

FFS

### A.2.2.2    Interface ConnectivityMessage

FFS

## A.2.2.3    Interface ConnectivityService

| Method Name | Acronyms |
|---|---|
| `prepareAndSendConnectivityEvent()` | Sce |
| `prepareAndSendTransactionEvent(byte[] aid,`<br>`short aidOffset, short aidLen, byte[] parameters,`<br>`short parametersOffset, short parametersLen)` | Ste |
| `prepareAndSendTransactionEvent(byte[] parameters, short`<br>`parametersOffset, short parametersLen)` | Stt |

# A.2.3    Readermode

## A.2.3.1    Interface RaederListener

| Method Name | Acronyms |
|---|---|
| `void onCallback()` | Ocb |

## A.2.3.2    Interface ReaderMessage

| Method Name | Acronyms |
|---|---|
| `void prepareAndSendGetParameterCommand()` | Sgp |
| `void prepareAndSendWriteXchgDataCommand()` | Srx |
| `void restartReaderModeProcedure()` | Rrp |

## A.2.3.3    Interface ReaderService

FFS

# Annex B (normative):
# AIDs - to be reserved

## B.1 Package HCI framework

| Package name | AID |
|---|---|
| uicc.test.hci.framework | A0 00 00 00 09 00 05 FF FF FF FF 89 21 00 00 00 |

## B.1.1 Class HCIDevice

| Package name | AID |
|---|---|
| uicc.test.hci.framework. Api_1_Hdv_Gsr | A0 00 00 00 09 00 05 FF FF FF FF 89 21 01 00 00 |
| uicc.test.hci.framework. Api_1_Hdv_Gpm | A0 00 00 00 09 00 05 FF FF FF FF 89 21 02 00 00 |
| uicc.test.hci.framework. Api_1_Hdv_Isa | A0 00 00 00 09 00 05 FF FF FF FF 89 21 03 00 00 |

| Applet name | AID |
|---|---|
| Api_1_Hdv_Gsr_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 01 01 02 |
| Api_1_Hdv_Gsr_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 01 02 02 |
| Api_1_Hdv_Gpm_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 02 01 02 |
| Api_1_Hdv_Isa_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 03 01 02 |
| Api_1_Hdv_Isa_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 03 02 02 |

## B.1.2 Interface HCIService

| Package name | AID |
|---|---|
| uicc.test.hci.framework. Api_1_Hsr_Reg | A0 00 00 00 09 00 05 FF FF FF FF 89 21 04 00 00 |
| uicc.test.hci.framework. Api_1_Hsr_Drg | A0 00 00 00 09 00 05 FF FF FF FF 89 21 05 00 00 |
| uicc.test.hci.framework. Api_1_Hsr_Ace | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 00 00 |
| uicc.test.hci.framework. Api_1_Hsr_Dae | A0 00 00 00 09 00 05 FF FF FF FF 89 21 07 00 00 |
| uicc.test.hci.framework. Api_1_Hsr_Rcn | A0 00 00 00 09 00 05 FF FF FF FF 89 21 08 00 00 |
| uicc.test.hci.framework. Api_1_Hsr_Gen | A0 00 00 00 09 00 05 FF FF FF FF 89 21 09 00 00 |

| Applet name | AID |
|---|---|
| Api_1_Hsr_Reg_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 04 01 02 |
| Api_1_Hsr_Reg_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 04 02 02 |
| Api_1_Hsr_Reg_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 04 03 02 |
| Api_1_Hsr_Reg_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 04 04 02 |
| Api_1_Hsr_Drg_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 05 01 02 |
| Api_1_Hsr_Drg_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 05 02 02 |
| Api_1_Hsr_Ace_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 01 02 |
| Api_1_Hsr_Ace_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 02 02 |
| Api_1_Hsr_Ace_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 04 02 |
| Api_1_Hsr_Ace_5.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 05 02 |
| Api_1_Hsr_Ace_6.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 06 02 |
| Api_1_Hsr_Ace_8.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 06 08 02 |
| Api_1_Hsr_Dae_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 07 01 02 |
| Api_1_Hsr_Dae_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 07 02 02 |
| Api_1_Hsr_Dae_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 07 03 02 |
| Api_1_Hsr_Dae_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 07 04 02 |
| Api_1_Hsr_Dae_6.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 07 06 02 |
| Api_1_Hsr_Rcn_7.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 08 07 02 |
| Api_1_Hsr_Gen_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 09 01 02 |
| Api_1_Hsr_Gen_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 09 02 02 |

