ETSI TS 101 955 V7.3.0 (2001-12)

Technical Specification

Digital cellular telecommunications system (Phase 2+);
Test specification for SIM API for Java card
(3GPP TS 11.13 version 7.3.0 Release 1998)

Reference
RTS/TSGT-031113Q7R3

Keywords
GSM

ETSI

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

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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 GSM 03.19 "SIM API for Java Card ™" [7].

The present document describes the technical characteristics and methods of test for testing the SIM API for Java Card (TM) [7] implemented in the subscriber identity modules (SIMs) for GSM. It specifies the following parts:

- test applicability
- test environment description
- tests format
- test area reference
- conformance requirements
- test auite files
- test procedure
- test coverage and,
- a description of the associated testing tools that shall be used.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
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[1] (void)

[2] (void)

[3] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[4] GSM 11.14: "Digital cellular telecommunications system (Phase 2+);
Specification of the SIM application toolkit for the Subscriber Identity Module – Mobile Equipment (SIM – ME) interface".

[5] GSM 11.17: "Subscriber Identity Module" (SIM) conformance test specification".

[6] (void)

[7] GSM 03.19 version 7.4.0: "Digital cellular telecommunications system (Phase 2+); Subscriber Identity Module Application Programming Interface (SIM API); SIM API for Java Card™; Stage 2".

[8] GSM 03.48 version 8.4.0: "Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2".

[9] ISO/IEC 7816-3 (1997) " Identification cards - Integrated circuit(s) cards with contacts, Part 3: Electronic signals and transmission protocols".

[10] GSM 02.19 "Digital cellular telecommunications system (Phase 2+, Release 98); Subscriber Identity Module Application Programming Interface (SIM API); Service description; Stage 1".

[11] SUN Java Card Specification "Java Card 2.1 API Specification".

[12] SUN Java Card Specification "Java Card 2.1 Runtime Environment Specification".

[13] SUN Java Card Specification "Java Card 2.1 VM Architecture Specification".

[14] ETSI TS 101 220 v3.0.0 "Numbering System for Telecommunication IC card applications".

[15] GSM 11.10-1: "Digital cellular telecommunication system (Phase 2+); Mobile Station (MS) conformance specification; Part 1: Conformance specification".

3 Definitions and abbreviations

3.1 Definitions

The definitions specified in GSM 11.10-1 [15] clause 3.3 shall apply, unless otherwise specified in the present clause.

Applet: An Applet is an application built up using a number of classes which will run under the control of the Java Card virtual machine.

Applet installation parameters: Default values for applet installation parameters.

Applet loading script: File containing the APDU commands that will load and install the test applet in the card.

CleanUp Script file: File containing the APDU commands that will restore the Default Initial Conditions on the SIM

Conformance Requirement Reference: Description of the expected card behaviour according to 03.19 specification.

Expected state: the state in which the SIM is supposed to be after the execution of the test procedure applied on the relevant initial conditions

Security parameters: Minimum security requirements defined for the applet installation process.

Test Area: Set of Test Cases applicable to a specific part (class method, framework behaviour,…) of the 03.19 specification.

Test Case: Elementary test that checks for compliance with one or more Conformance Requirement References.

Test Output file: TBD.

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

Test Script file: File containing the APDU commands that will execute and verify the test results.

Test Toolkit Applet: Applet designed to test a specific functionality of the SIM API 03.19 specification.

3.2 Abbreviations

For the purpose of the present document, the following abbreviations apply, in addition to those listed in GSM 01.04 [2]:

AC	Application Code
AID	Application Identifier
APDU	Application Protocol Data Unit
API	Application Programming Interface
CAD	Card Acceptance Device

FFS	For Further Study
IFD	Interface Device
JCRE	Java Card™ Run Time Environment
JVM	Java Virtual Machine
SIM	Subscriber Identity Module
SE	Sending Entity

4 Test Environment

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

4.1 Applicability

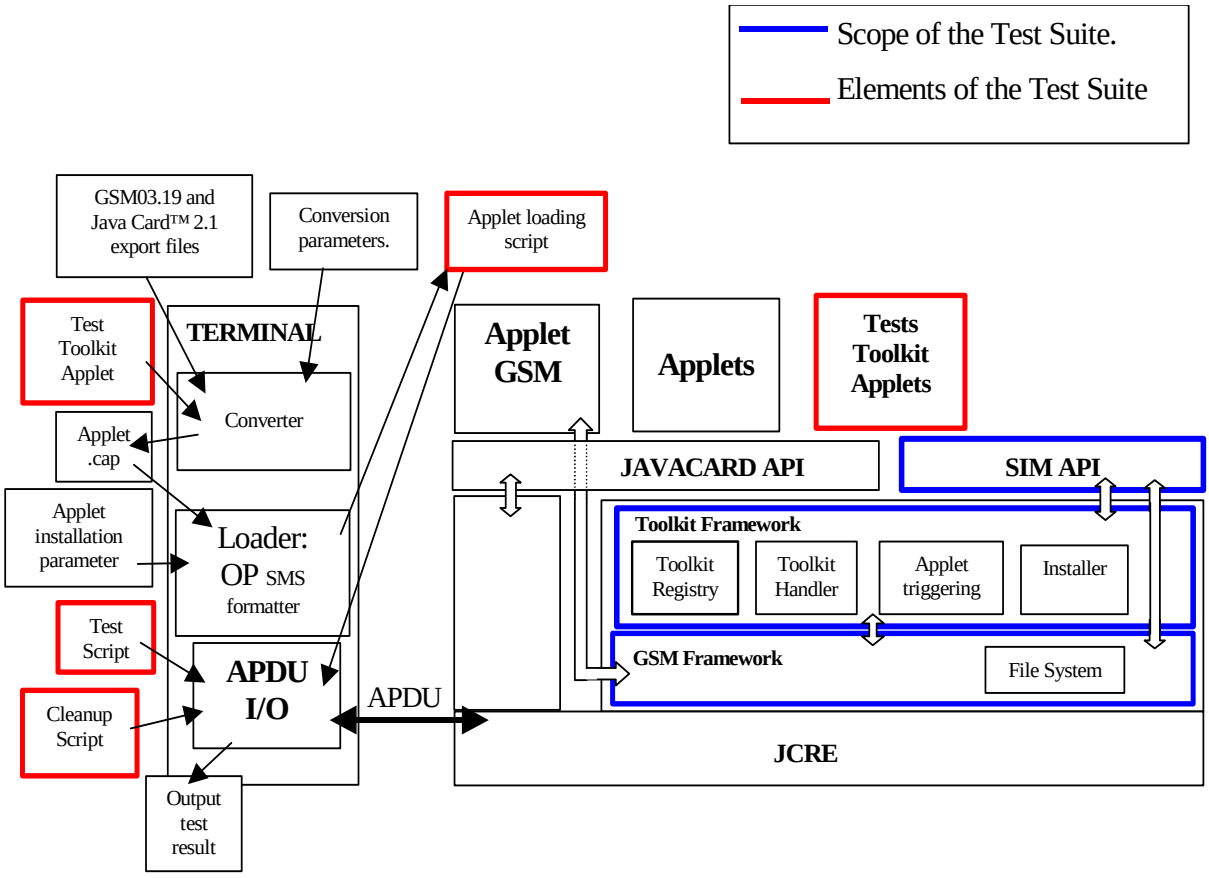
The tests defined in this specification shall be performed taking into account the services supported by the card as specified in the EF_{SST} file.

This specification contains tests that test interoperability at the API level. This specification does not currently contain tests for interoperability at the SIM API framework and at the byte code level. These are for further study.

The test defined in this specification are applicable to cards implementing TS 03.19 [7] version 7.4.0 unless otherwise stated.

4.2 Test environment description

The general architecture for the test environment is:



Note: This diagram shows the test architecture required to test interoperability at both API and bytcode level. The latter is currently not included in the current specification. The diagram is for information.

4.3 Tests format

4.3.1 Test Area Reference

Each test area is referenced as follows:

API Testing:: 'API_[package name]_[classname]_[methodname]' where

package name:

sim.access package: '1'

sim.toolkit package: '2'

class name:

yyy: 3 letters for each class.

See Annex A for full classes acronyms list.

method name:

zzzz[input parameters]:

See Annex A for full methods name acronyms list.

FWK: framework testing

Chapter name:

xxx: 3 letters for each chapter

See annex F for full chapter acronyms list

Subchapter name

yyyy: : 4 letters for each subchapter

See annex F for full subchapter acronyms list

LDR: loader testing

[TBD]

4.3.1.1 Conformance requirements

The conformance requirements are expressed in the following way:

- Method prototype as listed in GSM 03.19 [7]specification.
- 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)

4.3.1.2 Test Area files

The files included in the Test Area use the following naming convention:

- Test Script: [Test Area Reference]_[Test script number].scr
- Test Applet: [Test Area Reference]_[Test applet number].java
- Load Script: [Test Area Reference]_[Load Script number].ldr
- Cleanup Script: [Test Area Reference]_[Cleanup Script number].clr
- Parameter File: [Test Area Reference]_[Parameter File number].par

The test script, applet, installation parameters, load script, cleanup script and conversion parameters numbers start from '1'.

The test script, load script and cleanup script shall share a common syntax and format (see Annex B).

The parameter file has an own syntax (see Annex G) and contains parameters to be used for CAP-file conversion and loading/cleanup script generation.

Scripts file shall be run in the following order:

[Test Area Reference]_1.ldr

[Test Area Reference]_1.scr

[Test Area Reference]_1.clr

[Test Area Reference]_2.ldr

[Test Area Reference]_2.scr

[Test Area Reference]_2.clr

….

[Test Area Reference]_n.ldr

[Test Area Reference]_n.scr

[Test Area Reference]_n.clr

In case that one of the files is not needed, it shall be skipped during the tests execution.

4.3.1.3 Test Procedure

Each test procedure contains a table to indicate the expected responses form the API and/or the APDU level as follows:

Test Case			
Id	**Description**	**API Expectation**	**APDU Expectation**
	Test Case detailed description	*API expected behavior.*	*Expected response at APDU level.*

4.3.1.4 Test Coverage

The table at the end of each test procedure indicates the correspondence between the Conformance Requirements Reference (CRR) and the different test cases.

4.4 Initial Conditions

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

- unless otherwise stated, the file system and the files' content shall fulfil the requirements described in the "Default Prepersonalisation" paragraph;
- 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.

When both statements apply, a test procedure is said to be in the "Default Initial Conditions" state.

4.5 Package name

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

sim.test.access.[Test Area Reference]: Java Card packages containing Test Area References for the GSM 03.19 sim.access package.

sim.test.framework.[Test Area Reference]: Java Card packages containing Test Area References for the GSM 03.19 framework.

sim.test.util: for the Test util package defined in this Test Suite.

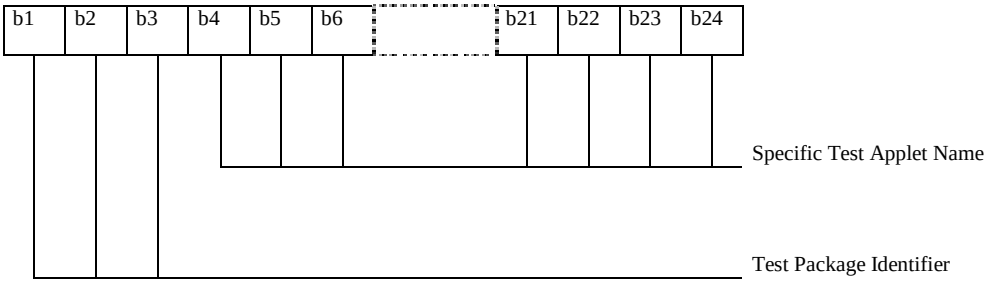
sim.test.toolkit.[Test Area Reference]: Java Card packages containing Test Area References for the GSM 03.19[7] sim.toolkit package.

Example: The package *../sim.test.access.[Test Area Reference]* creates the following directory structure *../sim/test/access/[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]*.

4.6 AID Coding

The AID coding for the Test Packages, Applet classes and Applet shall be as specified in TS 101 220 [14]. In addition, the following TAR values are defined for use within the present document:

TAR Coding (3 bytes/ 24 bits):



Test package Identifier(bits b1-b3):

000 reserved (as TAR= '00.00.00' is reserved for Card Manager)

001 API

010 Framework

011 Loader

111 sim.test.util

other values are RFU

Application Provider specific data (1 byte):

'00' for Package

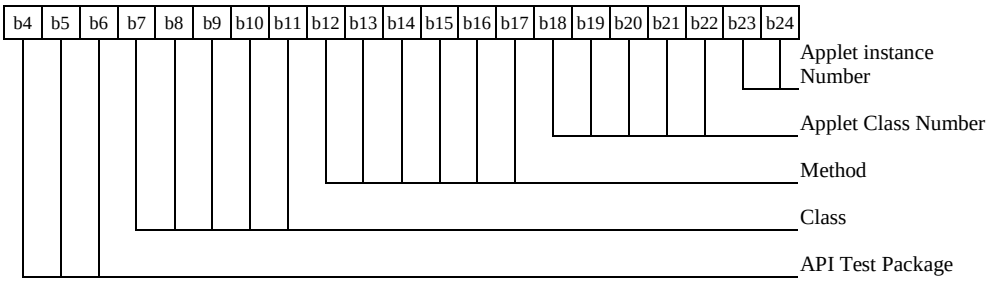
'01' for Applet class

'02' for Applet Instance

For example, the AID of Package sim.test.util is 'A0 00 00 00 09 00 02 FF FF FF FF 89 E0 00 00 00'

4.6.1 Specific Test Applet Name for API

Specific applet test name (bits b4-b24):



for API Test Package(3 bits)

001 sim.access

010 sim.toolkit

other are RFU

Class (5 bits): need to be assigned specification order see Annex A for the full list

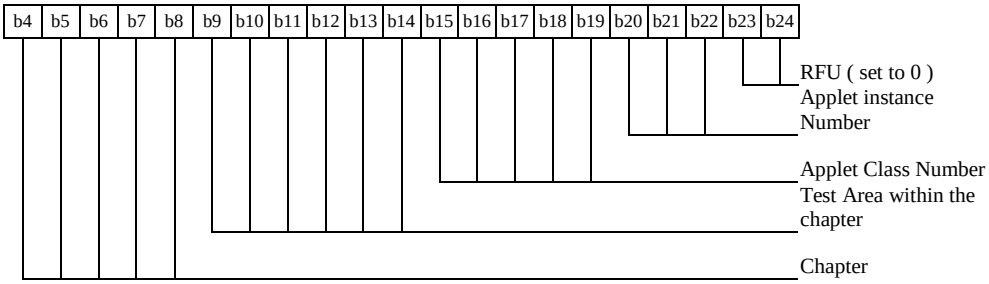
Method (6 bits): need to be assigned specification order see Annex A for the full list

Applet Class Number (5 bits): linked to Test Area, it shall start with 1 for classes and shall be 0 for package.

Applet Instance Number (2 bits) defined in the test procedure it shall start with 01 for applet instance and shall be 00 for package and class.

4.6.2 Specific Test Applet Name for Framework

Specific applet test name (bits b4-b24):



for Chapter (5 bits)

00001 Toolkit Installation Parameters

00010 Minimum Handler Availability

00011 Handler Integrity

00100 Applet Triggering

00101 Proactive Command Sending

00110 Envelope Response Posting

00111 Framework Security

01000 File System Context

01001 Exception Handling

01010 Other parts transferred to framework from API

other are RFU

Test Area within the chapter (6 bits): values are defined in Annex F

Applet Class number (5 bits): linked to Test Area, it shall start with 1 for classes and shall be 0 for package.

Applet Instance number (3 bits) defined in the test procedure it shall start with 01 for applet instance and shall be 00 for package and class.

4.7 Test Equipment

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

4.7.1 APDU tool

This test tool shall meet the following requirements:

- be able to send command to the card TPDU;
- be able to check none, only a part, or all of the data returned;
- be able to check none, only part, or all of the status returned;
- be able to accept all valid status codes returned;
- be able to support Reader commands;
- be able to generate a log file for each test execution.
- if more data is returned than defined in the test specification, the tool shall continue;
- if less data is returned than defined in the test specification, the tool shall aborts and return an error;
- if there is an error in data or status returned, the tool shall abort and return an error.

The log file produced by the test tool shall include the following information:

- all commands issued;
- all data returned;
- all status returned;
- all errors codes;
- expected data and status in case of error;
- comments from the scripts;
- a log message to report success or failure of the test.

4.7.2 Util package

Annex D includes java source code for the sim.test.util package as well as loading , testing and cleaning script examples.

4.7.3 Applet installation parameters

4.7.3.1 Security parameters

Loading scripts shall use the following security parameters as stated in GSM 03.48 [8] for applet installation:

Parameter	Value in hexadecimal
SPI	0A 00
KIC	00
KID	11
TAR	00 00 00
CNTR	00 00 00 00 01
PCNTR	00
Key	01 23 45 67 89 AB CD EF

4.7.3.2 Loading components

Cap files in loading scripts shall not include the descriptor component as described in Java Card 2.1 VM Architecture Specification [13].

4.8 Testing methodology

4.8.1 Test interfaces and facilities

The SIM-ME interface provides the main transport interface for the purpose of performing conformance tests.

The SIM API interface provides the main test interface for the purpose of performing conformance tests.

5 Test plan

The test plan is divided according to the SIM API specification, that way the tests will follow the class hierarchy for the sim.toolkit and sim.access package; for the SIM Toolkit framework this test plan describes the different points that will be tested with the present test specification.

6 API Test Plan

6.1 Package sim.access:

6.1.1 Interface SIMView

Note: The Test applet shall be run on a class that implements this interface.

6.1.1.1 Constants

Test Area Reference: API_1_SVW_CONST

6.1.1.1.1 Conformance Requirements

This section does not describe the conformance requirements for a method, but rather for the constants of the interface.

Normal execution

CRRN1: The constants shall have the same name and value that is defined in GSM 03.19 [7].

6.1.1.1.2 Test Suite Files

None.

6.1.1.1.3 Test Procedure

The constants in Java are resolved at compilation time, therefore a runtime test is not useful. No test of constants will be performed.

6.1.1.2 Method select(short fid, byte[] fci, short fciOffset, short fciLength)

Test Area Reference: API_1_SVW_ SLCTS_BSS

6.1.1.2.1 Conformance Requirements

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

```
public short select(short fid,
                    byte[] fci,
                    short fciOffset,
                    short fciLength)
             throws java.lang.NullPointerException,
                    java.lang.ArrayIndexOutOfBoundsException,
                    SIMViewException
```

Normal execution

CRRN1: If the desired file is selected, the length of the FCI (File Control Information) which has been written to the array fci is returned.

CRRN2: If the length fciLength is greater than or equal to the length of the FCI structure, the whole FCI structure is copied into the array fci and the length of the FCI which has been written to the array fci is returned.

CRRN3: If the length fciLength is less than the length of the FCI structure, the first part of the FCI structure is copied into the array fci and the length of the FCI which has been written to the array fci is returned.

CRRN4: After selecting a DF/MF no EF is selected.

CRRN5: After selecting a linear fixed EF no record is selected.

CRRN6: After selecting a cyclic EF the first record which is the last updated record is selected.

CRRN7: The current files (file context) of any other applets shall not be changed. See GSM 03.19 [7] - §5.2. This will be tested during the testing of the framework.

CRRN8: The information returned by fci shall be formatted as described in GSM 11.11 [3], §9.2.1.

CRRN9: The file with a File-ID that matches fid shall be found according to the following selection rules:

1) An immediate child EF or DF of the current MF/DF can be selected,

2) A sibling DF of the current DF can be selected,

3) The current MF/DF it self can be selected,

4) The parent MF/DF of the current DF can be selected,

5) The MF can always be selected.

Parameter errors

CRRP1: If the array fci is null, an instance of NullPointerException shall be thrown.

CRRP2: If fciOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: If fciLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP4: If fciOffset plus fciLength is greater than the length of the array fci.length, or fciOffset equals fci.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the file with a File-ID which matches fid could not be found according to the selection rules listed in CRRN9, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_NOT_FOUND.

CRRC2: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC3: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.2.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script:	API_1_SVW_SLCTS_BSS_1.scr
Test Applet:	API_1_SVW_SLCTS_BSS_1.java
Load Script:	API_1_SVW_SLCTS_BSS_1.ldr
Cleanup Script:	API_1_SVW_SLCTS_BSS_1.clr

6.1.1.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	

1	**Select EFICCID in MF (Transparent EF)**
	`fid = SIMView.FID_EF_ICCID`
	`byte[] fci = new byte[34]`
	`fciOffset = 0`
	`fciLength = 20`
	`select()`
		No exception shall be thrown.
		Shall return a value not greater than 20.
		
		<Description of fci:
		XX XX
		XX XX
		2F E2
		04
		>	

2	**Select EF_{ICCID} in MF (Transparent EF)**
	`fid = SIMView.FID_EF_ICCID`
	`fciOffset = 0`
	`fciLength = 13`
	`select()`
		No exception shall be thrown.
		Shall return 13.
		fci shall contain the first 13 bytes of the FCI structure.	

3	**Select DF_{GSM} in MF**
	`fid = SIMView.FID_DF_GSM`
	`fciOffset = 0`
	`fciLength = 7`
	`select()`
		No exception shall be thrown.
		Shall return 7.
		fci shall contain the entire FCI structure.
		<Description of fci:
		XX XX
		XX XX
		7F 20
		02
		>	

4	**Select EF_{ACM} in DF_{GSM} (CyclicEF)**
	`fid = SIMView.FID_EF_ACM`
	`fciOffset = 0`
	`fciLength = 20`
	`select()`
		No exception shall be thrown.
		Shall return a value between 15 and 20. (Cyclic EF)
		fci shall contain the first 15 or more bytes of the FCI structure.
		fci[14] shall have the value 3 (length of record).	

5	**Select MF**
	`fid = SIMView.FID_MF`
	`fciOffset = 0`
	`fciLength = 34`
	`select()`
		No exception shall be thrown.
		Shall return a value between 22 and 34.
		fci shall contain the entire FCI structure.	

6	**Select $DF_{TELECOM}$ in MF**
	`fid = SIMView.FID_DF_TELECOM`
	`fci[0] = fci[1] = '05'`
	`fciOffset = 2`
	`fciLength = 20`
	`select()`
		No exception shall be thrown.
		Shall return 20.
		fci shall contain the first 20 bytes of the FCI structure starting at index 2. The first two bytes shall (still) have the value '05'.	

7	**Select EF_{FDN} in $DF_{TELECOM}$ (Linear FixedEF)**
	`fid = SIMView.FID_EF_FDN`
	`fciOffset = 0`
	`fciLength = 15`
	`select()`
		No exception shall be thrown.
		Shall return 15.
		fci shall contain the first 15 bytes of the FCI structure.
		fci[14] shall have the value 28 (length of record).	

8	**fci is null**
	`fid = SIMView.FID_EF_FDN`
	`byte[] nullBuffer = null`
	`fciOffset = 0`
	`fciLength = 15`
	`select()`
		Shall throw java.lang.NullPointerException.	

9	**fciOffset < 0**
	`fid = SIMView.FID_EF_FDN`
	`fciOffset = -1`
	`fciLength = 15`
	`select()`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

10	**fciLength < 0**
	`fid = SIMView.FID_EF_FDN`
	`fciOffset = 0`
	`fciLength = -1`
	`select()`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

11	**fciOffset + fciLength > fci.length**	Shall throw	

Id	Description	API Expectation	APDU Expectation
	fid = SIMView.FID_EF_FDN fciOffset = 20 fciLength = 15 select()	java.lang.ArrayIndexOutOfBoundsException.	
12	**fciOffset >= fci.length** fid = SIMView.FID_EF_FDN fciOffset = 34 fciLength = 1 select()	Shall throw java.lang.ArrayIndexOutOfBoundsException	
13	**Selection possibilities** 1 - fid = SIMView.FID_MF fciOffset = 0 fciLength = 15 select() 2 – fid = SIMView.FID_DF_TELECOM select() 3 - fid = SIMView.FID_DF_GRAPHICS select() 4 - fid = SIMView.FID_DF_TELECOM select() 5 - fid = SIMView.FID_DF_GRAPHICS select() 6 - fid = SIMView.FID_MF select() 7 - fid = SIMView.FID_DF_GSM select() 8 - fid = SIMView.FID_DF_TELECOM select() 9 - fid = SIMView.FID_DF_TELECOM select() –	1 – No exception shall be thrown. 2 – No exception shall be thrown. 3 – No exception shall be thrown. 4 – No exception shall be thrown. 5 – No exception shall be thrown. 6 – No exception shall be thrown. 7 – No exception shall be thrown. 8 – No exception shall be thrown. 9 – No exception shall be thrown.	
14	**EF not selected after MF/DF selection** 1 - fid = SIMView.FID_MF select() fid = SIMView.FID_EF_ICCID select() 2 - fid = SIMView.FID_MF select() readBinary()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	
15	**No selection of non-reachable file** 1 - fid = SIMView.FID_MF select() 2 - fid = SIMView.FID_EF_ACM select()	1 – No exception shall be thrown. 2 – Shall throw sim.access.SIMViewException with reason code FILE_NOT_FOUND.	
16	**No record is selected after selecting linear fixed EF** 1 - fid = SIMView.FID_MF select() 2 - fid = FID_DF_SIMTEST select() 3 - fid = FID_EF_LARU select() 4 – recNumber = 0 mode = REC_ACC_MODE_ABSOLUTE_CURRENT readRecord()	1 – No exception shall be thrown. 2 – No exception shall be thrown. 3 – No exception shall be thrown. 4 – Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	
17	**Record pointer in selected cyclic EF** 1 – fid = SIMView.FID_MF select() 2 - fid = FID_DF_SIMTEST select() 3 - fid = FID_EF_CARU select() 4 – byte[] data1 = { 1,2,3 } mode = REC_ACC_MODE_PREVIOUS updateRecord(data1) 5 - fid = SIMView.FID_EF_ACM select() readRecord(data2) compare data1 to data2	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. 4 - No exception shall be thrown. 5 - The contents of data1 and data2 shall be identical.	

6.1.1.2.4 Test Coverage

CRR Number	Test Case Number
N1	1-7
N2	3, 5
N3	1, 2, 4, 6, 7
N4	14
N5	16
N6	17
N8	1, 3
N9	1-7, 13
P1	8
P2	9
P3	10
P4	11, 12
C1	15
C2, C3	Not Tested

6.1.1.3 Method select (short fid)

Test Area Reference: API_1_SVW_SLCTS

6.1.1.3.1 Conformance Requirements

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

```
public void select(short fid)
           throws SIMViewException
```

Normal execution

CRRN1: If the desired file is selected, no exception is thrown.

CRRN2: After selecting a DF/MF no EF is selected.

CRRN3: After selecting a linear fixed EF no record is selected.

CRRN4: After selecting a cyclic EF the first record which is the last updated record is selected.