## B.1.3 Interface HCIMessage

| Package name | AID |
|---|---|
| uicc.test.hci.framework. Api_1_Hme_Mhd | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0A 00 00 |
| uicc.test.hci.framework. Api_1_Hme_Mco | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0B 00 00 |
| uicc.test.hci.framework. Api_1_Hme_Mty | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0C 00 00 |
| uicc.test.hci.framework. Api_1_Hme_Min | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0D 00 00 |
| uicc.test.hci.framework. Api_1_Hme_Mro | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0E 00 00 |
| uicc.test.hci.framework. Api_1_Hme_Mrl | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0F 00 00 |
| uicc.test.hci.framework. Api_1_Hme_Mrb | A0 00 00 00 09 00 05 FF FF FF FF 89 21 10 00 00 |

| Applet name | AID |
|---|---|
| Api_1_Hme_Mhd_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0A 01 02 |
| Api_1_Hme_Mco_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0B 01 02 |
| Api_1_Hme_Mty_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0C 01 02 |
| Api_1_Hme_Mty_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0C 02 02 |
| Api_1_Hme_Min_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0D 01 02 |
| Api_1_Hme_Min_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0D 02 02 |
| Api_1_Hme_Mrl_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 0F 01 02 |
| Api_1_Hme_Mrb_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 10 01 02 |

## B.1.4 Interface HCIListener

| Package name | AID |
|---|---|
| uicc.test.hci.framework. Api_1_Hln_Ocb | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 00 00 |

| Applet name | AID |
|---|---|
| Api_1_Hln_Ocb_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 01 02 |
| Api_1_Hln_Ocb_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 02 02 |
| Api_1_Hln_Ocb_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 03 02 |
| Api_1_Hln_Ocb_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 04 02 |
| Api_1_Hln_Ocb_5.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 05 02 |
| Api_1_Hln_Ocb_6.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 11 06 02 |

## B.1.5 Class HCIException

| Package name | AID |
|---|---|
| uicc.test.hci.framework. Api_1_Hxp_Trw | A0 00 00 00 09 00 05 FF FF FF FF 89 21 12 00 00 |

| Applet name | AID |
|---|---|
| Api_1_Hxp_Trw_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 21 12 01 02 |

# B.2 HCI Services

## B.2.1 Package cardemulation

| Package name | AID |
|---|---|
| uicc.test.hci.services.cardemulation | A0 00 00 00 09 00 05 FF FF FF FF 89 25 00 00 00 |

### B.2.1.1 Interface CardEmulationListener

| Package name | AID |
|---|---|
| uicc.test.hci.services.cardemulation.Api_2_CEl_Ocb | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 00 00 |

| Applet name | AID |
|---|---|
| Api_2_CEl_Ocb_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 01 02 |
| Api_2_CEl_Ocb_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 02 02 |
| Api_2_CEl_Ocb_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 03 02 |
| Api_2_CEl_Ocb_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 04 02 |
| Api_2_CEl_Ocb_5.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 05 02 |
| Api_2_CEl_Ocb_6.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 06 02 |
| Api_2_CEl_Ocb_7.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 07 02 |
| Api_2_CEl_Ocb_8.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 05 08 02 |