CRRN5: The current files (file context) of any other applets shall not be changed [03.19 - §5.2]. This will be tested during the testing of the framework.

CRRN6: The file with a File-ID that matches fid shall be found according to the following selection rules:

1) An immediate child EF or DF of the current MF/DF can be selected,
2) A sibling DF of the current DF can be selected,
3) The current MF/DF it self can be selected,
4) The parent MF/DF of the current DF can be selected,
5) The MF can always be selected.

Parameter errors

No requirements.

Context errors

CRRC1: If the file with a File-ID which matches fid could not be found according to the selection rules listed in CCRN6, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_NOT_FOUND.

CRRC2: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC3: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.3.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script:	API_1_SVW_SLCTS_1.scr
Test Applet:	API_1_SVW_SLCTS_1.java
Load Script:	API_1_SVW_SLCTS_1.ldr
Cleanup Script:	API_1_SVW_SLCTS_1.clr

6.1.1.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	

1	**Select EF_{ICCID} in MF (Transparent EF)**
	`fid = SIMView.FID_EF_ICCID`
	`select()`
		No exception shall be thrown.	

2	**EF not selected after MF/DF selection**
	`1 - fid = SIMView.FID_MF`
	`select()`
	`fid = SIMView.FID_EF_ICCID`
	`select()`
	`2 - fid = SIMView.FID_MF`
	`select()`
	`readBinary()`
		1 - No exception shall be thrown.
		2 - Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

3	**No record is selected after selecting linear fixed EF**
	`1 - fid = SIMView.FID_MF`
	`select()`
	`2 - fid = FID_DF_SIMTEST`
	`select()`
	`3 - fid =FID_EF_LARU`
	`select()`
	`4 – recNumber = 0`
	`mode = REC_ACC_MODE_ABSOLUTE_CURRENT`
	`readRecord()`
		1 – No exception shall be thrown.
		2 – No exception shall be thrown.
		3 – No exception shall be thrown.
		4 – Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	

4	**Record pointer in selected cyclic EF**
	`1 – fid = SIMView.FID_MF`
	`select()`
	`2 - fid = SIMView.FID_DF_GSM`
	`select()`
	`3 - fid = SIMView.FID_EF_ACM`
	`select()`
	`4 – byte[] data1 = { 1,2,3 }`
	`updateRecord(data1)`
	`5 - fid = SIMView.FID_EF_ACM`
	`select()`
	`readRecord(data2)`
	`compare data1 to data2`
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		3 - No exception shall be thrown.
		4 - No exception shall be thrown.
		5 - The contents of data1 and data2 shall be identical.	

5	**Selection possibilities**
	`1 - fid = SIMView.FID_MF`
	`select()`
	`2 – fid = SIMView.FID_DF_TELECOM`
	`select()`
	`3 - fid = SIMView.FID_DF_GRAPHICS`
	`select()`
	`4 - fid = SIMView.FID_DF_TELECOM`
	`select()`
	`5 - fid = SIMView.FID_DF_GRAPHICS`
	`select()`
	`6 - fid = SIMView.FID_MF`
	`select()`
	`7 - fid = SIMView.FID_DF_GSM`
	`select()`
	`8 - fid = SIMView.FID_DF_TELECOM`
	`select()`
	`9 - fid = SIMView.FID_DF_TELECOM`
	`select()`
		1 – No exception shall be thrown.
		2 – No exception shall be thrown.
		3 – No exception shall be thrown.
		4 – No exception shall be thrown.
		5 – No exception shall be thrown.
		6 – No exception shall be thrown.
		7 – No exception shall be thrown.
		8 – No exception shall be thrown.
		9 – No exception shall be thrown.	

6	**No selection of unreachable file**
	`1 - fid = SIMView.FID_MF`
	`select()`
	`2 - fid = SIMView.FID_EF_ACM`
	`select()`
		1 – No exception shall be thrown.
		2 – Shall throw sim.access.SIMViewException with reason code FILE_NOT_FOUND.	

6.1.1.3.4 Test Coverage

CRR Number	Test Case Number
N1	1
N2	2
N3	3
N4	4
N6	5
C1	6
C2, C3	Not Tested

6.1.1.4 Method status

Test Area Reference: API_1_SVW_STAT_BSS

6.1.1.4.1 Conformance Requirements

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

```
public short status(byte[] fci,
                    short fciOffset,
                    short fciLength)
             throws java.lang.NullPointerException,
                    java.lang.ArrayIndexOutOfBoundsException,
                    SIMViewException
```

Normal execution

CRRN1: The FCI (File Control Information) of the current DF (or MF) is returned in the same format as for a SELECT command in case of selecting an MF/DF (described in GSM 03.19 [7], §9.2.1).

CRRN2: If the length fciLength is greater than or equal to the length of the FCI structure, the whole FCI structure is copied into the array fci and the length of the FCI which has been written to the array fci is returned.

CRRN3: If the length fciLength is less than the length of the FCI structure, the first part of the FCI structure is copied into the array fci and the length of the FCI which has been written to the array fci is returned.

Parameter errors

CRRP1: If the array fci is null, an instance of NullPointerException shall be thrown.

CRRP2: If fciOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: If fciLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP4: If fciOffset plus fciLength is greater than the length of the array fci.length, or fciOffset equals fci.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC2: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.4.2 Test Suite Files

Additional requirements for the GSM personalisation:

Test Script:	API_1_SVW_STAT_BSS_1.scr
Test Applet:	API_1_SVW_STAT_BSS_1.java
Load Script:	API_1_SVW_STAT_BSS_1.ldr
Cleanup Script:	API_1_SVW_STAT_BSS_1.clr

6.1.1.4.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	

1	**Status of MF**
	`byte[] fci = new byte[34]`
	`fciOffset = 0`
	`fciLength = 7`
	`status()`
		No exception shall be thrown.
		Shall return 7.
		fci shall contain the entire FCI structure.
		<Description of fci:
		XX XX
		XX XX
		3F 00
		01
		>	

2	**Status after select EF_{ICCID} in MF**
	`1 – fid = SIMView.FID_DF_GSM`
	`fciOffset = 0`
	`fciLength = 34`
	`len = select()`
	`2 – byte[] fci2 = new byte[34]`
	
	`len2 = status()`
	`3 – Compare len and len2`
	`4 - Compare the len bytes of fci and fci2`
		1 - No exception shall be thrown. Shall return a value between 22 and 34.
		2 - No exception shall be thrown. Shall return 22 or more.
		3 - len and len2 shall be identical
		4 - fci and fci2 shall be identical	

3	**Status of $DF_{Telecom}$**
	`1 – fid = SIMView.FID_DF_TELECOM`
	`select()`
	`2 – fciOffset = 0`
	`fciLength = 100`
	`status()`
		1 - No exception shall be thrown. Shall return a value between 22 and 34.
		2 - No exception shall be thrown. Shall return a value between 22 and34.
		fci shall contain the entire FCI structure (check that returned value is equal to 13 plus the "length of following data" - fci[12]).FID of the returned fci (fci[4:5]) is FID_DF_TELECOM.	

4	**Status $DF_{TELECOM}$**
	`fciOffset = 0`
	`fciLength = 7`
	`status()`
		No exception shall be thrown.
		Shall return 7.
		fci shall contain the first 7 bytes of the FCI structure starting at index 0.
		FID of the returned fci (fci[4:5]) is FID_DF_TELECOM.	

5	**fci is null**
	`byte[] nullBuffer = null`
	`fciOffset = 0`
	`fciLength = 34`
	`status()`
		Shall throw java.lang.NullPointerException.	

6	**fciOffset < 0**
	`fciOffset = -1`
	`fciLength = 34`
	`status()`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

7	**fciLength < 0**
	`fciOffset = 0`
	`fciLength = -1`
	`status()`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

8	**fciOffset + fciLength > fci.length**
	`fciOffset = 20`
	`fciLength = 15`
	`status()`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

9	**fciOffset >= fci.length**
	`fciOffset = 34`
	`fciLength = 1`
	`status()`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

6.1.1.4.4 Test Coverage

CRR Number	Test Case Number
N1	1-4
N2	2, 3
N3	1, 4
P1	5
P2	6
P3	7
P4	8, 9
C1, C2	Not Tested

6.1.1.5 Method readBinary

Test Area Reference: API_1_SVW_REDBS_BSS

6.1.1.5.1 Conformance Requirements

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

```
public short readBinary(short fileOffset,
                        byte[] resp,
                        short respOffset,
                        short respLength)
                 throws java.lang.NullPointerException,
                        java.lang.ArrayIndexOutOfBoundsException,
                        SIMViewException
```

Normal execution

CRRN1: If data can be accessed at the specified offset, the value respOffset plus respLength are returned and the data bytes of the currently selected transparent file are returned in resp.

Parameter errors

CRRP1: If fileOffset is less than 0, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_FILE_BOUNDARIES.

CRRP2: If fileOffset plus respLength exceeds the length of the file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_FILE_BOUNDARIES.

CRRP3: If the array resp is null, an instance of NullPointerException shall be thrown.

CRRP4: If respOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP5: If respLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP6: If respOffset plus respLength is greater than the length of the array resp.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the currently selected EF is not transparent, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC3: If the calling applet does not fulfil the access condition, READ, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC4: If the currently selected EF is invalidated and the file status of the EF does not allow for the reading of an invalidated file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC5: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC6: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.5.2 Test Suite Files

Additional requirements for the GSM personalisation: none.

Test Script: API_1_SVW_REDBS_BSS_1.scr

Test Applet: API_1_SVW_REDBS_BSS_1.java

Load Script: API_1_SVW_REDBS_BSS_1.ldr

Cleanup Script: API_1_SVW_REDBS_BSS_1.clr

6.1.1.5.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored	

1	**Read from EFICCID in MF (Transparent EF)**
	`1 – fid = SIMView.FID_EF_ICCID`
	`select()`
	`2 – fileOffset = 0`
	`byte[] resp = new byte[20]`
	`resp[0:19] = '55'`
	`respOffset = 10`
	`respLength = 10`
	`readBinary()`
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		Shall return 20.
		resp shall contain the entire contents of EFICCID starting at index 10.
		<Description of resp:
		55 55 55 55 55 55 55 55 55 55
		0F FF FF FF FF FF FF FF FF FF
		>	

2	**Read from EFICCID in MF**
	`resp[0:19] = '55'`
	`fileOffset = 5`
	`respOffset = 10`
	`respLength = 5`
	`readBinary()`
		No exception shall be thrown.
		Shall return 15.
		resp shall contain the last 5 bytes of EFICCID starting at index 10.
		<Description of resp:
		55 55 55 55 55 55 55 55 55 55
		FF FF FF FF FF 55 55 55 55 55
		>	

3	**Offset into File out of bounds**
	`fileOffset = -1`
	`respOffset = 0`
	`respLength = 10`
	`readBinary()`
		Shall throw sim.access.SIMViewException with reason code OUT_OF_FILE_BOUNDARIES.	

4	**fileOffset + respLength > EF length**
	`fileOffset = 9`
	`respOffset = 0`
	`respLength = 2`
	`readBinary()`
		Shall throw sim.access.SIMViewException with reason code OUT_OF_FILE_BOUNDARIES.	

5	**resp is null**
	`byte[] nullBuffer = null`
	`fileOffset = 0`
	`respOffset = 0`
	`respLength = 10`
	`readBinary()`
		Shall throw java.lang.NullPointerException.	

6	**respOffset < 0**
	`fileOffset = 0`
	`respOffset = -1`
	`respLength = 10`
	`readBinary()`
		Shall throw java.lang. ArrayIndexOutOfBoundsException.	

7	**respLength < 0**
	`fileOffset = 0`
	`respOffset = 0`
	`respLength = -1`
	`readBinary()`
		Shall throw java.lang. ArrayIndexOutOfBoundsException.	

Id	Description	API Expectation	APDU Expectation
8	**respOffset + respLength > resp.length** fileOffset = 0 respOffset = 10 respLength = 11 readBinary()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
9	**EF is not Transparent** 1 - fid = FID_DF_SIMTEST select() 2 - fid = FID_EF_LARU select() 3 - fileOffset = 0 respOffset = 0 respLength = 1 readBinary()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT.	
10	**Access condition not fulfilled** 1 - fid = DFSIMTTEST select() 2 - fid = EFTNR select() 3 - fileOffset = 0 respOffset = 0 respLength = 1 readBinary()	Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	
11	**EF is invalidated** 1 - fid = EFTNU invalidate() 2 - readBinary() 3 - rehabilitate()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION. 3 - No exception shall be thrown.	
12	**No EF selected** 1- fid = SIMView.FID_MF select() 2 readBinary()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

6.1.1.5.4 Test Coverage

CRR Number	Test Case Number
N1	1-2
P1	3
P2	4
P3	5
P4	6
P5	7
P6	8,
C1	12
C2	9
C3	10
C4	11
C5, C6	Not Tested

6.1.1.6 Method updateBinary

Test Area Reference: API_1_SVW_UPDBS_BSS

6.1.1.6.1 Conformance Requirements

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

```
public void updateBinary(short fileOffset,
                         byte[] data,
                         short dataOffset,
                         short dataLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         SIMViewException
```

Normal execution

CRRN1: The currently selected transparent file is updated starting at fileOffset, with the string of dataLength bytes in the array data starting at dataOffset.

Parameter errors

CRRP1: If fileOffset is less than 0, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_FILE_BOUNDARIES.

CRRP2: If fileOffset plus dataLength exceeds the length of the file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_FILE_BOUNDARIES.

CRRP3: If the array data is null, an instance of NullPointerException shall be thrown.

CRRP4: If dataOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP5: If dataLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP6: If dataOffset plus dataLength greater than the length of the array data.length an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the currently selected EF is not transparent, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC3: If the calling applet does not fulfil the access condition, UPDATE, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC4: If the currently selected EF is invalidated and the file status of the EF does not allow for updating of an invalidated file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC5: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC6: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.6.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script:	API_1_SVW_UPDBS_BSS_1.scr
Test Applet:	API_1_SVW_UPDBS_BSS_1.java
Load Script:	API_1_SVW_UPDBS_BSS_1.ldr
Cleanup Script:	API_1_SVW_UPDBS_BSS_1.clr

6.1.1.6.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**No EF selected** fileOffset = 0 byte[] data = new byte[20] data[0] = '55' dataOffset = 0 dataLength = 10 updateBinary()	Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	
2	**Update Transparent EF** 1 - fid = DFSIMTEST select() 2 - fid = EFTARU select() 3 - fileOffset = 3 data[0] = '55' dataOffset = 0 dataLength = 1 updateBinary() 4 - fileOffset = 3 respOffset = 0 respLength = 1 readBinary()	1 – No exception shall be thrown. 2 – No exception shall be thrown. 3 – No exception shall be thrown. 4 – No exception shall be thrown. Data in resp[0] shall be '55'.	
3	**1 - fileOffset = 254** data[0] = '55' data[1] = 'AA' data[2] = '66' dataOffset = 0 dataLength = 3 updateBinary() 2 - fileOffset = 254 respOffset = 0 respLength = 3 readBinary()	1 - No exception shall be thrown. 2 - No exception shall be thrown. Data in resp shall be resp[0] = '55' resp[1] = 'AA' resp[2] = '66'	
4	**Offset into File out of bounds** fileOffset = -1 dataOffset = 0 dataLength = 10 updateBinary()	Shall throw sim.access.SIMViewException with reason code OUT_OF_FILE_BOUNDARIES.	
5	**fileOffset + dataLength > EF length** fileOffset = 259 dataOffset = 0 dataLength = 2 updateBinary()	Shall throw sim.access.SIMViewException with reason code OUT_OF_FILE_BOUNDARIES.	
6	**data is null** byte[] nullBuffer = null fileOffset = 0 dataOffset = 0 dataLength = 10 updateBinary()	Shall throw java.lang.NullPointerException.	
7	**dataOffset < 0** fileOffset = 0 dataOffset = -1 dataLength = 10 updateBinary()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
8	**dataLength < 0** fileOffset = 0 dataOffset = 0 dataLength = -1 updateBinary()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
9	**dataOffset + dataLength > data.length** fileOffset = 0 dataOffset = 10 dataLength = 11 updateBinary()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	

Id	Description	API Expectation	APDU Expectation
10	**EF is not Transparent** 1 - fid = FID_DF_SIMTEST select() 2 - fid = FID_EF_LARU select() 3 - fileOffset = 0 data[0] = '55' dataOffset = 0 dataLength = 1 updateBinary()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT.	
11	**Access condition not fulfilled** 1 - fid = DFSIMTEST select() fid = EFTNU select() 2 - fileOffset = 0 data[0] = '55' dataOffset = 0 dataLength = 1 updateBinary()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	
12	**EF is invalidated** 1 - fid = EFTNR invalidate() 2 - fileOffset = 0 data[0] = '55' dataOffset = 0 dataLength = 1 updateBinary() 3 - rehabilitate()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION. 3 - No exception shall be thrown.	

6.1.1.6.4 Test Coverage

CRR Number	Test Case Number
N1	2, 3
P1	4
P2	5
P3	6
P4	7
P5	8
P6	9
C1	1
C2	10
C3	11
C4	12
C5, C6	Not Tested

6.1.1.7 Method readRecord

Test Area Reference: API_1_SVW_REDRSBS_BSS

6.1.1.7.1 Conformance Requirements

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

```
public short readRecord(short recNumber,
                        byte mode,
                        short recOffset,
                        byte[] resp,
                        short respOffset,
                        short respLength)
                 throws java.lang.NullPointerException,
                        java.lang.ArrayIndexOutOfBoundsException,
                        SIMViewException
```

Normal execution

CRRN1: The data bytes from the record, specified by mode and recNumber of the currently selected linear fixed or cyclic EF, is read at recOffset. A total of respLength bytes of this data is copied to the array resp at respOffset.

CRRN2: If the access mode is REC_ACC_MODE_ABSOLUTE_CURRENT:

- if recNumber is not 0, the record addressed by recNumber will be read;
- if recNumber is 0 the current selected record will be read; and
- the current record pointer shall not change.

CRRN3: If the access mode is REC_ACC_MODE_NEXT:

- the next record relative to the current selected record will be selected and read;
- if no current record is selected, the first record will be selected and read;
- if the current record pointer is set to the last record for a cyclic EF the record pointer is set to the first record and the record is read;
- the current record pointer of any other applet shall not be changed.

CRRN4: If the access mode is REC_ACC_MODE_PREVIOUS:

- the previous record relative to the current selected record will be selected and read;
- if no current record is selected, the last record will be selected and read;
- if the current record pointer is set to the first record, for a linear fixed EF the method responses with an error exception and for a cyclic EF the record pointer is set to the last record and the record is read;
- the current record pointer of any other applet shall not be changed.

Parameter errors

CRRP1: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_ABSOLUTE_CURRENT and recNumber is less than 0 or greater than records available, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP2: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_ABSOLUTE_CURRENT, recNumber is 0 and there is no current record selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP3: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_NEXT and the current record pointer is set to the last record, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP4: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_PREVIOUS and the current record pointer is set to the first record, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP5: If the specified offset into the selected record recOffset is less than 0, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_RECORD_BOUNDARIES.

CRRP6: If recOffset plus respLength is greater than the record length, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_RECORD_BOUNDARIES.

CRRP7: If the access mode is not between 2 and 4 inclusive (2 = REC_ACC_MODE_NEXT, etc.), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALID_MODE.

CRRP8: If the array resp is null, an instance of NullPointerException shall be thrown.

CRRP9: If respOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP10: If respLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP11: If respOffset plus respLength is greater than the length of the array resp.length, or respOffset equals resp.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the currently selected EF is neither linear fixed nor cyclic, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC3: If the calling applet does not fulfil the access condition, READ, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC4: If the currently selected EF is invalidated and the file status of the EF does not allow for reading an invalidated file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC5: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC6: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.7.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script: API_1_SVW_REDRSBS_BSS_1.scr

Test Applet: API_1_SVW_REDRSBS_BSS_1.java

Load Script: API_1_SVW_REDRSBS_BSS_1.ldr

Cleanup Script: API_1_SVW_REDRSBS_BSS_1.clr

6.1.1.7.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	

1	**No EF selected**
	`recNumber = 1`
	`mode = REC_ACC_MODE_ABSOLUTE_CURRENT`
	`recOffset = 0`
	`byte[] resp = new byte[20]`
	`respOffset = 0`
	`respLength = 10`
	`readRecord()`
		Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

Id	Description	API Expectation	APDU Expectation
2	**Read Absolute and Current from Linear Fixed EF** 1 - fid = DFSIMTEST select() 2 - fid = EFLARU select() // Record pointer not set. 3 - recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 4 readRecord() 4 – recNumber = 2 mode = REC_ACC_MODE_ABSOLUTE_CURRENT readRecord() 5 - recNumber = 1 readRecord() 6 - recNumber = 0 resp[0] = resp[1] = resp[2] = resp[3] = '00' readRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55' resp[3] = '55' 4 - No exception shall be thrown. resp shall be: resp[0] = 'AA' resp[1] = 'AA' resp[2] = 'AA' resp[3] = 'AA' 5 - No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55' resp[3] = '55' 6 - No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55' resp[3] = '55'	
3	**Read Next from Linear Fixed EF** recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 4 readRecord()	No exception shall be thrown. resp shall be: resp[0] = 'AA' resp[1] = 'AA' resp[2] = 'AA' resp[3] = 'AA'	
4	**Read Next from Linear Fixed EF** recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 4 readRecord()	Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	
5	**Read Previous from Linear Fixed EF** recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 respOffset = 0 respLength = 4 readRecord()	No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55' resp[3] = '55'	
6	**Read Previous from Linear Fixed EF** recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 respOffset = 0 respLength = 4 readRecord()	Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	

Id	Description	API Expectation	APDU Expectation
7	**Read Absolute and Current from Cyclic EF** 1 - fid = EFCARU select() 2 - recNumber = 2 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 respOffset = 0 respLength = 3 readRecord() 3 – recNumber = 1 readRecord() 4 – recNumber = 0 resp[0] = resp[1] = resp[2] = '00 readRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. resp shall be: resp[0] = ' AA' resp[1] = ' AA' resp[2] = ' AA' 3 - No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55' 4 - No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55'	
8	**Read Next from Cyclic EF** recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 3 readRecord()	No exception shall be thrown. resp shall be: resp[0] = 'AA' resp[1] = 'AA' resp[2] = 'AA'	
9	**Read Next from Cyclic EF** recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 3 readRecord()	No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55'	
10	**Read Previous from Cyclic EF** recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 respOffset = 0 respLength = 3 readRecord()	No exception shall be thrown. resp shall be: resp[0] = 'AA' resp[1] = 'AA' resp[2] = 'AA'	
11	**Read Previous from Cyclic EF** recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 respOffset = 0 respLength = 3 readRecord()	No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55'	
12	**Read Absolute from Linear Fixed EF beyond** Records 1 - fid = EFLARU select() 2 – recNumber = -1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 respOffset = 0 respLength = 4 readRecord() 3 – recNumber = 3 readRecord()	1 – No exceptionshall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE. 3 - Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	

13	**No current record in linear fixed EF, read**
	current
	1 - fid = EFLARU
	select() // No curr rec
	2 – recNumber = 0 // curr rec
	mode = REC_ACC_MODE_ABSOLUTE_CURRENT
	recOffset = 0
	respOffset = 0
	respLength = 4
	readRecord()
		1 - No exception shall be thrown.
		2 - Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	

Id	Description	API Expectation	APDU Expectation

14	**recOffset < 0**
	1 - fid = EFLARU
	select()
	2 - recNumber = 1 // rec 1
	mode = REC_ACC_MODE_ABSOLUTE_CURRENT
	recOffset = -1
	respOffset = 0
	respLength = 4
	readRecord()
		1 - No exception shall be thrown.
		2 - Shall throw sim.access.SIMViewException with reason code OUT_OF_RECORD_BOUNDARIES.	

15	**recOffset + respLength > Record Length** 1 - fid = EFLARU select() 2 - recNumber = 1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 2 respOffset = 0 respLength = 4 readRecord()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code OUT_OF_RECORD_BOUNDARIES.	
16	**Reading with invalid mode** 1 – fid = EFLARU select() 2 – recNumber = 0 mode = 1 recOffset = 0 respOffset = 0 respLength = 4 readRecord() 3 – mode = 5 readRecord()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE. 3 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE.	
17	**resp is null** byte[] nullBuffer = null mode = REC_ACC_MODE_ABSOLUTE_CURRENT respOffset = 0 respLength = 10 readRecord()	Shall throw java.lang.NullPointerException.	
18	**respOffset < 0** respOffset = -1 respLength = 10 readRecord ()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
19	**respLength < 0** respOffset = 0 respLength = -1 readRecord ()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
20	**respOffset + respLength > resp.length** respOffset = 10 respLength = 11 readRecord ()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
21	**EF is neither Cyclic nor Linear Fixed** 1 - fid = DFSIMTEST select() 2 - fid = EFTNU select() 3 – respOffset = 0 respLength = 4 readRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT.	
22	**Access condition not fulfilled** 1 - fid = EFCNR select() 2 - respLength = 3 readRecord()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	
23	**EF is invalidated** 1 - fid = EFCNU invalidate() 2 – readRecord() 3 – rehabilitate()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION. 3 - No exception shall be thrown.	

6.1.1.7.4 Test Coverage

CRR Number	Test Case Number
N1	2-5, 7-11
N2	2, 7
N3	3, 8, 9
N4	5, 10, 11
P1	12
P2	13
P3	4
P4	6
P5	14
P6	15
P7	16
P8	17
P9	18
P10	19
P11	20
C1	1
C2	21
C3	22
C4	23
C5, C6	Not Tested

6.1.1.8 Method updateRecord

Test Area Reference: API_1_SVW_UPDRSBS_BSS

6.1.1.8.1 Conformance Requirements

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

```
public void updateRecord(short recNumber,
                         byte mode,
                         short recOffset,
                         byte[] data,
                         short dataOffset,
                         short dataLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         SIMViewException
```

Normal execution

CRRN1: dataLength bytes of the record specified by mode and recNumber of the current selected linear fixed or cyclic EF are updated at recOffset, by using the string of bytes in the array data starting at dataOffset.

CRRN2: If the access mode is REC_ACC_MODE_ABSOLUTE_CURRENT and the file is a linear fixed EF:

- the record addressed by recNumber will be updated;
- if recNumber is 0 the current selected record will be updated; and
- the current record pointer shall not change.

CRRN3: If the access mode is REC_ACC_MODE_NEXT and the file is a linear fixed EF:

- the next record relative to the current selected record will be selected and updated;
- if no current record is selected, the first record will be selected and updated;
- the current record pointer of any other applet shall not be changed.

CRRN4: If the access mode is REC_ACC_MODE_PREVIOUS:

- the previous record relative to the current selected record will be selected and updated;

- if no current record is selected, the last record will be selected and updated;
- if a cyclic EF is updated, the oldest record will be updated independent of the current record pointer and this record becomes record number 1 and the current record;
- the current record pointer of any other applet shall not be changed in case of a linear fixed EF.

Parameter errors

CRRP1: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_ABSOLUTE_CURRENT and recNumber is less than 0 or greater than records available, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP2: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_ABSOLUTE_CURRENT, recNumber is 0 and there is no current record selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP3: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_NEXT and the current record pointer is set to the last record, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP4: If the currently selected EF is linear fixed and the access mode is REC_ACC_MODE_PREVIOUS and the current record pointer is set to the first record; an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.RECORD_NUMBER_NOT_AVAILABLE.

CRRP5: If the specified offset into the selected record recOffset is less than 0, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_RECORD_BOUNDARIES.

CRRP6: If recOffset plus dataLength is greater than the record lengh, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_RECORD_BOUNDARIES.

CRRP7: If the access mode is not between 2 and 4 inclusive (2 = REC_ACC_MODE_NEXT, etc.), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALID_MODE.

CRRP8: If the currently selected EF is cyclic and the mode of record access mode is not REC_ACC_MODE_PREVIOUS, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALID_MODE.

CRRP9: If the array data is null, an instance of NullPointerException shall be thrown.

CRRP10: If dataOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP11: If dataLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP12: If dataOffset plus dataLength, is greater than the length of the array data.length, or dataOffset equals data.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the currently selected EF is neither linear fixed nor cyclic, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC3: If the calling applet does not fulfil the access condition, UPDATE, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC4: If the currently selected EF is invalidated and the file status of the EF does not allow for updating an invalidated file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC5: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC6: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.8.2 Test Suite Files

Additional requirements for the GSM personalisation: This test is based on the assumption that the contents of the EFs in $DF_{SIMTEST}$ are identical to those defined in the default pre-personalisation and the current record pointers have not been altered.

Test Script: API_1_SVW_UPDRSBS_BSS_1.scr

Test Applet: API_1_SVW_UPDRSBS_BSS_1.java

Load Script: API_1_SVW_UPDRSBS_BSS_1.ldr

Cleanup Script: API_1_SVW_UPDRSBS_BSS_1.clr

6.1.1.8.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**No EF selected** recNumber = 1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 byte[] data = new byte[20] dataOffset = 0 dataLength = 10 updateRecord()	Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	
2	**Update Absolute and Current from Linear Fixed EF** 1 - fid = DFSIMTEST select() 2 - fid = EFLARU select() // Record pointer not set. 3 - recNumber = 2 mode = REC_ACC_MODE_ABSOLUTE_CURRENT data[0:3] = '11' recOffset = 0 dataOffset = 0 dataLength = 4 updateRecord() respOffset = 0 respLength = 0 readRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. Resp shall be: Resp[0] = '11' Resp[1] = '11' Resp[2] = '11' Resp[3] = '11'	= 4

3	**Update Current from Linear Fixed EF**
	1 - fid = DFSIMTEST
	select()
	2 - fid = EFLARU
	select()
	// Set record pointer with mode “next”.
	3 - recNumber = 0
	mode = REC_ACC_MODE_NEXT
	recOffset = 0
	data[0:3] = ‘00’
	dataOffset = 0
	dataLength = 4
	updateRecord()
	// write data with mode “current”
	4 - recNumber = 0
	data[0:3] = ‘22’
	mode = REC_ACC_MODE_ABSOLUTE_CURRENT
	updateRecord()
	// read result with mode “absolute”
	respOffset = 0
	respLength = 4
	recNumber = 1
	mode = REC_ACC_MODE_ABSOLUTE_CURRENT
	readRecord()
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		3 - No exception shall be thrown.
		4 - No exception shall be thrown.
		resp shall be:
		resp[0] = ‘22’
		resp[1] = ‘22’
		resp[2] = ‘22’
		resp[3] = ‘22’	

4	**Update Next from Linear Fixed EF, no record pointer set** 1 – fid = FID_DF_SIMTEST select() 2 – fid = FID_EF_LARU select 3 - recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 data[0:3] = '33' dataOffset = respOffset = 0 dataLength = respLength = 4 updateRecord() mode = REC_ACC_MODE_ABSOLUTE_CURRENT readRecord()	1 - No exception shall be thrown. 2- No exception shall be thrown. 3 - No exception shall be thrown. Resp shall be: Resp[0] = '33' Resp[1] = '33' Resp[2] = '33' Resp[3] = '33'	
5	**Update Next from Linear Fixed EF, record pointer set** 1 - recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 data[0:3] = ‘44’	1 - No exception shall be thrown. 2 - No exception shall be thrown. resp shall be: resp[0] = ‘44’ resp[1] = ‘44’ resp[2] = ‘44’	

Id	Description	API Expectation	APDU Expectation
	dataOffset = 0 dataLength = 4 updateRecord() 2 - mode = REC_ACC_MODE_ABSOLUTE_CURRENT readRecord()	resp[3] = '44'	

Id	Description	API Expectation	APDU Expectation
6	**Update Next from Linear Fixed EF, no more records** recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 data[0:3] = '55' dataOffset = 0 dataLength = 4 updateRecord()	Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	
7	**Update Previous from Linear Fixed EF, no record pointer set** 1 - fid = DFSIMTEST select() 2 - fid = EFLARU select() 3 - recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 data[0:3] = ‘66’ dataOffset = respOffset = 0 dataLength = respLength = 4 updateRecord() 4 - mode = REC_ACC_MODE_ABSOLUTE_CURRENT readRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. 4 - No exception shall be thrown. resp shall be: resp[0] = ‘66’ resp[1] = ‘66’ resp[2] = ‘66’ resp[3] = ‘66’	
8	**Update Previous from Linear Fixed EF, record pointer set** 1 - recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 data[0:3] = '77' dataOffset = respOffset = 0 dataLength = respLength = 4 updateRecord() readRecord() 2 – mode = REC_ACC_MODE_ABSOLUTE_CURRENT	1 - No exception shall be thrown 2 - No exception shall be thrown. Resp shall be: Resp[0] = '7744' Resp[1] = '7744' Resp[2] = '7744' Resp[3] = '7744'	
9	**Update Previous from Linear Fixed EF , no more records** recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 data[0:3] = '88' dataOffset = respOffset = 0 dataLength = respLength = 4 updateRecord()	Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	
10	**Update Previous from Cyclic EF** 1 - fid = FID_DF_SIMTEST select() 2 - fid = FID_EF_CARU select() 3 – recNumber = 2 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 respOffset = 0 respLength = 3 readRecord() 4 – recNumber = 2 mode = REC_ACC_MODE_PREVIOUS data[0:2] = resp[0:2] ^ 'FF' dataOffset = 0 dataLength = 3 updateRecord() 5 – recNumber = 0 mode = REC_ACC_MODE_ABSOLUTE_CURRENT respOffset = 0 respLength = 3 readRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. 4 - No exception shall be thrown. 5 - No exception shall be thrown. resp shall be: resp[0] = data[0] resp[1] = data[1] resp[2] = data[2]	
11	**Update Absolute from Linear Fixed EF beyond Records** 1 – fid = EFLARU select() 2 -recNumber = -1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 dataOffset = 0 dataLength = 4	1 – No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE. 3 - Shall throw sim.access.SIMViewException with	

Id	Description	API Expectation	APDU Expectation
	updateRecord() 2 - recNumber = 3 updateRecord()	reason code RECORD_NUMBER_NOT_AVAILABLE.	

Id	Description	API Expectation	APDU Expectation

12	**No current record in linear fixed EF, update current**
	1 - fid = EFLARU
	select() // No curr rec
	2 - recNumber = 0 // curr rec
	mode = REC_ACC_MODE_ABSOLUTE_CURRENT
	recOffset = 0
	dataOffset = 0
	dataLength = 4
	updateRecord()
		1 - No exception shall be thrown.
		2 - Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.	

13	**recOffset < 0**
	1 - fid = EFLARU
	select()
	2 - recNumber = 1 // rec 1
	mode = REC_ACC_MODE_ABSOLUTE_CURRENT
	recOffset = -1
	dataOffset = 0
	dataLength = 4
	updateRecord()
		1 - No exception shall be thrown.
		2 - Shall throw sim.access.SIMViewException with reason code OUT_OF_RECORD_BOUNDARIES.	

14	**recOffset + dataLength > Record Length** 1 - fid = EFLARU select() 2 - recNumber = 1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 2 dataOffset = 0 dataLength = 4 updateRecord()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code OUT_OF_RECORD_BOUNDARIES.	
15	**Updating with invalid mode** 1 - fid = EFLARU select() 2 - recNumber = 0 mode = 1 recOffset = 0 dataOffset = 0 dataLength = 4 updateRecord() 3 - mode = 5 updateRecord()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE. 3 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE.	
16	**Updating Cyclic EF with invalid mode** 1 - fid = DFSIMTEST select() 2 - fid = EFCARU select() 3 - recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 data[0:2] = '00' dataOffset = 0 dataLength = 3 updateRecord() 4 - recNumber = 0 mode = REC_ACC_MODE_ABSOLUTE_CURRENT updateRecord() 5 - recNumber = 2 mode = REC_ACC_MODE_ABSOLUTE_CURRENT updateRecord()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE. 4 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE. 5 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE.	
17	**data is null** byte[] nullBuffer = null dataOffset = 0 dataLength = 10 updateRecord()	Shall throw java.lang.NullPointerException.	
18	**dataOffset < 0** dataOffset = -1 dataLength = 10 updateRecord()	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
19	**dataLength < 0** dataOffset = 0 dataLength = -1 updateRecord()	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
20	**dataOffset + dataLength > data.length** dataOffset = 10 dataLength = 11 updateRecord()	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
21	**EF is neither Cyclic nor Linear Fixed**	1 - No exception shall be thrown.	

Id	Description	API Expectation	APDU Expectation
	1 - fid = DFSIMTEST select() 2 - fid = EFTNR select() 3 - dataOffset = 0 dataLength = 4 updateRecord()	2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT.	
22	**Access condition not fulfilled** 1 - fid = EFCNU select() 2 - recOffset = 0 dataOffset = 0 dataLength = 1 mode = REC_ACC_MODE_PREVIOUS updateRecord() 3 - fid = EFLNU select() 4 - recNumber = 1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 dataOffset = 0 dataLength = 1 updateRecord()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED. 3 - No exception shall be thrown. 4 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	
23	**EF is invalidated** 1 - fid = EFCNR invalidate() 2 – updateRecord() 3 - rehabilitate()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION. 3 - No exception shall be thrown.	

6.1.1.8.4 Test Coverage

CRR Number	Test Case Number
N1	2, 3,4, 5, 7, 8, 10
N2	2, 3
N3	5, 6
N4	7, 8, 9, 10
P1	11
P2	12
P3	6
P4	9
P5	13
P6	14
P7	15
P8	16
P9	17
P10	18
P11	19
P12	20
C1	1
C2	21
C3	22
C4	23
C5, C6	Not Tested

6.1.1.9 Method seek

Test Area Reference: API_1_SVW_SEEKB_BSS

6.1.1.9.1 Conformance Requirements

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

```
public short seek(byte mode,
                  byte[] patt,
```

```
        short pattOffset,
        short pattLength)
throws java.lang.NullPointerException,
        java.lang.ArrayIndexOutOfBoundsException,
        SIMViewException
```

Normal execution

CRRN1: If the pattern in patt with the length pattLength at offset pattOffset is found in the record being specified by mode, the current record pointer is set to that record and the record number is returned. The record pointer of any other applet is not changed. This will be tested during the testing of the framework.

CRRN2: If mode is SEEK_FROM_BEGINNING_FORWARD, the search starts with the first record forward towards the end of the file.

CRRN3: If mode is SEEK_FROM_END_BACKWARD, the search starts with the last record backward towards the beginning of the file.

CRRN4: If mode is SEEK_FROM_NEXT_FORWARD, the search starts from the next record after the current record pointer forward towards the end of file. If no current record pointer is selected, the search starts with the first record.

CRRN5: If mode is SEEK_FROM_PREVIOUS_BACKWARD, the search starts from the previous record before the current record pointer backward towards the beginning of the file. If no current record pointer is selected the search starts with the last record.

CRRN6: If pattern in patt is not found, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.PATTERN_NOT_FOUND.

CRRN7: If mode is SEEK_FROM_NEXT_FORWARD and the record pointer is at the last record, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.PATTERN_NOT_FOUND.

CRRN8: If mode is SEEK_FROM_PREVIOUS_BACKWARD and the record pointer is at the first record, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.PATTERN_NOT_FOUND.

Parameter errors

CRRP1: If mode is not between 0 and 3 inclusive (0 = SEEK_FROM_BEGINNING_FORWARD, etc.), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALID_MODE.

CRRP2: If the pattern array patt is null, an instance of NullPointerException shall be thrown.

CRRP3: If pattOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP4: If pattLength is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP5: If pattLength is greater than the size of the record of the currently selected EF, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.OUT_OF_RECORD_BOUNDARIES.

CRRP6: If pattOffset plus pattLength is greater than the length of the pattern array patt.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the currently selected EF is not linear fixed, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC3: If the calling applet does not fulfil the access condition, READ, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC4: If the currently selected EF is invalidated and the file status of the EF does not allow for reading an invalidated file, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC5: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC6: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.9.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script: API_1_SVW_SEEKB_BSS_1.scr

Test Applet: API_1_SVW_SEEKB_BSS_1.java

Load Script: API_1_SVW_SEEKB_BSS_1.ldr

Cleanup Script: API_1_SVW_SEEKB_BSS_1.ldr

6.1.1.9.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	

1	**No EF selected**
	`Byte[] patt = new byte[20]`
	`pattOffset = 0`
	`pattLength = 10`
	`mode = SEEK_FROM_BEGINNING_FORWARD`
	`seek()`
		Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

2	**Pattern not Found**
	`1 - fid = DFSIMTEST`
	`select()`
	`2 - fid = EFLARU`
	`select()`
	`3 - patt[0] = 'DA'`
	`pattOffset = 0`
	`pattLength = 1`
	`mode = SEEK_FROM_BEGINNING_FORWARD`
	`seek()`
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		3 - Shall throw sim.access.SIMViewException with reason code PATTERN_NOT_FOUND.	

3	**Seek from Beginning Forward**
	`patt[0:2] = '55'`
	`pattOffset = 0`
	`pattLength = 3`
	`mode = SEEK_FROM_BEGINNING_FORWARD`
	`seek()`
		No exception shall be thrown. Shall return 1	

4	**Seek from End Backward**
	`patt[0:2] = '55'`
	`pattOffset = 0`
	`pattLength = 3`
	`mode = SEEK_FROM_END_BACKWARD`
	`seek()`
		No exception shall be thrown. Shall return 1	

5	**Seek from Next Forward**
	`patt[0:2] = 'AA'`
	`pattOffset = 0`
	`pattLength = 3`
	`mode = SEEK_FROM_NEXT_FORWARD`
	`seek()`
		No exception shall be thrown. Shall return 2	

6	**Last Record, Seek from Next Forward**
	`mode = SEEK_FROM_NEXT_FORWARD`
	`seek()`
		Shall throw sim.access.SIMViewException with reason code PATTERN_NOT_FOUND.	

7	**Seek from Previous Backward**
	`patt[0:2] = '55'`
	`pattOffset = 0`
	`pattLength = 3`
	`mode = SEEK_FROM_PREVIOUS_BACKWARD`
	`seek()`
		No exception shall be thrown. Shall return 1	

8	**First Record, Seek from Previous Backward**	Shall throw	

Id	Description	API Expectation	APDU Expectation
	SEEK_FROM_PREVIOUS_BACKWARD seek()	sim.access.SIMViewException with reason code PATTERN_NOT_FOUND.	
9	**Pattern not Found (out of reach)** patt[0:2] = '55' pattOffset = 0 pattLength = 3 mode = SEEK_FROM_NEXT_FORWARD seek()	Shall throw sim.access.SIMViewException with reason code PATTERN_NOT_FOUND.	
10	**Invalid mode** 1 - mode = 4 seek() 2 - mode = -1 seek()	1 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE 2 - Shall throw sim.access.SIMViewException with reason code INVALID_MODE	
11	**patt is null** byte[] nullBuffer = null mode = SEEK_FROM_BEGINNING_FORWARD seek ()	Shall throw java.lang.NullPointerException.	
12	**pattOffset < 0** patt[0:2] = '55' pattOffset = -1 pattLength = 3 mode = SEEK_FROM_BEGINNING_FORWARD seek()	Shall throw java.lang. ArrayIndexOutOfBoundsException	
13	**pattLength < 0** patt[0:2] = '55' pattOffset = 0 pattLength = -1 mode = SEEK_FROM_BEGINNING_FORWARD seek()	Shall throw java.lang. ArrayIndexOutOfBoundsException	
14	**pattLength > size of record** patt[0:4] = '55' pattOffset = 0 pattLength = 4 mode = SEEK_FROM_BEGINNING_FORWARD seek()	Shall throw sim.access.SIMViewException with reason code OUT_OF_RECORD_BOUNDARIES	
15	**pattOffset + pattLength > patt.length** patt[0:2] = '55' pattOffset = 1 pattLength = 3 mode = SEEK_FROM_BEGINNING_FORWARD seek()	Shall throw java.lang. ArrayIndexOutOfBoundsException	
16	**EF is not Linear Fixed** 1 - fid = EFTNU select() 2 - pattOffset = 0 pattLength = 3 mode = SEEK_FROM_BEGINNING_FORWARD seek() 3 - fid = EFCNU select() seek()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT 3 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT	
17	**Access condition not fulfilled** 1 - fid = EFLNR select() 2 - patt[0] = '55' pattOffset = 0 pattLength = 1 mode = SEEK_FROM_BEGINNING_FORWARD seek()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	
18	**EF is invalidated** 1 - fid = EFLARU select() 2 - invalidate() 3 - patt[0] = '55 pattOffset = 0 pattLength = 1 mode = SEEK_FROM_BEGINNING_FORWARD seek() 4 - rehabilitate()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION. 4 - No exception shall be thrown.	

6.1.1.9.4 Test Coverage

CRR Number	Test Case Number
N1	2, 3 - 6, 7
N2	3
N3	4
N4	5
N5	7
N6	2, 6, 8, 9
N7	6
N8	8
P1	10
P2	11
P3	12
P4	13
P5	14
P6	15
C1	1
C2	16
C3	17
C4	18
C5, C6	Not Tested

6.1.1.10 Method increase

Test Area Reference: API_1_SVW_INCR_BS_BS

6.1.1.10.1 Conformance Requirements

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

```
public short increase(byte[] incr,
                      short incrOffset,
                      byte[] resp,
                      short respOffset)
               throws java.lang.NullPointerException,
                      java.lang.ArrayIndexOutOfBoundsException,
                      SIMViewException
```

Normal execution

CRRN1: The value in the array incr is added to the value of the last increased / updated record in the currently selected cyclic EF. The result is stored in the oldest record and returned in the array resp. The updated record becomes record number 1 and is selected as current record. The number of bytes of valid data in resp is returned.

Parameter errors

CRRP1: If the array incr is null, an instance of NullPointerException shall be thrown.

CRRP2: If incrOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: If incrOffset plus the value 3, is greater than the length of the array incr.length, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP4: If the result of the addition is greater than the maximum value of the record (represented by all bytes set to 'FF'), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MAX_VALUE_REACHED.

CRRP5: If the array resp is null, an instance of NullPointerException shall be thrown.

CRRP6: If respOffset is less than 0, an instance of ArrayIndexOutOfBoundsException shall be thrown.

CRRP7: If the remaining length of the array resp at the offset respOffset is less than the length of the record, an instance of ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the currently selected EF is not cyclic, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC3: If increase is not allowed as indicated by the FCI byte 8 (GSM 11.11: FCI structure of an EF returned by the SELECT command), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.FILE_INCONSISTENT.

CRRC4: If the calling applet does not fulfil the access condition, INCREASE, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC5: If the currently selected EF is invalidated, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC6: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC7: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.10.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script: API_1_SVW_INCR_BS_BS_1.scr

Test Applet: API_1_SVW_INCR_BS_BS_1.java

Load Script: API_1_SVW_INCR_BS_BS_1.ldr

Cleanup Script: API_1_SVW_INCR_BS_BS_1.clr

6.1.1.10.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**No EF selected** byte[] incr = new byte[4] byte[] resp = new byte[4] incrOffset = 0 respOffset = 0 increase()	Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

2	**Increase , verify response**
	1 - fid = DFSIMTEST
	select()
	2 - fid = EFCARU
	select()
	3 - //Set both records to 00 00 00
	mode = REC_ACC_MODE_PREVIOUS
	data[0:3] = 0
	dataOffset = 0
	dataLength = 3
	updateRecord()
	updateRecord()
	4 - incrOffset = 0
	incr[2] = 1
	respOffset = 0
	increase()
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		3 - No exception shall be thrown.
		4 - No exception shall be thrown.
		resp[] shall contain {0,0,1,0}.	

3	**Increase, verify file** 1 - incrOffset = 1 incr[2] = 0, incr[3] = 2 respOffset = 1 increase() 2 - resp[3] = 0 recNumber = 0 mode = REC_ACC_MODE_ABSOLUTE_CURRENT	1 - No exception shall be thrown. resp[] shall contain {0,0,0,3}. 2 - No exception shall be thrown. resp[] shall contain {0,0,3,0}.	

Id	Description	API Expectation	APDU Expectation
	recOffset = 0 respOffset = 0 respLength = 0 readRecord()		
4	**incr is null** byte[] nullBuffer = null incrOffset = 0 respOffset = 0 increase()	Shall throw java.lang.NullPointerException.	
5	**incrOffset < 0** incrOffset = -1 respOffset = 0 increase()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
6	**incrOffset + 3 > incr.length** incrOffset = 2 respOffset = 0 increase()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
7	**Reach Maximum Value** incr[0] = incr[1] = incr[2] = 'FF' incrOffset = 0 respOffset = 0 increase()	Shall throw sim.access.SIMViewException with reason code MAX_VALUE_REACHED.	
8	**resp is null** incr[0] = incr[1] = 0x00' incr[2] = '02' incrOffset = 0 byte[] respNull = null respOffset = 0 increase()	Shall throw java.lang.NullPointerException.	
9	**respOffset < 0** incrOffset = 0 respOffset = -1 increase()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
10	**respOffset + recordLength > resp.length** incrOffset = 0 respOffset = 2 increase()	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
11	**EF is not Cyclic** 1 - fid = EFTARU select() 2 – incrOffset = 0 respOffset = 0 increase() 3 - fid = EFLARU select() 4 – incrOffset = 0 respOffset = 0 increase()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT. 3 - No exception shall be thrown. 4 - Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT.	
12	**Access condition not fulfilled** 1 - fid = EFCNIC select() 2 – incrOffset = 0 respOffset = 0 increase()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	
13	**EF is invalidated** 1 - fid = EFCARU select() 2 – invalidate() 3 – incrOffset = 0 respOffset = 0 increase() 4 – rehabilitate()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION. 4 - No exception shall be thrown.	
14	**Check increase not allowed from FCI** 1 – fciOffset = 0 fciLength = 8 select (FID_EF_CINA, fci...) Verify FCI byte 8 (fci[7]) 2 - incrOffset = 0 respOffset = 0 increase()	1 - No exception shall be thrown. Bit 7 of resp[7] shall not be set (0), indicating that increase is not allowed. 2 – Shall throw sim.access.SIMViewException with reason code FILE_INCONSISTENT	

6.1.1.10.4 Test Coverage

CRR Number	Test Case Number
N1	2, 3
P1	4
P2	5
P3	6
P4	7
P5	8
P6	9
P7	10
C1	1
C2	11
C3	14
C4	12
C5	13
C6, C7	Not Tested

6.1.1.11 Method invalidate

Test Area Reference: API_1_SVW_INVL

6.1.1.11.1 Conformance Requirements

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

```
public void invalidate()
                throws SIMViewException
```

Normal execution

CRRN1: The currently selected EF of the calling applet shall be invalidated, i.e. the flag in the EF file status shall be changed accordingly.

Parameter errors

No requirements.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the calling applet does not fulfil the access condition, INVALIDATE, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC3: If the currently selected EF is already invalidated, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC4: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC5: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.11.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script: API_1_SVW_INVL_1.scr

Test Applet: API_1_SVW_INVL_1.java

Load Script: API_1_SVW_INVL_1.ldr

Cleanup Script: API_1_SVW_INVL_1.clr

6.1.1.11.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**No EF is selected** `1 – invalidate()`	1 - Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

2	**Invalidate EF**
	`1 – fid = DFSIMTEST`
	`select()`
	`2 – fid = EFTNR`
	`select()`
	`3 – invalidate()`
	`4 – rehabilitate()`
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		3 - No exception shall be thrown.
		4 - No exception shall be thrown.	

3	**Access condition not fulfilled**
	`1 – fid = EFCNIV`
	`select()`
	`2 – invalidate()`
		1 - No exception shall be thrown.
		2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.	

4	**EF is already invalidated**
	`1 – fid = EFTNR`
	`select()`
	`2 – invalidate()`
	`3 – invalidate()`
		1 - No exception shall be thrown.
		2 - No exception shall be thrown.
		3 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION.	

6.1.1.11.4 Test Coverage

CRR number	Test Case Number
N1	2
C1	1
C2	3
C3	4
C4, C5	Not Tested

6.1.1.12 Method rehabilitate

Test Area Reference: API_1_SVW_REHA

6.1.1.12.1 Conformance Requirements

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

```
public void rehabilitate()
                throws SIMViewException
```

Normal execution

CRRN1: The currently selected EF of the calling applet shall be rehabilitated, i.e. the flag in the EF file status shall be changed accordingly.

Parameter errors

No requirements.

Context errors

CRRC1: If the calling applet has currently no EF selected, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.NO_EF_SELECTED.

CRRC2: If the calling applet does not fulfil the access condition, REHABILITATE, to perform this function, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.AC_NOT_FULFILLED.

CRRC3: If the currently selected EF is not invalidated, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRRC4: If the method call causes a memory problem (e.g. memory access error), an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.MEMORY_PROBLEM.

CRRC5: If the method call causes an error to occur that is not expected and thus not handled, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INTERNAL_ERROR.

6.1.1.12.2 Test Suite Files

Additional requirements for the GSM personalisation: None

Test Script: API_1_SVW_REHA_1.scr

Test Applet: API_1_SVW_REHA_1.java

Load Script: API_1_SVW_REHA_1.ldr

Cleanup Script: API_1_SVW_REHA_1.clr

6.1.1.12.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**No EF is selected** 1 – rehabilitate()	1 - Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	
2	**Rehabilitate invalidated File** 1 – fid = DFSIMTEST select() 2 - fid = EFCNR select() 3 – invalidate() 4 – rehabilitate() 5 - byte[] incr = new byte[3] = {0,0,1} incrOffset = 0 byte[] resp = new byte[1] = 1 respOffset = 0 increase()	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. 4 - No exception shall be thrown. 5 - No exception shall be thrown. resp[] shall contain {0,0,1}.	
3	**Access condition not fulfilled** 1 – fid = EFCNRH select() 2 – rehabilitate()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED..	
4	**Rehabilitate validated File** 1 - fid = EFCNR select() 2 – rehabilitate()	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTRADICTION.	