### B.2.1.2 Interface CardEmulationMessage

| Package name | AID |
|---|---|
| uicc.test.hci.services.cardemulation.Api_2_CEm_Sgp | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 00 00 |
| uicc.test.hci.services.cardemulation.Api_2_CEm_Ssd | A0 00 00 00 09 00 05 FF FF FF FF 89 25 02 00 00 |
| uicc.test.hci.services.cardemulation.Api_2_CEm_Scm | A0 00 00 00 09 00 05 FF FF FF FF 89 25 03 00 00 |

| Applet name | AID |
|---|---|
| Api_2_CEm_Sgp _1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 01 02 |
| Api_2_CEm_Sgp _2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 02 02 |
| Api_2_CEm_Sgp _3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 03 02 |
| Api_2_CEm_Sgp _4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 04 02 |
| Api_2_CEm_Sgp _5.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 05 02 |
| Api_2_CEm_Sgp _6.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 06 02 |
| Api_2_CEm_Sgp _7.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 07 02 |
| Api_2_CEm_Sgp _8.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 08 02 |
| Api_2_CEm_Sgp _9.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 09 02 |
| Api_2_CEm_Sgp _10.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 0A 02 |
| Api_2_CEm_Sgp _11.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 0B 02 |
| Api_2_CEm_Sgp _12.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 0C 02 |
| Api_2_CEm_Sgp _13.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 01 0D 02 |
| Api_2_CEm_Ssd _1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 02 01 02 |
| Api_2_CEm_Ssd _2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 02 02 02 |
| Api_2_CEm_Ssd _3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 02 03 02 |
| Api_2_CEm_Ssd _4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 02 04 02 |
| Api_2_CEm_Scm _1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 03 01 02 |

### B.2.1.3 Interface CardEmulationService

| Package name | AID |
|---|---|
| uicc.test.hci.services.cardemulation.Api_2_CEs_RFt | A0 00 00 00 09 00 05 FF FF FF FF 89 25 04 00 00 |

| Applet name | AID |
|---|---|
| Api_2_CEs_RFt_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 25 04 01 02 |

## B.2.2 Package connectivity

| Package name | AID |
|---|---|
| uicc.test.hci.services.connectivity | A0 00 00 00 09 00 05 FF FF FF FF 89 26 00 00 00 |

### B.2.2.1 Interface ConnectivityListener

FFS

### B.2.2.2 Interface ConnectivityMessage

FFS

### B.2.2.3 Interface ConnectivityService

| Package name | AID |
|---|---|
| uicc.test.hci.services.connectivity.Api_2_CNs_Sce | A0 00 00 00 09 00 05 FF FF FF FF 89 26 01 00 00 |
| uicc.test.hci.services.connectivity.Api_2_CNs_Ste | A0 00 00 00 09 00 05 FF FF FF FF 89 26 02 00 00 |
| uicc.test.hci.services.connectivity.Api_2_CNs_Stt | A0 00 00 00 09 00 05 FF FF FF FF 89 26 03 00 00 |

| Applet name | AID |
|---|---|
| Api_2_CNs_Sce_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 01 01 02 |
| Api_2_CNs_Sce_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 01 02 02 |
| Api_2_CNs_Sce_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 01 03 02 |
| Api_2_CNs_Sce_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 01 04 02 |
| Api_2_CNs_Sce_5.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 01 05 02 |
| Api_2_CNs_Ste_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 02 01 02 |
| Api_2_CNs_Ste_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 02 02 02 |
| Api_2_CNs_Ste_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 02 03 02 |
| Api_2_CNs_Ste_4.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 02 04 02 |
| Api_2_CNs_Stt_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 03 01 02 |
| Api_2_CNs_Stt_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 03 02 02 |
| Api_2_CNs_Stt_3.java | A0 00 00 00 09 00 05 FF FF FF FF 89 26 03 03 02 |

## B.2.3 Package readermode

| Package name | AID |
|---|---|
| uicc.test.hci.services.reader | A0 00 00 00 09 00 05 FF FF FF FF 89 27 00 00 00 |