6.1.1.12.4 Test Coverage

CRR number	Test Case Number
N1	2
C1	1
C2	3
C3	4
C4, C5	Not Tested

6.1.2 Class SIMSystem

6.1.2.1 Method getTheSIMView

Test Area Reference: API_1_SSY_GETS

6.1.2.1.1 Conformance Requirement:

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

```
public static SIMView getTheSIMView()
```

Normal execution

CRRN1: returns a reference to class which implements the SIMView interface

Parameters error

No requirements

Context errors

No requirements

6.1.2.1.2 Test suite files

No additional requirements for the GSM personalisation:

Test Script: API_1_SSY_GETS_1.scr

Test Applet: API_1_SSY_GETS_1.java

Load Script: API_1_SSY_GETS_1.ldr

Cleanup Script: API_1_SSY_GETS_1.clr

6.1.2.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**reference not equal null after execute**	The returned reference shall be not null after execute	
2	**reference to the GSM interface**	Returned a reference to the GSM interface	

6.1.2.1.4 Test Coverage

CRR number	Test case number
N1	1,2

6.1.3 Class SIMViewException

6.1.3.1 Method throwIt

Test Area Reference: API_1_SVE_THITS

6.1.3.1.1 Conformance Requirement:

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

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

Normal execution

CRRN1: Throws the JCRE instance of SIMViewException with the specified reason

CRRN2: Extends javacard.framework.CardRuntimeException

Parameter errors

No requirements

Context errors

No requirements

6.1.3.1.2 Test Suite Files

No additional requirements for the GSM personalisation

Test Script: API_1_SVE_THITS_1.scr

Test Applet: API_1_SVE_THITS_1.java

Load Script: API_1_SVE_THITS_1.ldr

Cleanup Script: API_1_SVE_THITS_1.clr

6.1.3.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Throws the JCRE instance of SIMViewException with the specified reason**	Reason = 0	
2	**Throws the JCRE instance of SIMViewException with the specified reason**	Reason = 1	
3	**Throws the JCRE instance of SIMViewException with the specified reason**	Reason = 15	
4	**SIMViewException extends javacard.framework.CardRuntimeException**	Reason = 0	
5	**SIMViewException extends javacard.framework.CardRuntimeException**	Reason = 1	
6	**SIMViewException extends javacard.framework.CardRuntimeException**	Reason = 15	

6.1.3.1.4 Test Coverage

CRR number	Test case number
N1	1,2,3
N2	4,5,6

6.1.3.2 Constructor

Test Area Reference: API_1_SVE_COORS

6.1.3.2.1 Conformance Requirement:

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

```
public SIMViewException(short reason)
        throws  SIMViewException
```

Normal execution

CRRN1: Construct a SIMViewException with the specified reason

Parameters error

No requirements

Context errors

No requirements

6.1.3.2.2 Test suite files

No additional requirements for the GSM personalisation

Test Script: API_1_SVE_COORS_1.scr

Test Applet: API_1_SVE_COORS_1.java

Load Script: API_1_SVE_COORS.ldr

Cleanup Script: API_1_SVE_COORS.clr

6.1.3.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**SIMViewException with the specified reason** (The reason shall set with setReason and compare the Exception with getReason)	Reason (specified)	

6.1.3.2.4 Test Coverage

CRR number	Test case number
N1	1

6.1.3.3 Reason Codes

Test Area Reference: API_1_SVE_CONS

6.1.3.3.1 Conformance Requirement:

There is no API, only constants. This constants shall compliant to its definition in the API.

Normal execution

CRRN1: The Constants of the class SIMViewException shall all have the same name and value defined in the GSM03.19

CRRN2: Constructs SIMViewException a Exception with the specified reason

Parameters error

No requirements

Context errors

No requirements

6.1.3.3.2 Test suite files

None

6.1.3.3.3 Test Procedure

The constants in Java are resolved at compilation time, therefore a runtime test is not useful. No test of constants will be performed

6.2 Package sim.toolkit

6.2.1 Interface ToolkitConstants

6.2.1.1 Constants

Test Area Reference: API_2_TKC_CONS

6.2.1.1.1 Conformance Requirement:

There is no API, only constants. This constants shall be compare to its definition in the API.

Normal execution

CRRN1: The Toolkit Constants shall all have the same name and value defined in the GSM03.19 normalization.

Parameters error

No requirements

Context errors

No requirements

6.2.1.1.2 Test suite files

None

6.2.1.1.3 Test Procedure

The constants in Java are resolved at compilation time, therefore a runtime test is not useful. No test of constants will be performed.

6.2.2 Interface ToolkitInterface

6.2.2.1 Method processToolkit

Test Area Reference: API_1_TKI_PRTKB

6.2.2.1.1 Conformance Requirement:

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

```
public void processToolkit(byte event)
        throws  ToolkitException
```

Normal execution

CRRN1: This interface must be implemented by a Toolkit applet (which extends the javacard.framework.Applet class) so that it can be triggered by the Toolkit Handler according to the registration information.

CRRN2: The Toolkit applet will have to implement the processToolkit shared method so that the following events can be notified:

Event	Description
EVENT_PROFILE_DOWNLOAD	Terminal Profile command reception
EVENT_FORMATTED_SMS_PP_ENV	03.48 formatted envelope SMS-PP Data Download reception
EVENT_FORMATTED_SMS_PP_UPD	03.48 formatted Update Record EF SMS
EVENT_UNFORMATTED_SMS_PP_ENV	Unformatted Envelope SMS-PP Data Download reception
EVENT_UNFORMATTED_SMS_PP_UPD	Unformatted Update Record EF SMS
EVENT_UNFORMATTED_SMS_CB	Unformatted Cell Broadcast Data Download command reception
EVENT_MENU_SELECTION	Envelope Menu Selection command reception
EVENT_MENU_SELECTION_HELP_REQUEST	Envelope Menu Selection Help Request command reception
EVENT_CALL_CONTROL_BY_SIM	Envelope Call Control by SIM command reception
EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM	Envelope MO Short Message Control by SIM command reception
EVENT_TIMER_EXPIRATION	Envelope Timer Expiration
EVENT_EVENT_DOWNLOAD_MT_CALL	Envelope Event Download - MT call
EVENT_EVENT_DOWNLOAD_CALL_CONNECTED	Envelope Event Download - Call connected
EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED	Event Download - Call disconnected
EVENT_EVENT_DOWNLOAD_LOCATION_STATUS	Envelope Event Download - Location status
EVENT_EVENT_DOWNLOAD_USER_ACTIVITY	Envelope Event Download - User activity
EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE	Envelope Event Download - Idle screen available
EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS	Envelope Event Download - Card Reader Status
EVENT_STATUS_COMMAND	Status APDU command event
EVENT_UNRECOGNIZED_ENVELOPE	Unrecognized Envelope command reception

Parameters error

No requirements

Context errors

No requirements

6.2.2.1.2 Test suite files

The method is tested in the Framework

6.2.2.1.3 Test Coverage

CRR number	Test case number
N1	Tested in Framework
N2	Tested in Framework

6.2.3 Class EditHandler

It is not possible to test the methods provided by this class as it is declared 'abstract'; it will be done in the class inheriting it: EnvelopeResponseHandler, ProactiveHandler.

6.2.4 Class EnvelopeHandler

6.2.4.1 Method getEnvelopeTag

Test Area Reference: API_2_ENH_GENT

6.2.4.1.1 Conformance Requirement:

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

```
public byte getEnvelopeTag()
```

Normal execution

CRRN1: The method shall return the Envelope BER-TLV tag.

CRRN2: The Envelope BER TAG is available for all triggered toolkit applets from the invocation to the termination of their processToolkit method if the EnvelopeHandler is available.

Parameters error

Context errors

6.2.4.1.2 Test suite files

Test Script: API_2_ENH_GENT_1.scr

Test Applet: API_2_ENH_GENT_1.java

Load Script: API_2_ENH_GENT_1.ldr

Cleanup Script: API_2_ENH_GENT_1.clr

6.2.4.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	getEnvelopeTag called just after triggering of the application.	Returns 0xD1	
2	getEnvelopeTag called after a proactive command.	Returns 0xD1	
3	getEnvelopeTag called after a second proactive command.	Returns 0xD1	

6.2.4.1.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	1, 2, 3

6.2.4.2 Method getItemIdentifier

Test Area Reference: API_2_ENH_GIID

6.2.4.2.1 Conformance Requirement:

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

```
public byte getItemIdentifier()
                    throws ToolkitException
```

Normal execution

CRRN1:The method shall return the item identifier byte value.

CRRN2:The item identifier byte value returned shall be from the first Item Identifier TLV element.

CRRN3: If the element is available it becomes the TLV selected.

CRRN4: The item identifier is available for all triggered toolkit applets from the invocation to the termination of their processToolkit method if the EnvelopeHandler is available.

Parameters error

No requirements.

Context errors

CRRC1: The method shall throw ToolkitException (UNAVAILABLE_ELEMENT) if the item identifier TLV is not present.

CRRC2: The method shall throw ToolkitException (OUT_OF_TLV_BOUNDARIES) if the item identifier byte is missing in the Item Identifier Simple TLV.

6.2.4.2.2 Test suite files

Test Script: API_2_ENH_GIID_1.scr

Test Applet: API_2_ENH_GIID_1.java

Load Script: API_2_ENH_GIID_1.ldr

Cleanup Script: API_2_ENH_GIID_1.clr

6.2.4.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	Send envelope SMS-PP Formatted with item identifier TLV and identifier value of 03	Returns 03	
2	Send envelope SMS-PP Formatted with two item identifier TLV with first value FF and second 44	Returns FF	
3	Send envelope SMS-PP Formatted with two item identifier TLV with first value 81 and second 44, call twice the method getItemIdentifier	Returns 81 Returns 81	
4	Send envelope SMS-PP Formatted with item identifier TLV and value of 66. FindTLV with TAG 02. getItemIdentifier and then getValueByte with offset 0	getItemIdentifier=getValueByte	
5	Send envelope SMS-PP Formatted without item identifier TLV and getItemIdentifier	ToolkitException (UNAVAILABLE_ELEMENT)	
6	Send Envelope SMS-PP Formatted with item identifier TLV (66), send proactive command. Then getItemIdentifier	Returns 66	
7	Send Envelope SMS-PP Formatted with item identifier TLV but without item number	ToolkitException (OUT_OF_TLV_BOUNDARIES)	

6.2.4.2.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	2, 3
N3	4
N4	6
C1	5
C2	7

6.2.4.3 Method getSecuredDataLength

Test Area Reference: API_2_ENH_GSDL

6.2.4.3.1 Conformance Requirement:

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

```
public short getSecuredDataLength()
                        throws ToolkitException
```

Normal execution

CRRN1: The method shall return the length of the secured data contained in a SMS TPDU TLV.

CRRN2: The length is from the first SMS TPDU TLV.

CRRN3: The length should not include padding bytes.

CRRN4: The method can be used if the event is EVENT_FORMATTED_SMS_PP_ENV and if the SMS TP-UD is formatted according to GSM03.48.

CRRN5: The method can be used if the event is EVENT_FORMATTED_SMS_PP_UPD and if the SMS TP-UD is formatted according to GSM03.48.

CRRN6: If the method is successful, the selected TLV should be the SMS TPDU TLV.

Parameters error

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (UNAVAILABLE_ELEMENT) in case of unavailable SMS TPDU TLV element.

CRRC2: The method shall thrown ToolkitException (UNAVAILABLE_ELEMENT) in case of missing Secured Data.

6.2.4.3.2 Test suite files

Specific triggering:

- SMS CB
- FORMATTED SMS PP UPD
- UNFORMATED SMS PP ENV
- For Formatted triggering if CC/RC/DS is used, the security parameters are the one used for downloading applications.

Test Script: API_2_ENH_GSDL_1.scr

Test Applet: API_2_ENH_GSDL_1.java

Load Script: API_2_ENH_GSDL_1.ldr

Cleanup Script: API_2_ENH_GSLD_1.clr

6.2.4.3.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	Test with TP-OA length of 2	Returns 0x2A	
2	Test with TP-OA length of 6	Returns 0x2A	
3	Test with TP-OA length of 12	Returns 0x2A	
4	Test with RC/CC/DS length of 0	Returns 0x10	
5	Test with RC/CC/DS length of 8	Returns 0x10	
6	Test with PCNTR = 0	Returns 0x10	

7	Test with PCNTR = 7	Returns 0x05	
8	Test with SecuredDataLength = 00	Returns 0x00	
9	Test with UserDataLength = 0x33	Returns 0x33	
10	Test with UserDataLength = 0x 6C	Returns 0x 6C	
11	Test with UserDataLength = 0x 6D	Returns 0x 6D	
12	Test with UserDataLength = maximum length: 0x79	Returns 0x 79	
13	Verify it is the first TPDU TLV: Send a SMS PP with 2 TPDU TLV and inside two different secured data lengths: 5 and 10	Returns 0x05	
14	Same test as 1 but with FORMATTED_SMS_PP_UPD	Returns 0x2A	
15	Same test as 2 but with FORMATTED_SMS_PP_UPD	Returns 0x2A	
16	Same test as 3 but with FORMATTED_SMS_PP_UPD	Returns 0x2A	
17	Same test as 4 but with FORMATTED_SMS_PP_UPD	Returns 0x10	
18	Same test as 5 but with FORMATTED_SMS_PP_UPD	Returns 0x10	
19	Same test as 3 but with FORMATTED_SMS_PP_UPD	Returns 0x10	
20	Same test as 4 but with FORMATTED_SMS_PP_UPD	Returns 0x05	
21	Same test as 5 but with FORMATTED_SMS_PP_UPD	Returns 0x00	
22	Same test as 6 but with FORMATTED_SMS_PP_UPD	Returns 0x33	
23	Same test as 7 but with FORMATTED_SMS_PP_UPD	Returns 0x 6C	
24	Same test as 8 but with FORMATTED_SMS_PP_UPD	Returns 0x 6D	
25	Same test as 9 but with FORMATTED_SMS_PP_UPD	Returns 0x 79	
26	Same test as 10 but with FORMATTED_SMS_PP_UPD	Returns 0x05	
27	Verify after call of the method the current TLV is the TPDU TLV: findTLV device identities, getSecuredDataLength and then getValueByte to verify that the current TLV is the TPDU TLV	getValueByte returns 0x40	
28	Send an envelope SMS CB, getSecuredDataLength	ToolkitException UNAVAILABLE_ELEMENT	
29	Send an envelope SMS PP unformatted	ToolkitException UNAVAILABLE_ELEMENT	

6.2.4.3.4 Test Coverage

This method has only been tested with call control and the tests shall be improved during 03.48 tests.

CRR number	Test case number
N1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
N2	13
N3	6, 7
N4	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 25
N5	14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
N6	27
C1	28
C2	29

6.2.4.4 Method getSecuredDataOffset

Test Area Reference: API_2_ENH_GSDO

6.2.4.4.1 Conformance Requirement:

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

```
public short getSecuredDataOffset()
                          throws ToolkitException
```

Normal execution

CRRN1: The method shall return the offset of the secured data first byte contained in a SMS TPDU TLV.

CRRN2: The offset is from the first SMS TPDU TLV.

CRRN3: The method can be used if the event is EVENT_FORMATTED_SMS_PP_ENV and if the SMS TP-UD is formatted according to GSM03.48.

CRRN4: The method can be used if the event is EVENT_FORMATTED_SMS_PP_UPD and if the SMS TP-UD is formatted according to GSM03.48.

CRRN5: If the method is successful, the selected TLV should be the SMS TPDU TLV.

Parameters error

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (UNAVAILABLE_ELEMENT) in case of unavailable SMS TPDU TLV element.

CRRC2: The method shall thrown ToolkitException (UNAVAILABLE_ELEMENT) in case of missing Secured Data.

6.2.4.4.2 Test suite files

Specific triggering:

```
        SMS CB
        FORMATTED SMS PP UPD
        UNFORMATED SMS PP ENV
        For Formatted triggering if CC/RC/DS is used, the security parameters are the one used for
downloading applications.
```

Test Script: API_2_ENH_GSDO_1.scr

Test Applet: API_2_ENH_GSDO_1.java

Load Script: API_2_ENH_GSDO_1.ldr

Cleanup Script: API_2_ENH_GSDO_1.clr

6.2.4.4.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	Test with TP-OA length of 2	Returns 0x21	
2	Test with TP-OA length of 6	Returns 0x23	
3	Test with TP-OA length of 12	Returns 0x26	
4	Test with RC/CC/DS length of 0	Returns 0x21	
5	Test with RC/CC/DS length of 8	Returns 0x29	
6	Send a SMS PP with 2 TPDU TLV and inside two different secured data offsets	Returns 0x24 (the first offset)	

7	Same test as 1 but with FORMATTED_SMS_PP_UPD	Returns 0x21	
8	Same test as 2 but with FORMATTED_SMS_PP_UPD	Returns 0x23	
9	Same test as 3 but with FORMATTED_SMS_PP_UPD	Returns 0x26	
10	Same test as 4 but with FORMATTED_SMS_PP_UPD	Returns 0x21	
11	Same test as 5 but with FORMATTED_SMS_PP_UPD	Returns 0x29	
12	Same test as 6 but with FORMATTED_SMS_PP_UPD	Returns 0x24 (the first offset)	
13	Verify after call of the method the current TLV is the TPDU TLV: findTLV device identities, getSecuredDataOffset and then getValueByte to verify that the current TLV is the TPDU TLV	Returns 0x40	
14	Send an envelope SMS CB, getSecuredDataOffset	ToolkitException UNAVAILABLE_ELEMENT	
15	Send an envelope SMS PP unformatted	ToolkitException UNAVAILABLE_ELEMENT	
16	Send an envelope SMS-PP formatted with no secured data , getSecuredDataOffset	Returns 0x21	

6.2.4.4.4 Test Coverage

This method has only been tested with call control and the tests shall be improved during 03.48 tests.

CRR number	Test case number
N1	1, 2, 3, 4, 5, 6, 16
N2	6, 12
N3	1, 2, 3, 4, 5, 6, 16
N4	7, 8, 9, 10, 11
N5	13
C1	14
C2	15

6.2.4.5 Method getTheHandler

Test Area Reference: API_2_ENH_GTHD

6.2.4.5.1 Conformance Requirements

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

```
public static EnvelopeHandler getTheHandler()
                                    throws ToolkitException
```

Normal execution

CRRN1: The method shall return the single system instance of the EnvelopeHandler class.

CRRN2: The EnvelopeHandler is a Temporary JCRE Entry Point Object (see Javacard 2.1 Runtime Environment (JCRE) Specification [12])

Parameters error

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (HANDLER_NOT_AVAILABLE) if the handler is busy.

6.2.4.5.2 Test suite files

Test Script: API_2_ENH_GTHD_1.scr

Test Applet: API_2_ENH_GTHD_1.java

Load Script: API_2_ENH_GTHD_1.ldr

Cleanup Script: API_2_ENH_GTHD_1.clr

6.2.4.5.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	getTheHandler twice	The returned objects shall be the same	
2	Verify that getTheHandler returns an EnvelopeHandler GetTheHandler	The reference returned shall be an EnvelopeHandler (checkcast)	
3	Verify the returned value is not null GetTheHandler	The reference returned shall not be null.	

6.2.4.5.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	To be checked in Framework tests and insert here cross reference
C1	To be checked in Framework tests and insert here cross reference

6.2.4.6 Method getTPUDLOffset

Test Area Reference: API_2_ENH_GTPO

6.2.4.6.1 Conformance Requirement:

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

```
public short getTPUDLOffset()
                    throws ToolkitException
```

Normal execution

CRRN1: The method shall return the TPUDL offset in a SMS TPDU TLV.

CRRN2: The offset is from the first SMS TPDU TLV.

CRRN3: The method can be used if the event is EVENT_FORMATTED_SMS_PP_ENV.

CRRN4: The method can be used if the event is EVENT_FORMATTED_SMS_PP_UPD.

CRRN5: The method can be used if the event is EVENT_UNFORMATTED_SMS_PP_ENV.

CRRN6: The method can be used if the event is EVENT_UNFORMATTED_SMS_PP_UPD.

CRRN7: If the method is successful, the selected TLV should be the SMS TPDU TLV.

Parameters error

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (UNAVAILABLE_ELEMENT) in case of unavailable SMS TPDU TLV element.

CRRC2: The method shall thrown ToolkitException (UNAVAILABLE_ELEMENT) if the TPUDL field does not exist.

6.2.4.6.2 Test suite files

Specific triggering:

```
FORMATTED SMS PP UPD
UNFORMATTED SMS PP UPD
UNFORMATTED SMS PP ENV
SMS CB
```

Test Script: API_2_ENH_GTPO_1.scr

Test Applet: API_2_ENH_GTPO_1.java

Load Script: API_2_ENH_GTPO_1.ldr

Cleanup Script: API_2_ENH_GTPO_1.clr

6.2.4.6.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	Test with TP-OA length of 2	Returns 0x0D	
2	Test with TP-OA length of 6	Returns 0x0F	
3	Test with TP-OA length of 12	Returns 0x12	
4	Send a SMS PP with 2 TPDU TLV and inside two different UDL offsets	Returns 0x10 (the first offset)	
5	Same test as 1 but with FORMATTED_SMS_PP_UPD	Returns 0x0D	
6	Same test as 2 but with FORMATTED_SMS_PP_UPD	Returns 0x0F	
7	Same test as 3 but with FORMATTED_SMS_PP_UPD	Returns 0x12	
8	Same test as 4 but with FORMATTED_SMS_PP_UPD	Returns 0x10 (the first offset)	
9	Same test as 1 but with UNFORMATTED_SMS_PP_UPD	Returns 0x0D	
10	Same test as 2 but with UNFORMATTED_SMS_PP_UPD	Returns 0x0F	
11	Same test as 3 but with UNFORMATTED_SMS_PP_UPD	Returns 0x12	
12	Same test as 4 but with UNFORMATTED_SMS_PP_UPD	Returns 0x12 (the first offset)	
13	Same test as 1 but with UNFORMATTED_SMS_PP_ENV	Returns 0x0D	
14	Same test as 2 but with UNFORMATTED_SMS_PP_ENV	Returns 0x0F	
15	Same test as 3 but with UNFORMATTED_SMS_PP_ENV	Returns 0x12	
16	Same test as 4 but with UNFORMATTED_SMS_PP_ENV	Returns 0x10 (the first offset)	
17	Verify after call of the method the current TLV is the TPDU TLV: findTLV device identities, getTPUDLOffset and then	Returns 0x40	

	getValueByte to verify that the current TLV is the TPDU TLV		
18	Send an envelope SMS CB, getTPUDLOffset	ToolkitException UNAVAILABLE_ELEMENT	

6.2.4.6.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
N2	4
N3	1, 2, 3, 4, 17
N4	5, 6, 7, 8
N5	13, 14, 15, 16
N6	9, 10, 11, 12
N7	17
C1	18
C2	Don't no how to test

6.2.4.7 Method getLength

Test Area Reference: API_2_ENH_GLEN

6.2.4.7.1 Conformance Requirement

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

```
public short getLength()
                    throws ToolkitException
```

Normal execution

CRRN1: returns the length in bytes of the TLV list.

Parameter Error

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException.HANDLER_NOT_AVAILABLE.

6.2.4.7.2 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_GLEN_1.scr

Test Applet: API_2_ENH_GLEN_1.java

Load Script: API_2_ENH_GLEN_1.ldr

Cleanup Script: API_2_ENH_GLEN_1.clr

6.2.4.7.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	Send an envelope SMS PP with BER length of 0x31	Result of getLength() is 0x0031	
2	Send an envelope SMS PP with BER length of 0x7F	Result of getLength() is 0x007Fh	
3	Send an envelope SMS PP with BER length of 81 80	Result of getLength() is 0x0080h	
4	Send an envelope SMS PP with BER length of 81 FC	Result of getLength() is 0x00FCh	

6.2.4.7.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3, 4
C1	Does not apply for EnvelopeHandler

6.2.4.8 Method copy

Test Area Reference: API_2_ENH_COPY_BSS

6.2.4.8.1 Conformance Requirement

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

```
public short copy(byte[] dstBuffer,
                  short dstOffset,
                  short dstLength)
        throws  java.lang.NullPointerException,
                java.lang.ArrayIndexOutOfBoundsException,
                ToolkitException
```

Normal execution

CRRN1: copies the simple TLV list contained in the handler to the destination byte array.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null a NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative, an ArrayIndexOutOfBoundsException is thrown.

CRRP3: if dstLength is grater than the length of the simple TLV List, an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException. OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.4.8.2 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_COPY_BSS_1.scr

Test Applet: API_2_ENH_COPY_BSS_1.java

Load Script: API_2_ENH_COPY_BSS_1.ldr

Cleanup Script: API_2_ENH_ COPY _ BSS _1.clr

6.2.4.8.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**NULL as parameter to dstBuffer**	NullPointerException is thrown	
2	**dstOffset ≥ dstBuffer.length** dstBuffer.length = 5 dstOffset = 5 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**DstOffset + dstLength > dstBuffer.length** DstBuffer.length = 5 DstOffset = 3 DstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**DstLength > length of the simple TLV list** DstBuffer.length = 48 DstOffset = 0 DstLength = 48	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**Successful call, dstBuffer is the whole buffer** DstBuffer.length = 47 DstOffset = 0 DstLength = 47	Result of copy() is 0X0047	
9	**Compare the buffer**	Result of arrayCompare() is 0	
10	**Successful call, dstBuffer is part of a buffer** DstBuffer.length = 50 dstOffset = 3 dstLength = 47	Result of copy() is 0X0032	
11	**Compare the whole buffer**	Result of arrayCompare() is 0	
12	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 15 dstOffset = 3 dstLength = 6	Result of copy() is 0X0009	
13	**Compare the whole buffer**	Result of arrayCompare() is 0	
14	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 260 dstOffset = 257 dstLength = 3	Result of copy() is 0X0104	
15	**Compare the whole buffer**	Result of arrayCompare() is 0	
16	**Successful call, copy with length =0** dstBuffer.length = 260 dstOffset = 260 dstLength = 0	Result of copy() is 0x104	

6.2.4.8.4 Test Coverage

CRR number	Test case number
N1	9, 11, 13, 15
N2	8, 10, 12, 14, 16
P1	1
P2	2, 3, 4, 5, 6
P3	7
C1	Does not apply for EnvelopeHandler

6.2.4.9 Method findTLV

Test Area Reference: API_2_ENH_FINDBB

6.2.4.9.1 Conformance Requirement

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

```
public byte findTLV(byte tag, byte occurrence)
               throws ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of the TLV list (handler buffer):

CRRN1: the method is successful if the required occurrence exists then the corresponding TLV becomes current.

CRRN2: if the method is successful then it returns TLV_FOUND_CR_SET when Comprehension Required flag is set.

CRRN3: if the method is successful then it returns TLV_FOUND_CR_NOT_SET when Comprehension Required flag is not set.

CRRN4: if the required occurrence of the TLV element does not exist, the current TLV is no longer defined and TLV_NOT_FOUND is returned.

CRRN5: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if an input parameter is not valid (e.g. occurrence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.4.9.2 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_ENH_FINDBB_1.scr

Test Applet: API_2_ENH_ENH_FINDBB_1.java

Load Script: API_2_ENH_ENH_FINDBB_1.ldr

Cleanup Script: API_2_ENH_FINDBB_1.clr

6.2.4.9.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
	Trig the applet with SMS PP including one more tag 02 and one TAG 04		
1	**Invalid input parameter** `Occurrence = 0`	ToolkitException.BAD_INPUT_PARAMETER is thrown	

2	**Search 1st TLV**
	`Tag = 02h`
	`Occurrence = 1`
		Result is TLV_FOUND_CR_SET	

3	**Call the getValueLength() method**	Result is 0x02	

4	**Search 2nd TLV**
	`Tag = 06h`
	`Occurrence = 1`
		Result is TLV_FOUND_CR_SET	

5	**Call the getValueLength() method**	Result is 0x05h	
6	**Select a TLV (tag 02h)**		
	Search a wrong tag Tag = 03h Occurrence = 1	Result is TLV_NOT_FOUND	
7	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
8	**Search a tag with wrong occurrence** Tag = 02h Occurrence = 3	Result is TLV_NOT_FOUND	
9	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
10	**Search the TLV** Tag = 02h Occurrence = 2	Result is TLV_FOUND_CR_NOT_SET	
11	**Search the TLV** Tag = 04h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	
12	**Search tag 81h** Tag = 86h Occurrence = 1	Result is TLV_FOUND_CR_SET	
13	**Search tag 84h** Tag = 84h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	

6.2.4.9.4 Test Coverage

CRR number	Test case number
N1	3, 5
N2	2, 4
N3	10, 11
N4	6, 7,8, 9
N5	12, 13
P1	1
C1	Does not apply for EnvelopeHandler

6.2.4.10 Method getValueLength

Test Area Reference: API_2_ENH_GVLE

6.2.4.10.1 Conformance Requirement

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

```
public short getValueLength()
                      throws ToolkitException
```

Normal execution

CRRN1: gets and returns the binary length of the value field for the last TLV element which has been found in the handler.

Parameter errors

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.4.10.2 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_GVLE_1.scr

Test Applet: API_2_ENH_GVLE_1.java

Load Script: API_2_ENH_GVLE_1.ldr

Cleanup Script: API_2_ENH_GVLE_1.clr

6.2.4.10.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
	Fill the SMS PP with TLV: Tag 33, Length C8		
1	**getValueLength()**	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**Search TLV 02h**		
	`getValueLength()`	Result is 0X0002	
3	**Search TLV 0Bh**		
	`getValueLength()`	Result is 0X0024	
4	**Search TLV 33h**		
	`getValueLength()`	Result is 0X00C8	

6.2.4.10.4 Test Coverage

CRR number	Test case number
N1	2, 3, 4
C1	Does not apply for EnvelopeHandler
C2	1

6.2.4.11 Method getValueByte

Test Area Reference: API_2_ENH_GVBYS

6.2.4.11.1 Conformance Requirement

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

```
public byte getValueByte(short valueOffset)
                  throws ToolkitException
```

Normal execution

CRRN1: Gets a byte from the last TLV element which has been found in the handler and returns its value (1 byte).

Parameter errors

CRRP1: if valueOffset is out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.4.11.2 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_GVBY.scr

Test Applet: API_2_ENH_GVBY_1.java

Load Script: API_2_ENH_GVBY.ldr

Cleanup Script: API_2_ENH_GVBY_1.clr

6.2.4.11.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
	Fill the SMS PP with TLV: Tag 33, Length C8 Value 01 02 …		
1	getValueByte(0)	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**Search TLV 02h**		
	`getValueByte(2)`	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
3	**Search TLV 02h**		
	`getValueByte(1)`	Result is 0x81	
4	**Search TLV 02h (Device Identities TLV)**		
	`getValueByte(0)`	Result is 83h (Source)	
5	**Search TLV 33h**		
	`getValueByte(7E)`	Result is 0x7F	
6	**Search TLV 33h**		
	`getValueByte(80)`	Result is 0x81	
7	`getValueByte(7F)`	Result is 0x80	
8	**Search TLV B3h**		
	`getValueByte(C7)`	Result is 0xC8	

6.2.4.11.4 Test Coverage

CRR number	Test case number
N1	3, 4, 5, 6, 7, 8
P1	2
C1	Does not apply for EnvelopeHandler
C2	1

6.2.4.12 Method copyValue

Test Area Reference: API_2_ENH_CPYVS_BSS

6.2.4.12.1 Conformance Requirement

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

```
public short copyValue(short valueOffset,
                       byte[] dstBuffer,
                       short dstOffset,
                       short dstLength)
                throws java.lang.NullPointerException,
                       java.lang.ArrayIndexOutOfBoundsException,
                       ToolkitException
```

Normal execution

CRRN1: copies a part of the last TLV element which has been found, into a destination. buffer.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException is thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.4.12.3 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_CPYVS_BSS_1.scr

Test Applet: API_2_ENH_CPYVS_BSS_1.java

Load Script: API_2_ENH_CPYVS_BSS_1.ldr

Cleanup Script: API_2_ENH_CPYVS_BSS_1.clr

6.2.4.12.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Search TLV 02h**		
	copyValue() with a null dstBuffer	NullPointerException is thrown	
2	**Search TLV 0Bh**		
	dstOffset ≥ dstBuffer.length dstBuffer.length = 5 dstOffset = 5 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Search TLV 06h**		
	valueOffset ≥ TLV Length valueOffset = 6 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	

	dstLength = 1		
9	**dstLength > TLV length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + dstLength > TLV length** valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Search TLV 01h**		
	copyValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown on the copyValue() method	
12	**Search TLV 06h**		
	Successful call valueOffset = 0 dstBuffer.length = 6 dstOffset = 0 dstLength = 6	Result of copyValue() is 0x0006	
13	**Compare buffer** buffer = 81 11 22 33 44 F5	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call valueOffset = 1 dstBuffer.length = 20 dstOffset = 3 dstLength = 4	Result of copyValue() is 0x0007	
15	**Compare buffer** buffer = 55 55 55 11 22 33 44 55 55 55 55 55 55 55 55 55 55 55 55 55	Result is 00h	
16	**Successful call, copy with length =0** dstBuffer.length = 20 dstOffset = 20 dstLength = 0	Result of copyValue() is 20	

6.2.4.12.4 Test Coverage

CRR number	Test case number
N1	13, 15
N2	12, 14, 16
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for EnvelopeHandler
C2	11

6.2.4.13 Method compareValue

Test Area Reference: API_2_ENH_CPRVS_BSS

6.2.4.13.1 Conformance requirement

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

```
public byte compareValue(short valueOffset,
                         byte[] compareBuffer,
                         short compareOffset,
                         short compareLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

Compares the last found TLV element with a buffer:

CRRN1: returns 0 if identical.

CRRN2: returns -1 if the first miscomparing byte in simple TLV List is less than that in compareBuffer.

CRRN3: returns 1 if the first miscomparing byte in simple TLV List is greater than that in compareBuffer.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.4.13.3 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_CPRVS_BSS_1.scr

Test Applet: API_2_ENH_CPRVS_BSS_1.java

Load Script: API_2_ENH_CPRVS_BSS_1.ldr

Cleanup Script: API_2_ENH_CPRVS_BSS_1.clr

6.2.4.13.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Search TLV 02h**		
	`compareValue() with a null compareBuffer`	NullPointerException is thrown	
2	**Search TLV 0Bh**		

	compareOffset ≥ compareBuffer.length
	`compareBuffer.length = 5`
	`compareOffset = 5`
	`compareLength = 1`
		ArrayIndexOutOfBoundsException is thrown	

3	**compareOffset < 0**
	`compareBuffer.length = 5`
	`compareOffset = -1`
	`compareLength = 1`
		ArrayIndexOutOfBoundsException is thrown	

4	**compareLength >compareBuffer.length**
	`compareBuffer.length = 5`
	`compareOffset = 0`
	`compareLength = 6`
		ArrayIndexOutOfBoundsException is thrown	

5	**compareOffset + compareLength >compareBuffer.length**
	`compareBuffer.length = 5`
	`compareOffset = 3`
	`compareLength = 3`
		ArrayIndexOutOfBoundsException is thrown	

6	**compareLength < 0** `compareBuffer.length = 5`	ArrayIndexOutOfBoundsException is thrown	

	compareOffset = 0 compareLength = -1		
7	**Search TLV 06h**		
	valueOffset ≥ TLV Length valueOffset = 6 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**compareLength > TLV length** valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + compareLength > TLV length** valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Search TLV 01h**	Result is TLV_NOT_FOUND	
	compareValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**Search TLV 06h**		
	Initialise compareBuffer compareBuffer = 81 11 22 33 44 F5		
	Compare buffers valueOffset = 0 compareOffset = 0 compareLength = 6	Result is 00h	
13	**Initialise compareBuffer** compareBuffer = 7F 11 22 33 44 F5		
	Compare buffers with same parameters	Result is -1	
14	**Initialise compareBuffer** compareBuffer = 83 11 22 33 44 F5		
	Compare buffers with same parameters	Result is -1	
15	**Initialise compareBuffer** compareBuffer = 55 55 55 81 11 22 33 44 F5 55 55 55 55 55		
	Compare buffers valueOffset = 1 compareOffset = 4 compareLength = 5	Result is 00h	
16	**Initialise compareBuffer** compareBuffer = 55 55 55 81 10 22 33 44 F5 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
17	**Initialise compareBuffer** compareBuffer = 55 55 55 81 12 22 33 44 F5 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
18	**Successful call, compareValue with length** =0 CompareBuffer.length = 15 CompareOffset = 15 CompareLength = 0	Result of compareValue() is 0	

6.2.4.13.4 Test Coverage

CRR number	Test case number
N1	12, 15
N2	13, 16, 18
N3	14, 17
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for EnvelopeHandler
C2	11

6.2.4.14 Method findAndCopyValue(byte tag, byte[] dstBuffer, short dstOffset)

Test Area Reference: API_2_ENH_FACYB_BS

6.2.4.14.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte[] dstBuffer,
                             short dstOffset)
throws  java.lang.NullPointerException,
java.lang.ArrayIndexOutOfBoundsException,
                             ToolkitException
```

Normal execution

CRRN1: looks for the first occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + length of the copied value is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.4.14.3 Test Suite files

Specific triggering: None

Test Script: API_2_ENH_FACYB_BS_1.scr

Test Applet: API_2_ENH_FACYB_BS_1.java

Load Script: API_2_ENH_FACYB_BS_1.ldr

Cleanup Script: API_2_ENH_FACYB_BS_1.clr

6.2.4.14.3 Test procedure

Id	Description	API Expectation	APDU Expectation
	Fill the SMS PP with TLV: Tag 02 Value 22 44 Tag 33, Length C4 Value 01 02 …		
1	**FindAndCopyValue() with a null dstBuffer**	NullPointerException is thrown	
2	**dstOffset ≥ dstBuffer.length** tag = 06h dstBuffer.length = 06 dstOffset = 06	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 06 dstOffset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > dstBuffer.length** dstBuffer.length = 05 dstOffset = 0	ArrayIndexOutOfBoundsException is thrown	
5	**DstOffset + length >dstBuffer.length** DstBuffer.length = 06 DstOffset = 1	ArrayIndexOutOfBoundsException is thrown	
6	**Select a TLV (tag 02h)**		
	findAndCopyValue() tag = 03h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
7	**Successful call** Tag = 06h DstBuffer.length = 06 DstOffset = 0	Result of findAndCopyValue () is 0006	
8	**Compare buffer** buffer = 81 11 22 33 44 F5	Result is 00h	
9	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call dstBuffer.length = 12 dstOffset = 2	Result of findAndCopyValue () is 0008	
10	**Compare buffer** buffer = 55 55 81 11 22 33 44 F5 55 55 55 55	Result is 00h	
11	**Successful call** tag = 02h dstBuffer.length = 2 dstOffset = 0	Result of findAndCopyValue () is 0002	
12	**Compare buffer** buffer = 83 81	Result is 00h	
13	**Successful call (with tag 82h)** tag = 82h dstBuffer.length = 02 dstOffset = 0	Result of findAndCopyValue () is 0002	
14	**Compare buffer** buffer = 83 81	Result is 00h	
15	**Successful call (with tag B3h)** tag = B3h dstBuffer.length = C4 dstOffset = 0	Result of findAndCopyValue () is 00C4	
16	**Compare buffer** buffer = 01 02 … C4	Result is 00h	

6.2.4.14.4 Test Coverage

CRR number	Test case number
N1	8, 10, 12
N2	6
N3	7, 9, 11
N4	13, 14, 15, 16
P1	1
P2	2, 3, 4, 5
C1	Does not apply for EnvelopeHandler

6.2.4.15 Method findAndCopyValue(byte tag, byte occurrence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)

Test Area Reference: API_2_ENH_FACYBS_BSS

6.2.4.15.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte occurence,
                              short valueOffset,
                              byte[] dstBuffer,
                              short dstOffset,
                              short dstLength)
                       throws java.lang.NullPointerException,
                              java.lang.ArrayIndexOutOfBoundsException,
                              ToolkitException
```

Normal execution

CRRN1: looks for the indicated occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + dstLength is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.4.15.3 Test Suite files

Test Script: API_2_ENH_FACYBS_BSS_1.scr

Test Applet: API_2_ENH_FACYBS_BSS_1.java

Load Script: API_2_ENH_FACYBS_BSS_1.ldr

Cleanup Script: API_2_ENH_FACYBS_BSS_1.clr

6.2.4.15.3 Test procedure

Id	Description	API Expectation	APDU Expectation
	Fill the SMS PP with TLV: Tag 02 Value 22 44 Tag 33, Length C4 Value 01 02 …		
1	**findAndCopyValue() with a null dstBuffer**	NullPointerException is thrown	
2	**dstOffset ≥ dstBuffer.length** tag = 06h, occurrence = 1 valueOffset = 0 dstBuffer.length = 5 dstOffset = 5 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**valueOffset ≥ Value Length** tag = 06h, occurrence = 1 valueOffset = 6 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**dstLength > Value length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + dstLength > Text String** length valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Select a TLV (tag 02h)**		
	findAndCopyValue() tag = 06h occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
12	**Successful call** tag = 06h, occurrence = 1 valueOffset = 0 dstBuffer.length = 06 dstOffset = 0 dstLength = 06	Result of findAndCopyValue() is 6	
13	**Compare buffer** buffer = 81 11 22 33 44 F5	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call tag = 06h, occurrence = 1 valueOffset = 2	Result of findAndCopyValue () is 0007	

	dstBuffer.length = 12 dstOffset = 3 dstLength = 04		
15	**Compare buffer** buffer = 55 55 55 22 33 44 F5 55 55 55 55 55	Result is 00h	
16	**Successful call** tag = 02h, occurrence = 1 valueOffset = 0 dstBuffer.length = 12 dstOffset = 0 dstLength = 2	Result of findAndCopyValue() is 0002	
17	**Compare buffer** buffer = 83 81 55 … 55	Result is 00h	
18	**Successful call** tag = 02h, occurrence = 2 valueOffset = 0 dstBuffer.length = 12 dstOffset = 0 dstLength = 2	Result of findAndCopyValue() is 0002	
19	**Compare buffer** buffer = 22 44 55 … 55	Result is 00h	
20	**Successful call (with tag 82h)** tag = 82h occurrence = 1 valueOffset = 0 dstBuffer.length = 12 dstOffset = 0 dstLength = 02	Result of findAndCopyValue () is 0002	
21	**Compare buffer** buffer = 83 81 55 … 55	Result is 00h	
22	**Successful call (with tag 82h)** tag = 82h occurrence = 2 valueOffset = 0 dstBuffer.length = 12 dstOffset = 0 dstLength = 02	Result of findAndCopyValue () is 0002	
23	**Compare buffer** Buffer = 22 44 55 … 55	Result is 00h	
24	**Successful call, findAndCopyValue with length =0** DstBuffer.length = 12 dstOffset = 12 dstLength = 0	Result of findAndCopyValue () is 12	

6.2.4.15.4 Test Coverage

CRR number	Test case number
N1	13, 15, 17, 19
N2	11
N3	12, 14, 16, 18, 24
N4	20, 21, 22, 23
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for EnvelopeHandler

6.2.4.16 Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset)

Test Area Reference: API_2_ENH_FACRB_BS

6.2.4.16.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte[] compareBuffer,
                                short compareOffset)
                         throws  java.lang.NullPointerException,
                                 java.lang.ArrayIndexOutOfBoundsException,
                                 ToolkitException
```

Normal execution

Looks for the first occurrence of a TLV element from beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical returns 0.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer returns -1.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer returns 1.

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.4.16.3 Test Suite files

Test Script: API_2_ENH_FACRB_BS_1.scr

Test Applet: API_2_ENH_FACRB_BS_1.java

Load Script: API_2_ENH_FACRB_BS_1.ldr

Cleanup Script: API_2_ENH_FACRB_BS_1.clr

6.2.4.16.3 Test procedure

Id	Description	API Expectation	APDU Expectation
	Fill the SMS PP with TLV: Tag 02 Value 22 44 Tag 33, Length C4 Value 01 02 …		
1	**findAndCompareValue() with a null dstBuffer**	NullPointerException is thrown	

2	**compareOffset ≥ compareBuffer.length**
	`tag = 06h`
	`compareBuffer.length = 12`
	`compareOffset = 12`
		ArrayIndexOutOfBoundsException is thrown	

3	**compareOffset < 0**
	`compareBuffer.length = 12`
	`compareOffset = -1`
		ArrayIndexOutOfBoundsException is thrown	

4	**length > compareBuffer.length**
	`compareBuffer.length = 05`
	`compareOffset = 0`
		ArrayIndexOutOfBoundsException is thrown	

5	**compareOffset + length > compareBuffer.length**
	`compareBuffer.length = 12`
	`compareOffset = 7`
		ArrayIndexOutOfBoundsException is thrown	

6	**Select a TLV (tag 02h)**		

	findAndCompareValue() tag = 03h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
7	**Initialise compareBuffer** compareBuffer = 81 11 22 33 44 F5		
	Compare buffers tag = 06h compareOffset = 0	Result is 00h	
8	**Verify current TLV** getValueLength()	Result is 06	
9	**Initialise compareBuffer** compareBuffer = 81 11 22 33 44 F4		
	Compare buffers with same parameters	Result is +1	
10	**Initialise compareBuffer** compareBuffer = 81 11 22 33 44 F6		
	Compare buffers with same parameters	Result is -1	
11	**Initialise compareBuffer** compareBuffer = 55 55 81 11 22 33 44 F5 55 55 55 55		
	Compare buffers compareOffset = 2	Result is 00h	
12	**Initialise compareBuffer** compareBuffer = 55 55 83 81 55 55 55 55 55 55 55 55		
	Compare buffers compareOffset = 2	Result is 00h	
13	**Initialise compareBuffer** compareBuffer = 55 55 83 80 55 55 55 55 55 55 55 55		
	Compare buffers compareOffset = 2	Result is +1	
14	**Initialise compareBuffer** compareBuffer = 55 55 83 82 55 55 55 55 55 55 55 55		
	Compare buffers compareOffset = 2	Result is –1	
15	**Initialise compareBuffer** compareBuffer = 83 81 55 55 55 55 55 55 55 55 55 55		
	Successful call (with tag 02h) tag = 02h compareBuffer.length = 12 compareOffset = 0	Result is 00h	
16	**Initialise compareBuffer** CompareBuffer = 01 02 … C4		
	Successful call (with tag B3h) Tag = B3h CompareBuffer.length = C4 CompareOffset = 0	Result is 00h	

6.2.4.16.4 Test Coverage

CRR number	Test case number
N1	6
N2	8
N3	7, 11, 12
N4	9, 13
N5	10, 14
N6	15, 16
P1	1
P2	2, 3, 4, 5
C1	Does not apply for EnvelopeHandler

6.2.4.17 Method findAndCompareValue(byte tag, byte occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength)

Test Area Reference: API_2_ENH_FACRBBS_BSS

6.2.4.17.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte occurence,
                                short valueOffset,
                                byte[] compareBuffer,
                                short compareOffset,
                                short compareLength)
                         throws java.lang.NullPointerException,
                                java.lang.ArrayIndexOutOfBoundsException,
                                ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical 0 is returned.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer -1 is returned.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer 1 is returned

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, compareLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

CRRP4: if an input parameter is not valid (e.g. occurence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.4.17.3 Test Suite files

Test Script: API_2_ENH_FACRBBS_BSS_1.scr

Test Applet: API_2_ENH_FACRBBS_BSS_1.java

Load Script: API_2_ENH_FACRBBS_BSS_1.ldr

Cleanup Script: API_2_ENH_FACRBBS_BSS_1.clr

6.2.4.17.3 Test procedure

Id	Description	API Expectation	APDU Expectation
	Fill the SMS PP with TLV: Tag 02 Value 22 44 Tag 33, Length C4 Value 01 02 …		
1	**findAndCompareValue() with a null compareBuffer**	NullPointerException is thrown	
2	**compareOffset ≥ compareBuffer.length** tag = 06h, occurrence = 1 valueOffset = 0 compareBuffer.length = 6 compareOffset = 6 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 6 compareOffset = -1 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 0 compareLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**compareOffset + compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 3 compareLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**compareLength < 0** compareBuffer.length = 5 compareOffset = 0 compareLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**valueOffset ≥ Value Length** tag = 06h, occurrence = 1 valueOffset = 6 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**compareLength > Value length** valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + compareLength > Value length** valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Invalid parameter** occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
12	**Select a TLV (tag 02h)**		
	findAndCompareValue() tag = 06h occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
13	**Initialise compareBuffer** compareBuffer = 81 11 22 33 44 F5		
	findAndCompareValue() tag = 06h, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 6	Result is 00h	
14	**Verify current TLV** getValueLength()	Result is 0006	
15	**Initialise compareBuffer** compareBuffer = 81 11 22 33 44 F4		
	Compare buffers with same parameters	Result is +1	
16	**Initialise compareBuffer** compareBuffer = 81 11 22 33 44 F6		

	Compare buffers with same parameters	Result is -1	
17	**Initialise compareBuffer** compareBuffer = 55 55 55 22 33 44 F5 55 55 55 55		
	Compare buffers valueOffset = 2 compareOffset = 3 compareLength = 4	Result is 00h	
18	**Initialise compareBuffer** compareBuffer = 55 55 55 22 33 45 F5 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
19	**Initialise compareBuffer** compareBuffer = 55 55 55 22 33 43 F5 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
20	**Initialise compareBuffer** compareBuffer = 83 81 55 55 55 55 55 55 55 55 55 55		
	findAndCompareValue() tag = 02h, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 2	Result is 00h	
21	**Initialise compareBuffer** compareBuffer = 22 44 55 55 55 55 55 55 55 55 55 55		
	findAndCompareValue() tag = 02h, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 2	Result is 00h	
22	**Initialise compareBuffer** compareBuffer = 22 45 55 55 55 55 55 55 55 55 55 55		
	findAndCompareValue() tag = 02h, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 2	Result is -1	
23	**Initialise compareBuffer** compareBuffer = 83 81 55 55 55 55 55 55 55 55 55 55		
	Successful call (with tag 02h) tag = 02h, occurrence = 1 valueOffset = 0 compareBuffer.length = 12 compareOffset = 0 compareLength = 2	Result is 00h	
24	**Initialise compareBuffer** compareBuffer = 01 02 … C4		
	Successful call (with tag B3h) tag = B3h, occurrence = 1 valueOffset = 0 compareBuffer.length = 00C4 compareOffset = 0 compareLength = 00C4	Result is 00h	
25	**Successful call, findAndCompareValue with length =0** DstBuffer.length = C4 DstOffset = C4 DstLength = 0	Result of findAndCompareValue() is 00h	

6.2.4.17.4 Test Coverage

CRR number	Test case number
N1	12
N2	14
N3	13, 17, 20, 21, 25
N4	19, 15
N5	16, 18, 22
N6	23, 24
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
P4	11
C1	Does not apply for EnvelopeHandler

6.2.5 Class EnvelopeResponseHandler

6.2.5.1 Method getTheHandler

Test Area Reference: API_2_ERH_GTHD

6.2.5.1.1 Conformance requirement:

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

```
public static EnvelopeResponseHandler getTheHandler()
                                        throws ToolkitException
```

Normal execution

CRRN1: The method shall return the single system instance of the EnvelopeResponseHandler class.

CRRN2: The EnvelopeResponseHandler is a Temporary JCRE Entry Point Object (see Javacard 2.1 Runtime Environment (JCRE) Specification [12])

Parameter errors

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (HANDLER_NOT_AVAILABLE) if the handler is busy.

CRRC2: After the first invocation of the ProactiveHandler.send method the EnvelopeResponseHandler is no more available

6.2.5.1.2 Test suite files

Test Script: API_2_ERH_GTHD_1.scr

Test Applet: API_2_ERH_GTHD_1.java

Load Script: API_2_ERH_GTHD_1.ldr

Cleanup Script: API_2_ERH_GTHD_1.clr

6.2.5.1.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**getTheHandler twice**	The returned objects shall be the same	
2	**Verify that getTheHandler returns an EnvelopeHandler** `getTheHandler`	The reference returned shall be an EnvelopeResponseHandler (checkcast)	
3	**Verify the returned value is not null** `getTheHandler`	The reference returned shall not be null.	
4	**getTheHandler, then send a proactive command, and then, appendTLV**	ToolkitException HANDLER_NOT_AVAILABLE is thrown	

6.2.5.1.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	To be checked in Framework tests and insert here cross reference
C1	To be checked in Framework tests and insert here cross reference
C2	4

6.2.5.2 Method post

Test Area Reference: API_2_ERH_POSTB

6.2.5.2.1 Conformance requirement

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