### B.2.3.1 Interface ReaderMessage

| Package name | AID |
|---|---|
| uicc.test.hci.services.reader.Api_2_RMm_Rrp | A0 00 00 00 09 00 05 FF FF FF FF 89 27 01 00 00 |
| uicc.test.hci.services.reader.Api_2_ RMm _Srx | A0 00 00 00 09 00 05 FF FF FF FF 89 27 02 00 00 |
| uicc.test.hci.services.reader.Api_2_ RMm _Sgp | A0 00 00 00 09 00 05 FF FF FF FF 89 27 03 00 00 |

| Applet name | AID |
|---|---|
| Api_2_RMm_Rrp_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 01 01 02 |
| Api_2_RMm_Rrp_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 01 02 02 |
| Api_2_RMm_Srx_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 02 01 02 |
| Api_2_RMm_Srx_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 02 02 02 |
| Api_2_RMm_Sgp_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 03 01 02 |
| Api_2_RMm_Sgp_2.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 03 02 02 |

## B.2.3.2 Interface ReaderListener

| Package name | AID |
|---|---|
| uicc.test.hci.services.reader.Api_2_RMl_Ocb | A0 00 00 00 09 00 05 FF FF FF FF 89 27 04 00 00 |

| Applet name | AID |
|---|---|
| Api_2_Rml_Ocb_1.java | A0 00 00 00 09 00 05 FF FF FF FF 89 27 04 01 02 |
|  |  |

## B.2.3.3 Interface ReaderService

FFS

# Annex C (normative):
# Requirements

## C.1 Non-occurrence and out-of-scope requirements

### C.1.1 Package uicc.hci

| Requirement | Reference |
|---|---|
| A mechanism to launch an application on the terminal host that is related to the Applet running in the UICC | Api_2_CNs_Ste Api_2_CNs_Stt |
| The Contactless Framework shall add the AID of the calling Applet instance to the HCI event passed to the CLF | Api_2_CNs_Stt |
| A mechanism that allows a UICC to start a proactive session as defined in TS 102 223 [7] | Api_2_CNs_Sce |
| Content of the buffer outside of the area which is used for the HCI message part is undefined | Api_1_Hme_Mrb |
| This method throw HCIException with error code reason HCI_RESOURCES_NOT_AVAILABLE if the contactless framework does not have enough resources to process the command | Api_2_RMm_Srx Api_2_RMm_Sgp Api_2_CNs_Sce Api_2_CEm_ Ssd Api_2_CNs_Ste Api_2_CNs_Stt |

### C.1.2 TS 102 705 prose part

| Requirement | Reference |
|---|---|
| To release the CLF control at the end of a transaction an Applet shall deactivate the ReaderListener.EVENT_TARGET_DISCOVERED | 4.3 |
| The Contactless Framework shall bind the services defined in the uicc.hci.services.cardemulation package to the underlying HCI resources (e.g. gates and pipes) defined by the HCI protocol as specified in [3] | 4.2 |

## C.2 FFS requirements

### C.2.1 Package uicc.hci

| Requirement | Reference |
|---|---|
| The application may use the whole receive buffer for its internal purposes. If the buffer is used for manipulation of sensitive data it shall be cleared by the Applet before returning to the contactless framework | Api_1_Hme_Mrb |
| Throw HCIException with error code reason HCI_FRAGMENTED_MESSAGE_ONGOING if the Contactless Framework is still receiving a fragmented HCI Message | Api_2_RMm_Srx |
| Throw java.lang.ArrayIndexOutOfBoundsException if operation would cause access of data outside array bounds | Api_2_RMm_Srx |
| Throws HCIException with the reason code HCI_CURRENTLY_DISABLED if the HCI interface was disabled | Api_2_CEm_ Sgp Api_2_CEm_ Ssd |
| Throw HCIException with error code reason HCI_INVALID_LENGTH if the parameter length or the AID is not compliant to TS 102 622 [3] | Api_2_CNs_Ste Api_2_CNs_Stt |
| In the case of a fragmented incoming message this method shall return the HCI message instruction coded in the first part of the HCI message | Api_1_Hme_Min |
| If the message is not complete then the returned value is the actual HCI message fragment length | Api_1_Hme_Mrl |
| HCIException with reason code HCI_CONDITIONS_NOT_SATISFIED if one or more conditions to activate the event are not satisfied | Api_1_Hsr_Ace |
| All other HCI messages shall be delivered to the Applet instance in the same order as they were received by the Contactless Framework | Api_1_Hln_Ocb |