```
public void post(byte statusType)
          throws ToolkitException
```

Normal execution

CRRN1: When the method is called, the toolkit applet can continue it's processing (e.g. prepare a proactive command).

CRRN2: The byte statusType is SW1 of the status.

CRRN3: If the send method is called after a post method, the posted data are the first sent to the ME.

CRRN4: The SIM Toolkit Framework shall take the optional Application Data posted by the triggered toolkit applet if present, secure and send the response packet the SIM Toolkit Framework will return the response APDU defined by the toolkit applet.

Parameter error

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (HANDLER_NOT_AVAILABLE) if the handler is busy.

6.2.5.2.2 Test suite files

Specific triggering: Call control

Test Script: API_2_ERH_POSTB_1.scr

Test Applet: API_2_ERH_POSTB_1.java

Load Script: API_2_ERH_POSTB_1.ldr

Cleanup Script: API_2_ERH_POSTB_1.clr

6.2.5.2.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**getTheHandler and then post** (the handler is empty)		9000
2	**Fill the handler (appendTLV to have** bytes in it)and then post data with status 9F		9FFD data are retrieved with GET RESPONSE command
3	**Verify that after a post the handler is no more available** appendTLV, post and then appendTLV	ToolkitException HANDLER_NOT_AVAILABLE is thrown on the second appendTLV	
4	**construct the response (appendTLV with 0x10 data) and post it with status 9E and then send a display text**		9E12 and posted data retrieved by a GET RESPONSE with status 9113 and display text retrieved by a FETCH
5	**Verify that it is possible to send a proactive command after a post** getTheHandler and post , then send a display text		91 13 and display text is retrieved by a FETCH
6	**Verify it is not possible to post after a proactive command** getTheHandler, appendTLV, send a display text, post.	ToolkitException HANDLER_NOT_AVAILABLE is thrown	
7	**Verify that the handler is no more available after a post** getTheHandler, appendTLV, post with status 9E, post with status 9F	ToolkitException HANDLER_NOT_AVAILABLE is thrown	9E12 and posted data retrieved by a GET RESPONSE

6.2.5.2.4 Test Coverage

CRR number	Test case number
N1	3, 4, 7
N2	1, 2, 4, 7
N3	4, 5
N4	To be checked in Framework tests and insert here cross reference
C1	6

6.2.5.3 Method postAsBERTLV

Test Area Reference:API_2_ERH_POSTBB

6.2.5.3.1 Conformance Requirement

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

```
public void postAsBERTLV(byte statusType,
                         byte tag)
                  throws ToolkitException
```

Normal execution

CRRN1: When the method is called, the toolkit applet can continue it's processing (e.g. prepare a proactive command) the SIM Toolkit Framework will return the response APDU defined by the toolkit applet.

CRRN2: The byte statusType is SW1 of the status

CRRN3: If the send method is called after a postAsBERTLV method, the posted data are the first sent to the ME.

CRRN4: The byte tag is the BER Tag at the beginning of the simple TLV list.

Parameter errors

No requirements

Context errors

CRRC1: The method shall thrown ToolkitException (HANDLER_NOT_AVAILABLE) if the handler is busy.

6.2.5.3.2 Test suite files

Specific triggering: Call control

Test Script: API_2_ERH_POSTBB_1.scr

Test Applet: API_2_ERH_POSTBB_1.java

Load Script: API_2_ERH_POSTBB_1.ldr

Cleanup Script: API_2_ERH_POSTBB_1.clr

6.2.5.3.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**getTheHandler and then postAsBERTLV** (the handler is empty)		9F02 data are retrieved with GET RESPONSE command, the tag shall be 33 and the length is 00
2	**Fill the handler and then postAsBERTLV the data with status 9F, and tag 33**		9FFF data are retrieved with GET RESPONSE command, the tag shall be 33
3	**appendTLV, postAsBERTLV and then appendTLV**	ToolkitException HANDLER_NOT_AVAILABLE is thrown on the second appendTLV	
4	**construct the response (appendTLV with 0x10 data) and postAsBERTLV it with status 9E, tag 75 and then send a display text**		9E14 and posted data retrieved by a GET RESPONSE the tag shall be 75 with status 9113 and display text retrieved by a FETCH
5	**getTheHandler and postAsBERTLV, then send a display text**		9E02 and posted data retrieved by a GET RESPONSE the tag 33 (and the length 00) with status 9113 and display text is retrieved by a FETCH
6	**Verify it is not possible to postAsBERTLV after a proactive command** getTheHandler, appendTLV, send a display text, postAsBERTLV.	ToolkitException HANDLER_NOT_AVAILABLE is thrown on the postAsBERTLV	
7	**Verify that the handler is no more available after a postAsBERTLV** getTheHandler, appendTLV(with data length = 0x10, postAsBERTLV with status 9E, tag 56, postAsBERTLV with status 9F, tag 28	ToolkitException HANDLER_NOT_AVAILABLE is thrown on the second postAsBERTLV	9E14 and posted data retrieved by a GET RESPONSE the tag shall be 56 with status 9000

6.2.5.3.4 Test Coverage

CRR number	Test case number
N1	3, 4, 7
N2	1, 2, 4, 7
N3	4, 5
N4	2, 4, 7
C1	6

6.2.5.4 Method getLength

Test Area Reference: API_2_ERH_GLEN

6.2.5.4.1 Conformance requirement

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

```
public short getLength()
                    throws ToolkitException
```

Normal execution

CRRN1: returns the length in bytes of the TLV list.

Parameter errors

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException.HANDLER_NOT_AVAILABLE.

6.2.5.4.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_GLEN_1.scr

Test Applet: API_2_ERH_GLEN_1.java

Load Script: API_2_ERH_GLEN_1.ldr

Cleanup Script: API_2_ERH_GLEN_1.clr

6.2.5.4.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Clear the handler** `getLength()`	Result of getLength() is 0	
2	**appendTLV with length of 7** `getLength()`	Result of getLength() is 9	
3	**Clear the handler and appendTLV with Length of 250** `getLength()`	Result of getLength() is 253	
4	**Build a 7Fh Envelope response handler** `getLength()`	Result of getLength() is 81h	
5	**Build a 80h Envelope response handler** `getLength()`	Result of getLength() is 83h	

Note : Test case 3 is limited to 253 and not 256 because the current 03.19 [7] is not clear enough on this point. So this test allows the two possible implementations.

6.2.5.4.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3, 4, 5
C1	Does not apply for Envelope response handler

6.2.5.5 Method copy

Test Area Reference: API_2_ERH_COPY_BSS

6.2.5.5.1 Conformance requirement

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

```
public short copy(byte[] dstBuffer,
                  short dstOffset,
                  short dstLength)
           throws java.lang.NullPointerException,
                  java.lang.ArrayIndexOutOfBoundsException,
                  ToolkitException
```

Normal execution

CRRN1: copies the simple TLV list contained in the handler to the destination byte array.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null a NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative, an ArrayIndexOutOfBoundsException is thrown.

CRRP3: if dstLength is greater than the length of the simple TLV List, an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException. OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.5.5.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_COPY_BSS_1.scr

Test Applet: API_2_ERH_COPY_BSS_1.java

Load Script: API_2_ERH_COPY_BSS_1.ldr

Cleanup Script: API_2_ERH_COPY_BSS_1.clr

6.2.5.5.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**appendTLV with value length of 7 NULL as parameter to dstBuffer**	NullPointerException is thrown	
2			
	dstOffset ≥ dstBuffer.length dstBuffer.length = 5 dstOffset = 5 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**dstLength > length of the simple TLV list** dstBuffer.length = 10 dstOffset = 0 dstLength = 10	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**Successful call, dstBuffer is the whole buffer** dstBuffer.length = 9 dstOffset = 0 dstLength = 9	Result of copy() is 9	
9	**Compare the buffer**	Result of arrayCompare() is 0	
10	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 15 dstOffset = 3 dstLength = 9	Result of copy() is 12	
11	**Compare the whole buffer**	Result of arrayCompare() is 0	
12	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 15 dstOffset = 3 dstLength = 6	Result of copy() is 9	
13	**Compare the whole buffer**	Result of arrayCompare() is 0	
14	**Successful call, copy with length =0** dstBuffer.length = 15 dstOffset = 15 dstLength = 0	Result of copy() is 15	

6.2.5.5.4 Test Coverage

CRR number	Test case number
N1	9, 11, 13
N2	8, 10, 12, 14
P1	1
P2	2, 3, 4, 5, 6
P3	7
C1	Does not apply for Envelope response handler

6.2.5.6 Method findTLV

Test Area Reference: API_2_ERH_FINDBB

6.2.5.6.1 Conformance requirement

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

```
public byte findTLV(byte tag, byte occurrence)
               throws ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of the TLV list (handler buffer):

CRRN1: the method is successful if the required occurrence exists then the corresponding TLV becomes current.

CRRN2: if the method is successful then it returns TLV_FOUND_CR_SET when Comprehension Required flag is set.

CRRN3: if the method is successful then it returns TLV_FOUND_CR_NOT_SET when Comprehension Required flag is not set.

CRRN4: if the required occurrence of the TLV element does not exist, the current TLV is no longer defined and TLV_NOT_FOUND is returned.

CRRN5: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if an input parameter is not valid (e.g. occurrence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.5.6.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_FINDBB_1.scr

Test Applet: API_2_ERH_FINDBB_1.java

Load Script: API_2_ERH_FINDBB_1.ldr

Cleanup Script: API_2_ERH_FINDBB_1.clr

6.2.5.6.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**append the handler with TLVs:** 81 03 11 22 33 82 02 99 77		
	Invalid input parameter Occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
2			
	Search 1st TLV Tag = 01h Occurrence = 1	Result is TLV_FOUND_CR_SET	
3	**Call the getValueLength() method**	Result is 03h	
4	**Search 2nd TLV** Tag = 02h Occurrence = 1	Result is TLV_FOUND_CR_SET	
5	**Call the getValueLength() method**	Result is 02h	
6	**Select a TLV (tag 02h)**		
	Search a wrong tag	Result is TLV_NOT_FOUND	

	Tag = 03h Occurrence = 1		
7	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
8	**Search a tag with wrong occurrence** Tag = 01h Occurrence = 2	Result is TLV_NOT_FOUND	
9	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
10	**Append a TLV with tag=02h**		
	Search the TLV Tag = 02h Occurrence = 2	Result is TLV_FOUND_CR_NOT_SET	
11	**Append a TLV with tag=04h**		
	Search the TLV Tag = 04h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	
12	**Search tag 81h** Tag = 81h Occurrence = 1	Result is TLV_FOUND_CR_SET	
13	**Search tag 84h** Tag = 84h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	

6.2.5.6.4 Test Coverage

CRR number	Test case number
N1	3, 5
N2	2, 4
N3	10, 11
N4	6, 7,8, 9
N5	12, 13
P1	1
C1	Does not apply for Envelope response handler

6.2.5.7 Method getValueLength

Test Area Reference: API_2_ERH_GVLE

6.2.5.7.1 Conformance requirement

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

```
public short getValueLength()
                      throws ToolkitException
```

Normal execution

CRRN1: gets and returns the binary length of the value field for the last TLV element which has been found in the handler.

Parameter errors

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.5.7.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_GVLE_1.scr

Test Applet: API_2_ERH_GVLE_1.java

Load Script: API_2_ERH_GVLE_1.ldr

Cleanup Script: API_2_ERH_GVLE_1.clr

6.2.5.7.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**appendTLV 02 02 02 02 findTLV with TAG 03**		
	getValueLength()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**appendTLV with TAG 0D and length 00**		
	Search TLV 0Dh		
	`getValueLength()`	Result is 00h	
3	**Clear the handler and append TLV with TAG 0D and length 02**		
	Search TLV 0Dh		
	`getValueLength()`	Result is 02h	
4	**Clear the handler and append TLV with TAG 0D and length 0x7F**		
	Search TLV 0Dh		
	getValueLength()	Result is 7Fh	
5	**Clear the handler and append TLV with TAG 0D and length 0x80**		
	Search TLV 0Dh		
	`getValueLength()`	Result is 80h	
6	**Clear the handler and append TLV with TAG 0D and length 0xF1**		
	Search TLV 0Dh		
	`getValueLength()`	Result is F1h	

6.2.5.7.4 Test Coverage

CRR number	Test case number
N1	2, 3, 4, 5, 6
C1	Does not apply for EnvelopeResponseHandler
C2	1

6.2.5.8 Method getValueByte

Test Area Reference: API_2_ERH_GVBYS

6.2.5.8.1 Conformance requirement

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

```
public byte getValueByte(short valueOffset)
                  throws ToolkitException
```

Normal execution

CRRN1: Gets a byte from the last TLV element which has been found in the handler and returns its value (1 byte).

Parameter errors

CRRP1: if valueOffset is out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.5.8.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_GVBYS_1.scr

Test Applet: API_2_ERH_GVBYS_1.java

Load Script: API_2_ERH_GVBYS_1.ldr

Cleanup Script: API_2_ERH_GVBYS_1.clr

6.2.5.8.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**appendTLV 82 02 81 82, appendTLV 81 03 11 22 FE findTLV with TAG 03**		
	`getValueByte(0)`	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**Search TLV 01h**		
	`getValueByte(3)`	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
3	**Search TLV 01h**		
	`getValueByte(2)`	Result is FEh	
4	**Search TLV 02h**		
	`getValueByte(0)`	Result is 81h	
5	**appendTLV with TAG 0D, Length 0x7E, Value: 00, 01, ..., 7D**		
	`getValueByte(7D)`	Result is 7Dh	
6	**clear the handler, appendTLV with TAG 0D, Length 0x80, Value: 00, 01, ..., 7F**		
	`getValueByte(7E)`	Result is 7Eh	
7	`getValueByte(7F)`	Result is 7Fh	
8	**clear the handler, appendTLV with TAG 0D, Length 0xF1, Value: 00, 01, ..., F0**		
	`getValueByte(F0)`	Result is F0h	

6.2.5.8.4 Test Coverage

CRR number	Test case number
N1	3, 4, 5, 6, 7, 8
P1	2
C1	Does not apply for EnvelopeResponseHandler
C2	1

6.2.5.9 Method copyValue

Test Area Reference: API_2_ERH_CPYVS_BSS

6.2.5.9.1 Conformance requirement

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

```
public short copyValue(short valueOffset,
                       byte[] dstBuffer,
                       short dstOffset,
                       short dstLength)
                throws java.lang.NullPointerException,
                       java.lang.ArrayIndexOutOfBoundsException,
                       ToolkitException
```

Normal execution

CRRN1: copies a part of the last TLV element which has been found, into a destination. buffer.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException is thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.5.9.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_CPYVS_BSS_1.scr

Test Applet: API_2_ERH_CPYVS_BSS_1.java

Load Script: API_2_ERH_CPYVS_BSS_1.ldr

Cleanup Script: API_2_ERH_CPYVS_BSS_1.clr

6.2.5.9.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**appendTLV with TAG: 0D and length 16** **Select Text String TLV**		
	copyValue() with a null dstBuffer	NullPointerException is thrown	
2			
	dstOffset ≥ dstBuffer.length dstBuffer.length = 5 dstOffset = 5 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**clear the handler, appendTLV with TAG: 0D and length 6** **Select Text String TLV**		
	valueOffset ≥ Text String Length valueOffset = 6 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**dstLength > Text String length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + dstLength > Text String length** valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Initialise the handler**		
	copyValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**clear the handler, appendTLV with TAG: 0D and value: 04 00 01 … 0F** **Select Text String TLV**		
	Successful call valueOffset = 0 dstBuffer.length = 17 dstOffset = 0 dstLength = 17	Result of copyValue() is 17	
13	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call valueOffset = 2 dstBuffer.length = 20 dstOffset = 3 dstLength = 12	Result of copyValue() is 15	

15	**Compare buffer** buffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55	Result is 00h	
16	**Successful call, copyValue with length =0** dstBuffer.length = 20 dstOffset = 20 dstLength = 0	Result of copyValue() is 20	

6.2.5.9.4 Test Coverage

CRR number	Test case number
N1	13, 15
N2	12, 14, 16
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for EnvelopeResponseHandler
C2	11

6.2.5.10 Method compareValue

Test Area Reference: API_2_ERH_CPRVS_BSS

6.2.5.10.1 Conformance requirement

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

```
public byte compareValue(short valueOffset,
                         byte[] compareBuffer,
                         short compareOffset,
                         short compareLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

Compares the last found TLV element with a buffer:

CRRN1: returns 0 if identical.

CRRN2: returns -1 if the first miscomparing byte in simple TLV List is less than that in compareBuffer.

CRRN3: returns 1 if the first miscomparing byte in simple TLV List is greater than that in compareBuffer.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.5.10.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_CPRVS_BSS_1.scr

Test Applet: API_2_ERH_CPRVS_BSS_1.java

Load Script: API_2_ERH_CPRVS_BSS_1.ldr

Cleanup Script: API_2_ERH_CPRVS_BSS_1.clr

6.2.5.10.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**appendTLV with TAG: 0D and length 16 Select Text String TLV**		
	compareValue() with a null compareBuffer	NullPointerException is thrown	
2			
	compareOffset ≥ compareBuffer.length compareBuffer.length = 5 compareOffset = 5 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 5 compareOffset = -1 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 0 compareLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**compareOffset + compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 3 compareLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**compareLength < 0** compareBuffer.length = 5 compareOffset = 0 compareLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**appendTLV with TAG: 0D and length 6 Select Text String TLV**		
	valueOffset ≥ Text String Length valueOffset = 6 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**compareLength > Text String length** valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + compareLength > Text String length** valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Initialise the handler**		
	compareValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**appendTLV with TAG: 0D and value: 04 00 01**		

	… 0F **Select Text String TLV**		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	Compare buffers valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	
13	**Initialise compareBuffer** compareBuffer = 04 00 01 02 03 04 05 06 07 08 05 0A 0B 0C 0D 0E 10		
	Compare buffers with same parameters	Result is -1	
14	**Initialise compareBuffer** compareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
15	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers valueOffset = 2 compareOffset = 3 compareLength = 12	Result is 00h	
16	**Initialise compareBuffer** compareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
17	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
18	**Successful call, compareValue with length =0** compareBuffer.length = 15 compareOffset = 15 compareLength = 0	Result of compareValue() is 0	

6.2.5.10.4 Test Coverage

CRR number	Test case number
N1	12, 15, 18
N2	13, 16
N3	14, 17
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for EnvelopeResponseHandler
C2	11

6.2.5.11 Method findAndCopyValue(byte tag, byte[] dstBuffer, short valueOffset)

Test Area Reference: API_2_ERH_FACYB_BS

6.2.5.11.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte[] dstBuffer,
                              short dstOffset)
                       throws java.lang.NullPointerException,
                              java.lang.ArrayIndexOutOfBoundsException,
                              ToolkitException
```

Normal execution

CRRN1: looks for the first occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + length of the copied value is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.5.11.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_FACYB_BS_1.scr

Test Applet: API_2_ERH_FACYB_BS_1.java

Load Script: API_2_ERH_FACYB_BS_1.ldr

Cleanup Script: API_2_ERH_FACYB_BS_1.clr

6.2.5.11.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	findAndCopyValue() with a null dstBuffer	NullPointerException is thrown	
2	**appendTLV with TAG: 0D and length 16 Select Text String TLV**		

	dstOffset ≥ dstBuffer.length
	`tag = 0Dh`
	`dstBuffer.length = 20`
	`dstOffset = 20`
		ArrayIndexOutOfBoundsException is thrown	

3	**dstOffset < 0**
	`dstBuffer.length = 20`
	`dstOffset = -1`
		ArrayIndexOutOfBoundsException is thrown	

4	**dstOffset + length >dstBuffer.length**
	`dstBuffer.length = 20`
	`dstOffset = 5`
		ArrayIndexOutOfBoundsException is thrown	

5	**length > dstBuffer.length** `dstBuffer.length = 15`	ArrayIndexOutOfBoundsException is thrown	

	dstOffset = 0		
6	**clear the handler, appendTLV with TAG 02 and Length 02**		
	Select a TLV (tag 02h)		
	findAndCopyValue() tag = 03h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
7	**appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Successful call Tag = 0Dh dstBuffer.length = 17 dstOffset = 0	Result of findAndCopyValue() is 17	
8	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
9	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call dstBuffer.length = 20 dstOffset = 2	Result of findAndCopyValue() is 19	
10	**Compare buffer** buffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55	Result is 00h	
11	**clear the handler, appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	append a 2nd Text String TLV		
	Successful call tag = 0Dh dstBuffer.length = 17 dstOffset = 0	Result of findAndCopyValue() is 17	
12	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
13	**clear the handler, appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Successful call (with tag 8Dh) tag = 8Dh dstBuffer.length = 17 dstOffset = 0	Result of findAndCopyValue() is 17	
14	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
15	**Append tag 0Fh** buffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh dstBuffer.length = 16 dstOffset = 0	Result of findAndCopyValue() is 16	
16	**Compare buffer** buffer = 00 01 … 0F	Result is 00h	

6.2.5.11.4 Test Coverage

CRR number	Test case number
N1	8, 10, 12
N2	6
N3	7, 9, 11
N4	13, 14, 15, 16
P1	1
P2	2, 3, 4, 5
C1	Does not apply for EnvelopeResponseHandler

6.2.5.12 Method findAndCopyValue(byte tag, byte occurrence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)

Test Area Reference: API_2_ERH_FACYBBS_BSS

6.2.5.12.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte occurrence,
                              short valueOffset,
                              byte[] dstBuffer,
                              short dstOffset,
                              short dstLength)
                       throws java.lang.NullPointerException,
                              java.lang.ArrayIndexOutOfBoundsException,
                              ToolkitException
```

Normal execution

CRRN1: looks for the indicated occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + dstLength is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.5.12.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_FACYBBS_BSS_1.scr

Test Applet: API_2_ERH_FACYBBS_BSS_1.java

Load Script: API_2_ERH_FACYBBS_BSS_1.ldr

Cleanup Script: API_2_ERH_FACYBBS_BSS_1.clr

6.2.5.12.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	findAndCopyValue() with a null dstBuffer	NullPointerException is thrown	
2	**appendTLV with TAG: 0D and length 16**		
	dstOffset ≥ dstBuffer.length tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 5 dstOffset = 5 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**appendTLV with TAG: 0D and length 6**		
	valueOffset ≥ Text String Length tag = 0Dh, occurrence = 1 valueOffset = 6 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**dstLength > Text String length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + dstLength > Text String length** valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**clear the handler, appendTLV with TAG 02 and Length 02**		
	Select a TLV (tag 02h)		
	findAndCopyValue() tag = 0Dh occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
12	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Successful call tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 17	Result of findAndCopyValue() is 17	

	dstOffset = 0 dstLength = 17		
13	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call tag = 0Dh, occurrence = 1 valueOffset = 2 dstBuffer.length = 20 dstOffset = 3 dstLength = 12	Result of findAndCopyValue() is 15	
15	**Compare buffer** buffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55	Result is 00h	
16	**Append a Text String TLV** tag = 0D buffer = 00 11 22 33 44 55 (no specific DCS byte)		
	Successful call tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 20 dstOffset = 0 dstLength = 17	Result of findAndCopyValue() is 17	
17	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
18	**Successful call** tag = 0Dh, occurrence = 2 valueOffset = 0 dstBuffer.length = 6 dstOffset = 0 dstLength = 6	Result of findAndCopyValue() is 6	
19	**Compare buffer** buffer = 00 11 22 33 44 55	Result is 00h	
20	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Successful call (with tag 8Dh) tag = 8Dh occurrence = 1 valueOffset = 0 dstBuffer.length = 17 dstOffset = 0 dstLength = 17	Result of findAndCopyValue () is 17	
21	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
22	**Append tag 0Fh** buffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh occurrence = 1 valueOffset = 0 dstBuffer.length = 16 dstOffset = 0 dstLength = 16	Result of findAndCopyValue () is 16	
23	**Compare buffer** buffer = 00 01 … 0F	Result is 00h	
24	**Successful call, findAndCopyValue with length =0** dstBuffer.length = 16 dstOffset = 16 dstLength = 0	Result of findAndCopyValue () is 16	

6.2.5.12.4 Test Coverage

CRR number	Test case number
N1	13, 15, 17, 19
N2	11
N3	12, 14, 16, 18, 24
N4	20, 21, 22, 23
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for EnvelopeResponseHandler

6.2.5.13 Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset)

Test Area Reference: API_2_ERH_FACRB_BS

6.2.5.13.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte[] compareBuffer,
                                short compareOffset)
                         throws  java.lang.NullPointerException,
                                 java.lang.ArrayIndexOutOfBoundsException,
                                 ToolkitException
```

Normal execution

Looks for the first occurrence of a TLV element from beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical returns 0.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer returns -1.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer returns 1.

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.5.13.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_FACRB_BS_1.scr

Test Applet: API_2_ERH_FACRB_BS_1.java

Load Script: API_2_ERH_FACRB_BS_1.ldr

Cleanup Script: API_2_ERH_FACRB_BS_1.clr

6.2.5.13.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**appendTLV with TAG: 0D and length 16**		
	findAndCompareValue() with a null dstBuffer and tag 0Dh	NullPointerException is thrown	
2			

	compareOffset ≥ compareBuffer.length
	`tag = 0Dh`
	`compareBuffer.length = 20`
	`compareOffset = 20`
		ArrayIndexOutOfBoundsException is thrown	

3	**compareOffset < 0**
	`compareBuffer.length = 20`
	`compareOffset = -1`
		ArrayIndexOutOfBoundsException is thrown	

4	**compareOffset + length > compareBuffer.length**
	`compareBuffer.length = 20`
	`compareOffset = 5`
		ArrayIndexOutOfBoundsException is thrown	

5	**length > compareBuffer.length**
	`compareBuffer.length = 15`
	`compareOffset = 0`
		ArrayIndexOutOfBoundsException is thrown	

6	**clear the handler, appendTLV with TAG 02 and Length 02**		
	Select a TLV (tag 02h)		
	`findAndCompareValue()` `tag = 03h`	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
7	**Verify current TLV** `getValueLength()`	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
8	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		

	Initialise compareBuffer
	`compareBuffer =`
	`04 00 01 … 0F`		

	Compare buffers
	`tag = 0Dh`
	`compareOffset = 0`
		Result is 00h	

9	**Verify current TLV** `getValueLength()`	Result is 17	

10	**Initialise compareBuffer**
	`compareBuffer =`
	`04 00 01 … 10`		

	Compare buffers with same parameters	Result is -1	

11	**Initialise compareBuffer**
	`compareBuffer =`
	`03 00 01 … 0F`		

	Compare buffers with same parameters	Result is +1	

12	**Initialise compareBuffer**
	`compareBuffer =`
	`55 55 04 00 01`
	`02 03 04 05 06`
	`07 08 09 0A 0B`
	`0C 0D 0E 0F 55`		

	Compare buffers `compareOffset = 2`	Result is 00h	

13	**append a Text String TLV**
	`tag = 0Dh`
	`buffer = 00 11 22 33 44 55`		

	Initialise compareBuffer
	`compareBuffer =`
	`55 55 04 00 01`
	`02 03 04 05 06`
	`07 08 09 0A 0B`
	`0C 0D 0E 0F 55`		

	Compare buffers	Result is 00h	

	compareOffset = 2		
14	**Initialise compareBuffer** compareBuffer = 55 55 04 01 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		
	Compare buffers compareOffset = 2	Result is -1	
15	**Initialise compareBuffer** compareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0D 10 55		
	Compare buffers compareOffset = 2	Result is +1	
16	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	Successful call (with tag 8Dh) tag = 8Dh compareBuffer.length = 17 compareOffset = 0	Result is 00h	
17	**Append tag 0Fh** buffer = 00 01 … 0F		
	Initialise compareBuffer compareBuffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh compareBuffer.length = 16 compareOffset = 0	Result is 00h	

6.2.5.13.4 Test Coverage

CRR number	Test case number
N1	6,7
N2	7,9
N3	8, 13, 12
N4	10, 14
N5	11, 15
N6	17, 16
P1	1
P2	2, 3, 4, 5
C1	Does not apply for Envelope response handler

6.2.5.14 Method findAndCompareValue(byte tag, byte occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength)

Test Area Reference: API_2_ERH_FACRBBS_BSS

6.2.5.14.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte occurrence,
                                short valueOffset,
                                byte[] compareBuffer,
                                short compareOffset,
                                short compareLength)
                         throws java.lang.NullPointerException,
                                java.lang.ArrayIndexOutOfBoundsException,
                                ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical 0 is returned.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer -1 is returned.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer 1 is returned

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, compareLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

CRRP4: if an input parameter is not valid (e.g. occurrence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.5.14.3 Test Suite files

Specific triggering: Unrecognized Envelope

Test Script:	API_2_ERH_FACRBBS_BSS_1.scr
Test Applet:	API_2_ERH_FACRBBS_BSS_1.java
Load Script:	API_2_ERH_FACRBBS_BSS_1.ldr
Cleanup Script:	API_2_ERH_FACRBBS_BSS_1.clr

6.2.5.14.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	findAndCompareValue() with a null compareBuffer	NullPointerException is thrown	
2	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	compareOffset ≥ compareBuffer.length tag = 0Dh, occurrence = 1 valueOffset = 0 compareBuffer.length = 5 compareOffset = 5 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 5 compareOffset = -1 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 0 compareLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**compareOffset + compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 3 compareLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**compareLength < 0** compareBuffer.length = 5 compareOffset = 0 compareLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**clear the handler and appendTLV with TAG and length of 6**		
	valueOffset ≥ Text String Length tag = 0Dh, occurrence = 1 valueOffset = 6 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**compareLength > Text String length** valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + compareLength > Text String length** valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Invalid parameter** occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
12	**appendTLV with TAG 02 and length 02**		
	Select a TLV (tag 02h)		
	findAndCompareValue() tag = 0Dh occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
13	**Verify current TLV** getValueLength()	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
14	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	findAndCompareValue() tag = 0Dh, occurrence = 1	Result is 00h	

	valueOffset = 0 compareOffset = 0 compareLength = 17		
15	**Verify current TLV** getValueLength()	Result is 17	
16	**Initialise compareBuffer** compareBuffer = 04 00 01 … 10		
	Compare buffers with same parameters	Result is -1	
17	**Initialise compareBuffer** compareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
18	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers valueOffset = 2 compareOffset = 3 compareLength = 12	Result is 00h	
19	**Initialise compareBuffer** compareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
20	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
21	**append a Text String TLV** tag = 0Dh buffer = 00 11 22 33 44 55		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	findAndCompareValue() tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	
22	**Initialise compareBuffer** compareBuffer = 00 11 22 33 44 55		
	findAndCompareValue() tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 6	Result is 00h	
23	**Initialise compareBuffer** compareBuffer = 00 11 22 33 44 66		
	findAndCompareValue() tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 6	Result is -1	
24	**clear the handler and appendTLV with TAG: 0D and value: 04 00 01 … 0F**		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	Successful call (with tag 8Dh) tag = 8Dh, occurrence = 1 valueOffset = 0 compareBuffer.length = 17 compareOffset = 0 compareLength = 17	Result is 00h	

25	**Append tag 0Fh** `buffer = 00 01 … 0F`		
	Initialise compareBuffer `compareBuffer = 00 01 … 0F`		

	Successful call (with tag 8Fh)
	`tag = 8Fh, occurrence = 1`
	`valueOffset = 0`
	`compareBuffer.length = 16`
	`compareOffset = 0`
	`compareLength = 16`
		Result is 00h	

26	**Successful call, findAndCompareValue with length =0**
	`CompareBuffer.length = 16`
	`compareOffset = 16`
	`compareLength = 0`
		Result of findAndCompareValue () is 00	

6.2.5.14.4 Test Coverage

CRR number	Test case number
N1	12,13
N2	15,13
N3	14, 18, 22, 21, 26
N4	16, 19, 23
N5	17, 19
N6	25, 24
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
P4	11
C1	Does not apply for EnvelopeResponseHandler

6.2.5.15 Method appendArray

Test Area Reference: API_2_ERH_APDA_BSS

6.2.5.15.1 Conformance requirement:

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

```
void appendArray(byte[] buffer, short offset, short length)
        throws  java.lang.NullPointerException,
                java.lang.ArrayIndexOutOfBoundsException,
                ToolkitException
```

Normal execution

CRRN1: appends a buffer into the EditHandler buffer

CRRN2: a successful append does not modify the TLV selected

Parameters error

CRRP1: if buffer is null, a java.lang.NullPointerException is thrown

CRRP2: if offset or length or both would cause access outside the array bounds, or if length is negative, a java.lang.ArrayIndexOutOfBoundsException is thrown.

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.5.15.2 Test suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_APDA_BSS_1.scr

Test Applet: API_2_ERH_APDA_BSS_1.java

Load Script: API_2_ERH_APDA_BSS_1.ldr

Cleanup Script: API_2_ERH_APDA_BSS_1.clr

6.2.5.15.3 Test procedure

Id	Description	API Expectation	APDU Expectation
	Initialize the envelope response handler with a TLV of length 1		
1	**Null buffer**	NullPointerException is thrown	
2	**offset ≥ buffer.length** buffer.length = 5 offset = 5 length = 1	ArrayIndexOutOfBoundsException is thrown	
3	**offset < 0** buffer.length = 5 offset = -1 length = 1	ArrayIndexOutOfBoundsException is thrown	
4	**length > buffer.length** buffer.length = 5 offset = 0 length = 6	ArrayIndexOutOfBoundsException is thrown	
5	**offset + length > buffer.length** buffer.length = 5 offset = 3 length = 3	ArrayIndexOutOfBoundsException is thrown	
6	**length < 0** buffer.length = 5 offset = 0 length = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Handler overflow** buffer.length = 256 offset = 0 length = 256	ToolkitException.HANDLER_OVERFLOW is thrown	
8	**append the handler with TLVs:** 81 03 11 22 33 82 02 99 77		
	findTLV 0x81		
	Successful call buffer = FF FE … F8 offset = 0 length = 8		
	Verify Current TLV: Call getValueLength()	Result is 03h	
9	**Clear the handler**		
	Successful call buffer = FF FE … F8 offset = 0 length = 8		
	Call copy() method		
	Compare handler compareBuffer = FF FE … F8	Result is 00h	
10	**Successful call** buffer = 00 01 … 07 offset = 2 length = 6		
	Call copy() method		
	Compare handler compareBuffer = FF FE … F8 02 03 … 07	Result is 00h	
11	**Successful call**		

	buffer = 11 22 … 88 offset = 2 length = 4		
	Call copy() method		
	Compare handler compareBuffer = FF FE … F8 02 03 … 07 33 44 55 66	Result is 00h	

6.2.5.15.4 Test Coverage

CRR number	Test case number
N1	9, 10, 11
N2	8
N3	
P1	1
P2	2, 3, 4, 5, 6
C1	7
C2	Does not apply for EnvelopeResponseHandler

6.2.5.16 Method appendTLV(byte tag, byte value)

Test Area Reference: API_2_ERH_APTLBB

6.2.5.16.1 Conformance requirement:

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

```
void appendTLV  (byte tag, byte value)
        throws ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (1-byte element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

No requirements

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.5.16.2 Test suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_APTLBB_1.scr

Test Applet: API_2_ERH_APTLBB_1.java

Load Script: API_2_ERH_APTLBB_1.ldr

Cleanup Script: API_2_ERH_APTLBB_1.clr

6.2.5.16.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Call appendArray()** `length = 253`		
	Handler Overflow: Call twice the appendTLV()method	ToolkitException.HANDLER_OVERFLOW is thrown by one of the two.	

2	**append the handler with TLVs:**
	`81 03 11 22 33`
	`82 02 99 77`		

	Select Command Details TLV		
	Call the appendTLV() method		
	Verify Current TLV: Call getValueLength()	Result is 03h	
3	**Clear the handler**		

	Successful call
	`tag = 84h`
	`value = 00h`		

	Call copy() method		
	Compare handler `compareBuffer = 84 01 00`	Result is 00h	

4	**Successful call**
	`tag = 01h`
	`value = FEh`		

	Call copy() method		
	Compare handler `compareBuffer = 84 01 00 01 01 FE`	Result is 00h	

Note : Test case 1 call twice appendTLV because the current 03.19 [7] is not clear enough on this point. So this test allows the two possible implementations.

6.2.5.16.4 Test Coverage

CRR number	Test case number
N1	3, 4
N2	2
C1	1
C2	Does not apply for EnvelopeResponseHandler

6.2.5.17 Method appendTLV(byte tag, byte value1, byte value2)

Test Area Reference: API_2_ERH_APTLBBB

6.2.5.17.1 Conformance requirements:

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

```
void appendTLV  (byte tag, byte value1,byte value2)
        throws ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (2-byte element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

No requirements

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.5.17.2 Test suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_APTLBBB_1.scr

Test Applet: API_2_ERH_APTL BBB_1.java

Load Script: API_2_ERH_APTL BBB_1.ldr

Cleanup Script: API_2_ERH_APTLBBB_1.clr

6.2.5.17.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Call the appendArray with length of 253**		
	Handler Overflow: Call the appendTLV() method	ToolkitException.HANDLER_OVERFLOW is thrown	
2	**clear the handler, append the handler with TLVs:** 81 03 11 22 33 82 02 99 77		
	Select Command Details TLV		
	Call the appendTLV() method		
	Verify Current TLV: Call getValueLength()	Result is 03h	
3	**Clear the handler**		
	Successful call tag = 84h value1 = 00h value2 = 01h		
	Call copy() method		
	Compare handler compareBuffer = 84 02 00 01	Result is 00h	
4	**Successful call** tag = 01h value1 = FEh value2 = FDh		
	Call copy() method		
	Compare handler compareBuffer = 84 02 00 01 01 02 FE FD	Result is 00h	

6.2.5.17.4 Test Coverage

CRR number	Test case number
N1	3, 4
N2	2
C1	1
C2	Does not apply for EnvelopeResponseHandler

6.2.5.18 Method appendTLV(byte tag, byte[ ] value, short valueoffset, short valuelength)

Test Area Reference: API_2_ERH_APTLB_BSS

6.2.5.18.1 Conformance requirement:

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

```
void appendTLV  (byte tag,
                 byte[] value,
                 short valueoffset,
                 short valuelength)
          throws java.lang.NullPointerException,
                 java.lang.ArrayIndexOutOfBoundsException,
                 ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (byte-array element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

CRRP1: if value is null, a java.lang.NullPointerException is thrown

CRRP2: if valueoffset or valuelength or both would cause access outside the array bounds, or if length is negative, a java.lang.ArrayIndexOutOfBoundsException is thrown.

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

CRRC3: if valuelength is greater than 255, a ToolkitException is thrown with reason code BAD_INPUT_PARAMETER

6.2.5.18.2 Test suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_APTLB_BSS_1.scr

Test Applet: API_2_ERH_APTLB_BSS_1.java

Load Script: API_2_ERH_APTLB_BSS_1.ldr

Cleanup Script: API_2_ERH_APTLB_BSS_1.clr

6.2.5.18.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Null value**	NullPointerException is thrown	
2	**valueOffset ≥ value.length** value.length = 5 valueOffset = 5 valueLength = 1	ArrayIndexOutOfBoundsException is thrown	
3	**valueOffset < 0** value.length = 5 valueOffset = -1 valueLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**valueLength > value.length** value.length = 5 valueOffset = 0 valueLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**ValueOffset + valueLength > value.length** value.length = 5 valueOffset = 3 valueLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**valueLength < 0** value.length = 5 valueOffset = 0 valueLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Handler overflow** value.length = 254 valueOffset = 0 valueLength = 254	ToolkitException.HANDLER_OVERFLOW is thrown	
8	**Bad parameter** value.length = 256 valueOffset = 0 valueLength = 256	ToolkitException.BAD_INPUT_PARAMETER is thrown	
9	**clear the handler, append the handler with TLVs:** 81 03 11 22 33 82 02 99 77		
	Select Command Details TLV		
	Successful call tag = 04 value = FF FE … F8 valueOffset = 0 valueLength = 8		
	Verify Current TLV: Call getValueLength()	Result is 03h	
10	**Clear the handler**		
	Successful call tag = 04 value = FF FE … F8 valueOffset = 0 valueLength = 8		
	Call copy() method		
	Compare handler CompareBuffer = 04 08 FF FE … F8	Result is 00	
11	**Successful call** tag = 85h value = 00 01 … 07 valueOffset = 2 valueLength = 6		
	Call copy() method		
	Compare handler compareBuffer = 04 08 FF FE … F8 85 06 02 03 … 07	Result is 00	
12	**Successful call** tag = 01 value = 11 22 … 88 valueOffset = 2 valueLength = 4		
	Call copy() method		
	Compare handler compareBuffer = 04 08 FF FE … F8 85 06 02 03 … 07 01 04 33 44 55 66	Result is 00	
13	**Clear the handler**		
	Successful call tag = 04		

	value = 00 01 … 7F valueOffset = 0 valueLength = 80h		
	Call copy() method		
	Compare handler compareBuffer = 04 81 80 00 01…7F	Result is 00	

6.2.5.18.4 Test Coverage

CRR number	Test case number
N1	10, 11, 12, 13
N2	9
P1	1
P2	2, 3, 4, 5, 6
C1	7
C2	Does not apply for EnvelopeResponseHandler
C3	8

6.2.5.19 Method appendTLV(byte tag, byte value1, byte[ ] value2, short value2offset, short value2length)

Test Area Reference: API_2_ERH_APTLBB_BSS

6.2.5.19.1 Conformance requirement:

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

```
void appendTLV  (byte tag,
                 byte value1
                 byte[] value2,
                 short value2offset,
                 short value2length)
          throws java.lang.NullPointerException,
                 java.lang.ArrayIndexOutOfBoundsException,
                 ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (1 byte and a byte-array element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

CRRP1: if value2 is null, a java.lang.NullPointerException is thrown

CRRP2: if value2offset or value2length or both would cause access outside the array bounds, or if length is negative, a java.lang.ArrayIndexOutOfBoundsException is thrown.

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

CRRC3: if valuelength is greater than 255, a ToolkitException is thrown with reason code BAD_INPUT_PARAMETER

6.2.5.19.2 Test suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_APTLBB_BSS_1.scr

Test Applet: API_2_ERH_APTLBB_BSS_1.java

Load Script: API_2_ERH_APTLBB_BSS_1.ldr

Cleanup Script: API_2_ERH_APTLBB_BSS_1.clr

6.2.5.19.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Null value2**	NullPointerException is thrown	
2	**value2Offset ≥ value2.length** value2.length = 5 value2Offset = 5 value2Length = 1	ArrayIndexOutOfBoundsException is thrown	
3	**value2Offset < 0** value2.length = 5 value2Offset = -1 value2Length = 1	ArrayIndexOutOfBoundsException is thrown	
4	**value2Length > value2.length** value2.length = 5 value2Offset = 0 value2Length = 6	ArrayIndexOutOfBoundsException is thrown	
5	**value2Offset + value2Length > value2.length** value2.length = 5 value2Offset = 3 value2Length = 3	ArrayIndexOutOfBoundsException is thrown	
6	**value2Length < 0** value2.length = 5 value2Offset = 0 value2Length = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Handler overflow** value2.length = 254 value2Offset = 0 value2Length = 254	ToolkitException.HANDLER_OVERFLOW is thrown	
8	**Bad parameter** value2.length = 256 value2Offset = 0 value2Length = 256	ToolkitException.BAD_INPUT_PARAMETER is thrown	
9	**clear the handler, append the handler with TLVs:** 81 03 11 22 33 82 02 99 77		
	Select Command Details TLV		
	Successful call tag = 04 value1 = 05 value2 = FF FE … F8 value2Offset = 0 value2Length = 8		
	Verify Current TLV: Call getValueLength()	Result is 03h	
10	**Clear the handler**		
	Successful call tag = 04 value1 = 05 value2 = FF FE … F8 value2Offset = 0 value2Length = 8		
	Call copy() method		
	Compare handler CompareBuffer = 04 09 05 FF FE … F8	Result is 00	
11	**Successful call** tag = 85h value1 = 55h value2 = 00 01 … 07 value2Offset = 2 value2Length = 6		

	Call copy() method		
	Compare handler compareBuffer = 04 09 05 FF FE … F8 85 07 55 02 03 … 07	Result is 00	
12	**Successful call** tag = 01 value1 = 44h value2 = 11 22 … 88 value2Offset = 2 value2Length = 4		
	Call copy() method		
	Compare handler CompareBuffer = 04 09 05 FF FE … F8 85 07 55 02 03 … 07 01 05 44 33 44 55 66	Result is 00	
13	**Clear the handler**		
	Successful call tag = 04 value1 = 00 value2 = 01 … 7F value2Offset = 0 value2Length = 7Fh		
	Call copy() method		
	Compare handler compareBuffer = 04 81 80 00 01…7F	Result is 00	

6.2.5.19.4 Test Coverage

CRR number	Test case number
N1	10, 11, 12, 13
N2	9
P1	1
P2	2, 3, 4, 5, 6
C1	7
C2	Does not apply for EnvelopeResponseHandler
C3	8

6.2.5.20 Method clear

Test Area Reference: API_2_ERH_CLER

6.2.5.20.1 Conformance requirement:

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

```
void clear()
        throws ToolkitException
```

Normal execution

CRRN1: Clears the TLV list of an EditHandler and resets the current TLV selected.

Parameters error

No requirements

Context errors

CRRC1: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.5.20.2 Test suite files

Specific triggering: Unrecognized Envelope

Test Script: API_2_ERH_CLER_1.scr

Test Applet: API_2_ERH_CLER_1.java

Load Script: API_2_ERH_CLER_1.ldr

Cleanup Script: API_2_ERH_CLER_1.clr

6.2.5.20.3 Test procedure

Id	Description	API Expectation	APDU Expectation

1	**append the handler with TLVs:**
	`81 03 11 22 33`
	`82 02 99 77`
	`Select Command Details TLV`
	`Call the getLength() method`
		Result of getLength() is not null	

	Clear the handler `Call the getLength() method`	Result of getLength() is 0	
2	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown	

6.2.5.20.4 Test Coverage

CRR number	Test case number
N1	1, 2
C1	Does not apply for EnvelopeResponseHandler

6.2.6 Class MEProfile

6.2.6.1 Method check (byte index)

Test Area Reference: API_2_MEP_CHECB

6.2.6.1.1 Conformance requirement:

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

```
public static boolean check(byte index)
        throws  ToolkitException
```

Normal execution

CRRN1: The method checks a facility in the handset profile: returns true if supported and false if not.

Parameters error

CRRP1: The method shall throw ME_PROFILE_NOT_AVAILABLE ToolkitException if Terminal Profile data are not available

Context errors

No requirements

6.2.6.1.2 Test suite files

Specific triggering:

UNFORMATTED_SMS_PP_UPD

No Additional requirements for the GSM personalisation:

Test Script: API_2_MEP_CHECB_1.scr

Test Applet: API_2_MEP_CHECB_1.java

Load Script: API_2_MEP_CHECB_1.ldr (the applet is loaded without INI after the reset (RST)

Cleanup Script: API_2_MEP_CHECB_1.clr

6.2.6.1.3 Test procedure

Id	Description	API Expectation	APDU Expectation

1	**No Terminal Profile is registered**
	`Triggered by unformatted SMS`
	`Index = 1`
		ME_PROFILE_NOT_AVAILABLE ToolkitException is thrown	

2	**Terminal Profile, Facility is supported** `index = 0`	true is returned by the method	
3	**Terminal Profile, Facility is not supported** `Index = 15`	false is returned by the method	

6.2.6.1.4 Test Coverage

CRR number	Test case number
N1	2,3
P1	1

6.2.6.2 Method check (byte [ ] mask, short offset, short length)

Test Area Reference: API_2_MEP_CHEC_BSS

6.2.6.2.1 Conformance requirement:

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

```
public static boolean check(byte[] mask,
                            short offset,
                            short length)
                     throws  java.lang.NullPointerException,
                             java.lang.ArrayIndexOutOfBoundsException,
                             ToolkitException
```

Normal execution

CRRN1: The method checks all the facilities corresponding to bits set to 1 in the mask buffer: returns true if they are all supported and false if not.

CRRN2: The method returns true if the length to check is 0.

Parameters error

CRRP1: The method shall throw java.lang.NullPointerException if mask is null.

CRRP2: The method shall throw java.lang.ArrayIndexOutOfBoundsException if offset or length or both would cause access outside array bounds.

CRRP3: The method shall throw ME_PROFILE_NOT_AVAILABLE ToolkitException if Terminal Profile data are not available.

Context errors

No requirements

6.2.6.2.2 Test suite files

Specific triggering:

UNFORMATTED_SMS_PP_UPD

No Additional requirements for the GSM personalisation:

Test Script: API_2_MEP_CHEC_BSS_1.scr

Test Applet: API_2_MEP_CHEC_BSS_1.java

Load Script: API_2_MEP_CHEC_BSS_1.ldr (the applet is loaded without INI after the reset (RST))

Cleanup Script: API_2_MEP_CHEC_BSS_1.clr

6.2.6.2.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**No Terminal Profile is registered** Triggered by unformatted SMS Mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 0 Length = 16	ME_PROFILE_NOT_AVAILABLE ToolkitException is thrown	
2	**NULL as parameter to check** mask= NULL	NullPointerException is thrown	
3	**Offset > mask.length** mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 17	ArrayIndexOutOfBoundsException is thrown	
4	**Offset < 0** mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = -1	ArrayIndexOutOfBoundsException is thrown	
5	**Length > mask.length** mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 0 Length = 18	ArrayIndexOutOfBoundsException is thrown	
6	**Offset + length > mask.length** Mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 9 Length = 9	ArrayIndexOutOfBoundsException is thrown	
7	**length = 0** mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 0 Length = 0	true is returned	
8	**Check all the Terminal Profile** mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 0 Length = 16	false is returned by the method because facility 15 is not supported	
9	**Check a part of the Terminal Profile** mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 15 Length = 2	true is returned by the method: the 16 first facilities except facility 15 have been successfully checked	
10	**Check a part of the Terminal Profile** mask = 0x0080 Offset = 0 Length = 2	false is returned by the method only facility 15 is checked and not supported.	

6.2.6.2.4 Test Coverage

CRR number	Test case number
N1	8,9,10
N2	7
P1	2
P2	3,4,5,6
P3	1

6.2.7 Class ProactiveHandler

6.2.7.1 Method getTheHandler

Test Area Reference: API_2_PAH_GTHD

6.2.7.1.1 Conformance requirement

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

```
public static ProactiveHandler getTheHandler()
                        throws ToolkitException
```

Normal execution

CRRN1: The method shall return the single system instance of the ProactiveHandler class.

CRRN2: The EnvelopeHandler is a Temporary JCRE Entry Point Object

Parameter errors

No requirements

Context errors

CRRC1: The method shall throw ToolkitException.HANDLER_NOT_AVAILABLE if the handler is busy.

6.2.7.1.2 Test Suite files

Test Script: API_2_PAH_GTHD_1.scr

Test Applet: API_2_PAH_GTHD_1.java

Load Script: API_2_PAH_GTHD_1.ldr

Cleanup Script: API_2_PAH_GTHD_1.clr

6.2.7.1.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**getTheHandler() twice**	The returned objects shall be the same	
2	**getTheHandler()**	The reference shall be a ProactiveHandler	
3	**getTheHandler()**	The reference shall not be null	

6.2.7.1.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	To be checked in Framework tests and insert here cross reference
C1	To be checked in Framework tests and insert here cross reference

6.2.7.2 Method init

Test Area Reference: API_2_PAH_INITBBB

6.2.7.2.1 Conformance requirement

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

```
public void init(byte type,
                 byte qualifier,
                 byte dstDevice)
```

Normal execution

CRRN1: The init() method initialises the next Proactive command in the ProactiveHandler, with Command details and Device Identities TLV. The source device is always the SIM Card (81h). The Comprehension Required flags are set.

CRRN2: The Command number may take any value between 01h and FEh.

CRRN3: The init() method clears the ProactiveHandler before initialising it.

CRRN4: No TLV is selected after a call to the method.

CRRN5: The handler is not sent to the mobile by the init() method.

Parameter errors

No requirements

Context errors

No requirements

6.2.7.2.2 Test Suite files

Test Script: API_2_PAH_INITBBB_1.scr

Test Applet: API_2_PAH_INITBBB_1.java

Load Script: API_2_PAH_INITBBB_1.ldr

Cleanup Script: API_2_PAH_INITBBB_1.clr

6.2.7.2.3 Test procedure

Id	Description	API Expectation	APDU Expectation

1	**Call the init() method**
	`type = 01h`
	`qualifier = 02h`
	`dstDevice = 03h`
	Copy ProactiveHandler in a byte array (source)
	Compare the byte array
	`reference =`
	`81h 03h xxh 01h 02h`
	`82h 02h 81h 03h`
		source and reference are identical	

2	**Verify the command number value**	01h-FEh	

3	**Call the init() method**
	`type = FFh`
	`qualifier = FEh`
	`destination = FDh`
	Copy ProactiveHandler in a byte array (source)
	Compare the byte array
	`reference =`
	`81h 03h xxh FFh FEh`
	`82h 02h 81h FDh`
		source and reference are identical	

4	**Select the 1st TLV in the handler** **Call the init() method with any value**		
	Call the getValueLength() method	UNAVAILABLE_ELEMENT ToolkitException is thrown by getValueLength()	

6.2.7.2.4 Test Coverage

CRR number	Test case number
N1	1, 3
N2	2
N3	3
N4	4
N5	1, 3

6.2.7.3 Method initDisplayText

Test Area Reference: API_2_PAH_INDTBB_BSS

6.2.7.3.1 Conformance requirement

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

```
public void initDisplayText(byte qualifier,
                            byte dcs,
                            byte[] buffer,
                            short offset,
                            short length)
                     throws java.lang.NullPointerException,
                            java.lang.ArrayIndexOutOfBoundsException,
                            ToolkitException
```

Normal execution

CRRN1: The method shall build a DISPLAY TEXT proactive command in the ProactiveHandler, using qualifier, dcs and buffer parameters. Comprehension required flags are set.