## C.2.2 TS 102 705 prose part

| Requirement | Reference |
|---|---|
| When the contactless interface is disabled (cf. "state of contactless functionality" in TS 102 223 [7] and setCommunicationInterface() API method of "GlobalPlatform Amendment C" [10]), the Contactless Framework shall throw an HCIException with reason code HCI_CURRENTLY_DISABLED | 4.1 |
| The Contactless Framework shall request the reader mode control on the CLF by sending the HCI events EVT_READER_REQUESTED and EVT_END_OPERATION according to the state of the reader mode Applet | 4.3 |
| The Contactless Framework shall resend the EVT_READER_REQUESTED to the CLF if another Applet instance exists with the ReaderListener.EVENT_TARGET_DISCOVERED event activated | 4.3 |
| The EVT_READER_REQUESTED shall be sent by the Contactless Framework if an Applet instance activates the event ReaderListener.EVENT_TARGET_DISCOVERED and no other Applet instance has the event activated, i.e. it shall not be sent if the Contactless Framework has earlier sent an EVT_READER_REQUESTED due to the request from another Applet instance, which was not yet ended by an EVT_END_OPERATION | 4.3 |
| The Contactless Framework shall ensure that the ReaderListener.EVENT_TARGET_DISCOVERED is deactivated for all Applets when access to the interface is disabled on the UICC level | 4.3 |
| To be able to receive and send messages over the contactless interface in reader mode the applet shall activate the ReaderListener.EVENT_TARGET_DISCOVERED | 4.3 |
| When an Applet lifecycle state changes from ACTIVATED to DEACTIVATED the Contactless Framework shall enforce that the ReaderListener.EVENT_TARGET_DISCOVERED is deactivated | 4.3 |
| The HCI event EVT_END_OPERATION shall be sent to the CLF when an Applet instance or the Contactless Framework deactivates the event ReaderListener.EVENT_TARGET_DISCOVERED | 4.3 |
| The Contactless Framework shall inform the Applet instance which has activated the ReaderListener.EVENT_TARGET_DISCOVERED when a target is discovered on one of the RF technologies the Applet instance is registered to with its installation parameters as specified in TS 102 226 [9] | 4.3 |
| Reader mode Applets shall follow the extended lifecycle model that is defined in "GlobalPlatform Amendment C" [10] for contactless Applets in card emulation mode (i.e. following Application Availability States and the related transition rules) | 4.3 |
| Per RF technology there shall be only one reader mode Applet in the state ACTIVATED (according to "GlobalPlatform Amendment C" [10]) at any time | 4.3 |
| When the state of a reader mode Applet changes to lifecycle ACTIVATED (according to "GlobalPlatform Amendment C" [10]) the Contactless Framework shall ensure that the HCI gates and pipes are setup for the RF technologies that are supported by the reader mode Applet | 4.3 |

# Annex D (normative):
# Test Specification for Java Card™ Platform HCI API for the UICC

The source files for the HCI API for the UICC Application Programming Interface for Java Card™ for contactless Applets are contained in Annex_D_TestAppletsSourceCode.zip, which accompanies the present document.

# Annex E (normative):
# uicc.contactless.test.util package and contactless interfaces

The use of Java as a test scripting language is optional. However, if Java is used as the test scripting language, then the test descriptions shall be implemented according to annex E.

The content of this annex is TBD.

# Annex F (normative):
# Test Area files

The use of Java as a test scripting language is optional. However, if Java is used as the test scripting language, then the test descriptions shall be implemented according to annex F.

The content of this annex is TBD.

# Annex G (informative):
# Core specification version information

Unless otherwise specified, the versions of TS 102 705 [1] from which conformance requirements have been extracted are as follows.

| Release | Latest version from which conformance requirements have been extracted |
|---------|------------------------------------------------------------------------|
| 9 | V9.3.0 |

# History

| Document history | | |
|---|---|---|
| V9.0.0 | April 2013 | Publication |
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