CRRN2: A call to this method clears the handler then initialises it.

CRRN3: No TLV is selected after a call to the method.

CRRN4: The DISPLAY TEXT command is not sent by the method.

CRRN5: The Command Number may take any value between 01h and FEh.

Parameter errors

CRRP1: The method shall throw NullPointerException if buffer is null.

CRRP2: If offset or length or both would cause access outside array bounds, an ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: A ToolkitException.HANDLER_OVERFLOW shall be thrown if the ProactiveHandler is too small to put the requested data.

6.2.7.3.2 Test Suite files

Test Script: API_2_PAH_INDTBB_BSS_1.scr

Test Applet: API_2_PAH_INDTBB_BSS_1.java

Load Script: API_2_PAH_INDTBB_BSS_1.ldr

Cleanup Script: API_2_PAH_INDTBB_BSS_1.clr

6.2.7.3.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**NULL as parameter to buffer** buffer = NULL	NullPointerException is thrown	
2	**offset > buffer.length** buffer = "Text" offset = 5 length = 0	ArrayIndexOutOfBoundsException is thrown	
3	**offset < 0** buffer = "Text" offset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > buffer.length** buffer = "Text" offset = 0 length = 5	ArrayIndexOutOfBoundsException is thrown	
5	**offset + length > buffer.length** buffer = "Text" offset = 3 length = 2	ArrayIndexOutOfBoundsException is thrown	
6	**length < 0** buffer = "Text" offset = 3 length = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Successful call, buffer is the whole buffer** qualifier = 0 dcs = 4 buffer = "TextA" offset = 0 length = 5	No exception is thrown	
	Verify the command number value	Command number between 01h and FEh	
8	**Send the command**		DISPLAY TEXT Proactive command qualifier = 00h dcs = 4 Text = "TextA"
9	**Succesfull call, buffer is part of a buffer with the end part** **Send the command** qualifier = 0 dcs = 4 buffer = "12TextB" offset = 2 length = 5		DISPLAY TEXT Proactive command qualifier = 00h dcs = 4 Text = "TextB"
10	**Succesfull call, buffer is part of a buffer with the first part** **Send the command** qualifier = 0 dcs = 4 buffer = "TextC12" offset = 0 length = 5		DISPLAY TEXT Proactive command qualifier = 00h dcs = 4 Text = "TextC"
11	**Succesfull call, buffer is part of a buffer** **Send the command** qualifier = 0 dcs = 4 buffer = "12TextD34" offset = 2 length = 5		DISPLAY TEXT Proactive command qualifier = 00h dcs = 4 Text = "TextD"
12	**Succesfull call, qualifier = 81h** **Send the command** qualifier = 81h dcs = 4 buffer = "TextE" offset = 0 length = 5		DISPLAY TEXT Proactive command qualifier = 81h dcs = 4 Text = "TextE"
13	**Succesfull call, DCS=0 (7 bits)** **Send the command** qualifier = 0 dcs = 0 buffer = "TextF" offset = 0		DISPLAY TEXT Proactive command qualifier = 00h dcs = 0 Text = "TextF"

	length = 5		
14	**Succesfull call, DCS=8 (UCS2)** **Send the command** qualifier = 0 dcs = 8 buffer = "TextG" offset = 0 length = 5		DISPLAY TEXT Proactive command qualifier = 00h dcs = 8 Text = "TextG"
15	**Call the initDisplayText() method with any value** **Then build and send a DISPLAY TEXT command** qualifier = 0 dcs = 4 buffer = "TextHTextH" offset = 0 length = 10		DISPLAY TEXT Proactive command qualifier = 00h dcs = 4 Text = "TextHTextH"
16	**Successful call, text length is null** **Send the command** qualifier = 0 dcs = 4 buffer = "" (not null buffer) offset = 0 length = 0		DISPLAY TEXT Proactive command qualifier = 00h Text String TLV = 8D 00
17	**Select a TLV in the ProactiveHandler** **Call the initDisplayText() method** **Call the getValueLength() method**	UNAVAILABLE_ELEMENT ToolkitException is thrown by getValueLength()	
18	**Successful call, buffer length = 7Eh** qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 7Eh		DISPLAY TEXT Proactive command Text String TLV = 8D 7F 04 55 55…
19	**Successful call, buffer length = 7Fh** qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 7Fh		DISPLAY TEXT Proactive command Text String TLV = 8D 81 80 04 55 55…
20	**Successful call, buffer length = 240** Qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 240		DISPLAY TEXT Proactive command Text String TLV = 8D 81 F1 04 55 55…
21	**Call the initDisplayText() method with a too long buffer** qualifier = 0 dcs = 4 buffer = "XXXX…" offset = 0 length = 241	HANDLER_OVERFLOW ToolkitException is thrown	
22	**Call the initDisplayText() without sending the command**		No proactive command shall be sent expected status is '9000'

6.2.7.3.4 Test Coverage

CRR number	Test case number
N1	8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20
N2	15
N3	17
N4	22
N5	7
P1	1
P2	2, 3, 4, 5, 6
C1	21

6.2.7.4 Method initGetInkey

Test Area Reference: API_2_PAH_INGKBB_BSS

6.2.7.4.1 Conformance requirement

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

```
public void initGetInkey(byte qualifier,
                         byte dcs,
                         byte[] buffer,
                         short offset,
                         short length)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

CRRN1: The method shall build a GET INKEY proactive command in the ProactiveHandler, using qualifier, dcs and buffer parameters. Comprehension Required flags are set.

CRRN2: A call to this method clears the handler then initialises it.

CRRN3: No TLV is selected after a call to the method.

CRRN4: The GET INKEY command is not sent by the method.

CRRN5: The Command Number may take any value between 01h and FEh.

Parameter errors

CRRP1: The method shall throw NullPointerException if buffer is null.

CRRP1: If offset or length or both would cause access outside array bounds, a ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: A ToolkitException.HANDLER_OVERFLOW shall be thrown if the ProactiveHandler is to small to put the requested data.

6.2.7.4.2 Test Suite files

Test Script: API_2_PAH_INGKBB_BSS_1.scr

Test Applet: API_2_PAH_INGKBB_BSS_1.java

Load Script: API_2_PAH_INGKBB_BSS_1.ldr

Cleanup Script: API_2_PAH_INGKBB_BSS_1.clr

6.2.7.4.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**NULL as parameter to buffer** buffer = NULL	NullPointerException is thrown	
2	**offset > buffer.length** buffer = "Text" offset = 5	ArrayIndexOutOfBoundsException is thrown	
3	**offset < 0** buffer = "Text" offset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > buffer.length** buffer = "Text" offset = 0 length = 5	ArrayIndexOutOfBoundsException is thrown	
5	**offset + length > buffer.length** buffer = "Text" offset = 3 length = 2	ArrayIndexOutOfBoundsException is thrown	
6	**length < 0** buffer = "Text" offset = 3 length = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Successful call, buffer is the whole buffer** qualifier = 0 dcs = 4 buffer = "TextA" offset = 0 length = 5	No exception is thrown	
	Verify the command number value	Command number between 01h and FEh	
8	**Send the command**		GET INKEY Proactive command qualifier = 00h dcs = 4 Text = "TextA"
9	**Succesfull call, buffer is part of a buffer with the end part** qualifier = 0 dcs = 4 buffer = "12TextB" offset = 2 length = 5		GET INKEY Proactive command qualifier = 00h dcs = 4 Text = "TextB"
10	**Succesfull call, buffer is part of a buffer with the first part** qualifier = 0 dcs = 4 buffer = "TextC12" offset = 0 length = 5		GET INKEY Proactive command qualifier = 00h dcs = 4 Text = "TextC"
11	**Succesfull call, buffer is part of a buffer Send the command** qualifier = 0 dcs = 4 buffer = "12TextD34" offset = 2 length = 5		GET INKEY Proactive command qualifier = 00h dcs = 4 Text = "TextD"
12	**Succesfull call, qualifier = 81h** qualifier = 81h dcs = 4 buffer = "TextE" offset = 0 length = 5		GET INKEY Proactive command qualifier = 81h dcs = 4 Text = "TextE"
13	**Succesfull call, DCS=0 (7 bits)** qualifier = 0 dcs = 0 buffer = "TextF" offset = 0 length = 5		GET INKEY Proactive command qualifier = 00h dcs = 0 Text = "TextF"
14	**Succesfull call, DCS=8 (UCS2)** qualifier = 0		GET INKEY Proactive command

	dcs = 8 buffer = "TextG" offset = 0 length = 5		command qualifier = 00h dcs = 8 Text = "TextG"
15	**Call the initGetInkey() method with any value Then build and send a GET INKEY command** qualifier = 0 dcs = 4 buffer = "TextHTextH" offset = 0 length = 10		GET INKEY Proactive command qualifier = 00h dcs = 4 Text = "TextHTextH"
16	**Successful call, text length is null Send the command** qualifier = 0 dcs = 4 buffer = "" offset = 0 length = 0		GET INKEY Proactive command qualifier = 00h Text String TLV = 8D 00
17	**Select a TLV in the ProactiveHandler Call the initGetInkey() method Call the getValueLength() method**	UNAVAILABLE_ELEMENT ToolkitException is thrown by getValueLength()	
18	**Successful call, buffer length = 7Eh** qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 7Eh		GET INKEY Proactive command Text String TLV = 8D 7F 04 55 55…
19	**Successful call, buffer length = 7Fh** qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 7Fh		GET INKEY Proactive command Text String TLV = 8D 81 80 04 55 55…
20	**Successful call, buffer length = 240** Qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 240		GET INKEY Proactive command Text String TLV = 8D 81 F1 04 55 55…
21	**Call the initGetInkey() method with a too long buffer** qualifier = 0 dcs = 4 buffer = "XXXX…" offset = 0 length = 241	HANDLER_OVERFLOW ToolkitException is thrown	
22	**Call the initGetInkey() without sending the command**		No proactive command shall be sent expected status is '9000'

6.2.7.4.4 Test Coverage

CRR number	Test case number
N1	8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20
N2	15
N3	17
N4	22
N5	7
P1	1
P2	2, 3, 4, 5, 6
C1	21

6.2.7.5 Method initGetInput

Test Area Reference: API_2_PAH_INGPBB_BSSSS

6.2.7.5.1 Conformance requirement

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

```
public void initGetInput(byte qualifier,
                         byte dcs,
                         byte[] buffer,
                         short offset,
                         short length,
                         short minRespLength,
                         short maxRespLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

CRRN1: The method shall build a GET INPUT proactive command in the ProactiveHandler, using qualifier, dcs, buffer, minRespLength and maxRespLength parameters. Comprehension Required flags are set.

CRRN2: A call to this method clears the handler then initialises it.

CRRN3: No TLV is selected after a call to the method.

CRRN4: The GET INPUT command is not sent by the method.

CRRN5: The Command Number may take any value between 01h and FEh.

Parameter errors

CRRP1: The method shall throw NullPointerException if buffer is null.

CRRP2: If offset or length or both would cause access outside array bounds, a ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: A ToolkitException.HANDLER_OVERFLOW shall be thrown if the ProactiveHandler is to small to put the requested data.

6.2.7.5.2 Test Suite files

Test Script: API_2_PAH_INGPBB_BSSSS_1.scr

Test Applet: API_2_PAH_INGPBB_BSSSS_1.java

Load Script: API_2_PAH_INGPBB_BSSSS_1.ldr

Cleanup Script: API_2_PAH_INGPBB_BSSSS_1.clr

6.2.7.5.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**NULL as parameter to buffer** buffer = NULL	NullPointerException is thrown	
2	**offset > buffer.length** buffer = "Text" offset = 5	ArrayIndexOutOfBoundsException is thrown	
3	**offset < 0** buffer = "Text" offset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > buffer.length** buffer = "Text" offset = 0 length = 5	ArrayIndexOutOfBoundsException is thrown	
5	**offset + length > buffer.length** buffer = "Text" offset = 3 length = 2	ArrayIndexOutOfBoundsException is thrown	
6	**length < 0** buffer = "Text" offset = 3 length = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Successful call, buffer is the whole buffer** qualifier = 0 dcs = 4 buffer = "TextA" offset = 0 length = 5 minRespLength = 00h maxRespLength = FFh	No exception is thrown	
	Verify the command number value	Command number between 01h and -FEh	
8	**Send the command**		GET INPUT Proactive command qualifier = 00h dcs = 4 Text = "TextA" Min Length = 00h Max Length = FFh
9	**Succesfull call, buffer is part of a buffer with the end part** **Send the command** qualifier = 0 dcs = 4 buffer = "12TextB" offset = 2 length = 5 minRespLength = 10h maxRespLength = FFh		GET INPUT Proactive command qualifier = 00h dcs = 4 Text = "TextB" Min Length = 10h Max Length = FFh
10	**Succesfull call, buffer is part of a buffer with the first part** **Send the command** qualifier = 0 dcs = 4 buffer = "TextC12" offset = 0 length = 5 minRespLength = FFh maxRespLength = FFh		GET INPUT Proactive command qualifier = 00h dcs = 4 Text = "TextC" Min Length = FFh Max Length = FFh
11	**Succesfull call, buffer is part of a buffer** **Send the command** qualifier = 0 dcs = 4 buffer = "12TextD34" offset = 2 length = 5 minRespLength = 00h maxRespLength = 00h		GET INPUT Proactive command qualifier = 00h dcs = 4 Text = "TextD" Min Length = 00h Max Length = 00h
12	**Succesfull call, qualifier = 81h** qualifier = 81h dcs = 4		GET INPUT Proactive command

	buffer = "TextE" offset = 0 length = 5 minRespLength = 00h maxRespLength = 10h		qualifier = 81h dcs = 4 Text = "TextE" Min Length = 00h Max Length = 10h
13	**Succesfull call, DCS=0 (7 bits)** qualifier = 0 dcs = 0 buffer = "TextF" offset = 0 length = 5 minRespLength = 10h maxRespLength = 10h		GET INPUT Proactive command qualifier = 00h dcs = 0 Text = "TextF" Min Length = 10h Max Length = 10h
14	**Succesfull call, DCS=8 (UCS2)** qualifier = 0 dcs = 8 buffer = "TextG" offset = 0 length = 5 minRespLength = 00h maxRespLength = FFh		GET INPUT Proactive command qualifier = 00h dcs = 8 Text = "TextG" Min Length = 00h Max Length = FFh
15	**Call the initGetInput() method with any value Then build and send a GET INPUT command** qualifier = 0 dcs = 4 buffer = "TextHTextH" offset = 0 length = 10 minRespLength = 00h maxRespLength = 10h		GET INPUT Proactive command qualifier = 00h dcs = 4 Text = "TextHTextH" Min Length = 00h Max Length = 10h
16	**Successful call, text length is null Send the command** qualifier = 0 dcs = 4 buffer = "" offset = 0 length = 0 minRespLength = 00h maxRespLength = 10h		GET INPUT Proactive command qualifier = 00h Text String TLV = 8D 00 Min Length = 00h Max Length = 10h
17	**Select a TLV in the ProactiveHandler Call the initGetInput() method Call the getValueLength() method**	UNAVAILABLE_ELEMENT ToolkitException is thrown by getValueLength()	
18	**Successful call, buffer length = 7Eh** qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 7Eh minRespLength = 00h maxRespLength = 10h		GET INPUT Proactive command Text String TLV = 8D 7F 04 55 55… Min Length = 00h Max Length = 10h
19	**Successful call, buffer length = 7Fh** qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 7Fh minRespLength = 00h maxRespLength = 10h		GET INPUT Proactive command Text String TLV = 8D 81 80 04 55 55… Min Length = 00h Max Length = 10h
20	**Successful call, buffer length = 236** Qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 236 minRespLength = 00h maxRespLength = 10h		GET INPUT Proactive command Text String TLV = 8D 81 ED 04 55 55…
21	**Call the initGetInput() method with a too long buffer**	HANDLER_OVERFLOW ToolkitException is thrown	

	qualifier = 0 dcs = 4 buffer = "XXXX…" offset = 0 length = 237 minRespLength = 00h maxRespLength = 10h		
22	**Call the initGetInput() without sending the command**		No proactive command shall be sent expected status is '9000'

6.2.7.5.4 Test Coverage

CRR number	Test case number
N1	8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20
N2	15
N3	17
N4	22
N5	7
P1	1
P2	2, 3, 4, 5, 6
C1	21

6.2.7.6 Method send

Test Area Reference: API_2_PAH_SEND

6.2.7.6.1 Conformance requirement

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

```
public byte send()
```

Normal execution

CRRN1: The send() method send the current proactive command to the mobile.

CRRN2: The returned byte is equal to general result of the command (first byte of Result TLV in Terminal Response).

CRRN3: The handler remains unchanged after a call to send() method until the use of initXX() or appendTLV().

CRRN4: There is no invocation of select() or deselect() method.

CRRN5: A pending toolkit applet transaction at the method invocation is aborted.

Parameter errors

No requirements

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown is the Result Simple TLV is missing in Terminal Response.

CRRC2: A ToolkitException.OUT_OF_TLV_BOUNDARIES shall be thrown if the general result byte is missing in the Result Simple TLV in Terminal Response.

6.2.7.6.2 Test Suite files

Test Script: API_2_PAH_SEND_1.scr

Test Applet: API_2_PAH_SEND_1.java

Load Script: API_2_PAH_SEND_1.ldr

Cleanup Script: API_2_PAH_SEND_1.clr

6.2.7.6.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a DISPLAY TEXT command** qualifier = 00h dcs = 04h buffer = 'Text'		DISPLAY TEXT Proactive command
2	**Terminal Response with General Result = 00** Result TLV = 03 01 00 (command performed successfully)	Result of send() is 00h	
3	**Build and send a DISPLAY TEXT command** qualifier = 00h dcs = 04h buffer = 'Text'		DISPLAY TEXT Proactive command
4	**Terminal Response with General Result = 01, without Additional information on result** Result TLV = 03 01 01 (command performed with partial comprehension)	Result of send() is 01h	
5	**Build and send a DISPLAY TEXT command** qualifier = 00h dcs = 04h buffer = 'Text'		DISPLAY TEXT Proactive command
6	**Terminal Response with General Result = 01, with Additional information on result** Result TLV = 03 02 01 55 (command performed with partial comprehension)	Result of send() is 01h	
7	**Build and send a DISPLAY TEXT command** qualifier = 00h dcs = 04h buffer = 'Text'		DISPLAY TEXT Proactive command
8	**Terminal Response with General Result = 02** Result TLV = 03 04 02 65 43 21 (Missing information)	Result of send() is 02h	
9	**Build and send a 7Fh byte command (DISPLAY TEXT)** qualifier = 00h dcs = 04h buffer = "UUUUU…" length = 73h		DISPLAY TEXT Proactive command BER-TLV = D0 7F Text String TLV = 8D 74 04 55 55 55…
10	**Build and send a 80h byte command (DISPLAY TEXT)** qualifier = 00h dcs = 04h buffer = "UUUUU…" length = 74h		DISPLAY TEXT Proactive command BER-TLV = D0 81 80 Text String TLV = 8D 75 04 55 55 55…
11	**Build and send a maximum length command (length of the handler should be 253)** DISPLAY TEXT: Qualifier = 0 dcs = 4 buffer = "UUU…" offset = 0 length = 240		DISPLAY TEXT Proactive command BER-TLV = D0 81 FD Text String TLV = 8D 81 F1 04 55 55…
12	**Verify that the Proactive Handler is not modified after a send()** **Build a DISPLAY TEXT command** **Copy ProactiveHandler to source byte array** **Send command** **Copy ProactiveHandler to destination byte array**		

	Compare source and destination	Source and destination are identical	
13	**Build and send a DISPLAY TEXT command Verify there is no invocation of select() or deselect() method.**		DISPLAY TEXT Proactive command
14	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command

	Terminal Response with 2 Result TLV
	
	`1st Result TLV = 03 02 02 12`
	`2nd Result TLV = 03 03 03 34 56`
		Result of send() is 02h	

15	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without Result Simple TLV	ToolkitException.UNAVAILABLE_ELEMENT is thrown by send()	
16	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without general result byte in the Simple TLV `Result TLV = 03 00`	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown by send()	

6.2.7.6.4 Test Coverage

CRR number	Test case number
N1	1, 3, 5, 7, 9, 10, 11, 12, 13, 14
N2	2, 4, 6, 8, 14
N3	12
N4	13
N5	To be checked in Framework tests and insert here cross reference
C1	15
C2	16

6.2.7.7 Method getLength

Test Area Reference API_2_PAH_GLEN

6.2.7.7.1 Conformance requirement

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

```
public short getLength()
                    throws ToolkitException
```

Normal execution

CRRN1: returns the length in bytes of the TLV list.

Parameter errors

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException.HANDLER_NOT_AVAILABLE.

6.2.7.7.2 Test Suite files

Test Script: API_2_PAH_GLEN_1.scr

Test Applet: API_2_PAH_GLEN_1.java

Load Script: API_2_PAH_GLEN_1.ldr

Cleanup Script: API_2_PAH_GLEN_1.clr

6.2.7.7.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Clear the handler** `getLength()`	Result of getLength() is 0	
2	**Call the init() method** `getLength()`	Result of getLength() is 9	
3	**Call the initDisplayText() method, with buffer length = 240** `getLength()`	Result of getLength() is 253	
4	**Build a 7Fh Proactive Handler** `getLength()`	Result of getLength() is 7Fh	
5	**Build a 80h Proactive Handler** `getLength()`	Result of getLength() is 80h	

6.2.7.7.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3, 4,5
C1	Does not apply for Proactive Handler

6.2.7.8 Method copy

Test Area Reference API_2_PAH_COPY_BSS

6.2.7.8.1 Conformance requirement

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

```
public short copy(byte[] dstBuffer,
                  short dstOffset,
                  short dstLength)
         throws java.lang.NullPointerException,
                java.lang.ArrayIndexOutOfBoundsException,
                ToolkitException
```

Normal execution

CRRN1: copies the simple TLV list contained in the handler to the destination byte array.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null a NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative, an ArrayIndexOutOfBoundsException is thrown.

CRRP3: if dstLength is grater than the length of the simple TLV List, an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException. OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.7.8.2 Test Suite files

Test Script: API_2_PAH_COPY_BSS_1.scr

Test Applet: API_2_PAH_ COPY_BSS_1.java

Load Script: API_2_PAH_ COPY_BSS_1.ldr

Cleanup Script: API_2_PAH_ COPY_BSS_1.clr

6.2.7.8.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**NULL as parameter to dstBuffer**	NullPointerException is thrown	
2	**Call the init() method**		
	DstOffset > dstBuffer.length dstBuffer.length = 5 dstOffset = 6 dstLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**DstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**dstLength > length of the simple TLV list** dstBuffer.length = 10 dstOffset = 0 dstLength = 10	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**Successful call, dstBuffer is the whole buffer** dstBuffer.length = 9 dstOffset = 0 dstLength = 9	Result of copy() is 9	
9	**Compare the buffer**	Result of arrayCompare() is 0	
10	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 15 dstOffset = 3 dstLength = 9	Result of copy() is 12	
11	**Compare the whole buffer**	Result of arrayCompare() is 0	
12	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 15 dstOffset = 3 dstLength = 6	Result of copy() is 9	
13	**Compare the whole buffer**	Result of arrayCompare() is 0	

6.2.7.8.4 Test Coverage

CRR number	Test case number
N1	9, 11, 13
N2	8, 10, 12
P1	1
P2	2, 3, 4, 5, 6
P3	7
C1	Does not apply for ProactiveHandler

6.2.7.9 Method findTLV

Test Area Reference API_2_PAH_FINDBB

6.2.7.9.1 Conformance requirement

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

```
public byte findTLV(byte tag, byte occurrence)
               throws ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of the TLV list (handler buffer):

CRRN1: the method is successful if the required occurrence exists then the corresponding TLV becomes current.

CRRN2: if the method is successful then it returns TLV_FOUND_CR_SET when Comprehension Required flag is set.

CRRN3: if the method is successful then it returns TLV_FOUND_CR_NOT_SET when Comprehension Required flag is not set.

CRRN4: if the required occurrence of the TLV element does not exist, the current TLV is no longer defined and TLV_NOT_FOUND is returned.

CRRN5: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if an input parameter is not valid (e.g. occurrence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.7.9.2 Test Suite files

Test Script: API_2_PAH_FINDBB_1.scr

Test Applet: API_2_PAH_FINDBB_1.java

Load Script: API_2_PAH_FINDBB_1.ldr

Cleanup Script: API_2_PAH_FINDBB_1.clr

6.2.7.9.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	Invalid input parameter Occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
2	**Call the init() method**		
	Search 1st TLV Tag = 01h Occurrence = 1	Result is TLV_FOUND_CR_SET	
3	**Call the getValueLength() method**	Result is 03h	
4	**Search 2nd TLV** Tag = 02h Occurrence = 1	Result is TLV_FOUND_CR_SET	
5	**Call the getValueLength() method**	Result is 02h	
6	**Select a TLV (tag 02h)**		
	Search a wrong tag Tag = 03h Occurrence = 1	Result is TLV_NOT_FOUND	
7	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
8	**Search a tag with wrong occurrence** Tag = 01h Occurrence = 2	Result is TLV_NOT_FOUND	
9	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
10	**Append a TLV with tag=02h**		
	Search the TLV Tag = 02h Occurrence = 2	Result is TLV_FOUND_CR_NOT_SET	
11	**Append a TLV with tag=04h**		
	Search the TLV Tag = 04h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	
12	**Search tag 81h** Tag = 81h Occurrence = 1	Result is TLV_FOUND_CR_SET	
13	**Search tag 84h** Tag = 84h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	

6.2.7.9.4 Test Coverage

CRR number	Test case number
N1	3, 5
N2	2, 4
N3	10, 11
N4	6, 7,8, 9
N5	12, 13
P1	1
C1	Does not apply for Proactive Handler

6.2.7.10 Method getValueLength

Test Area Reference API_2_PAH_GVLE

6.2.7.10.1 Conformance requirement

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

```
public short getValueLength()
                    throws ToolkitException
```

Normal execution

CRRN1: gets and returns the binary length of the value field for the last TLV element which has been found in the handler.

Parameter errors

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.7.10.2 Test Suite files

Test Script: API_2_PAH_GVLE_1.scr

Test Applet: API_2_PAH_GVLE_1.java

Load Script: API_2_PAH_GVLE_1.ldr

Cleanup Script: API_2_PAH_GVLE_1.clr

6.2.7.10.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Call the init() method**		
	`getValueLength()`	ToolkitException.UNAVAILABLE_ELEMENT is thrown	

2	**Call the appendTLV() method**
	`tag = 0D`
	`valueOffset = 0`
	`valueLength = 0`		

	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 00h	
3	**Call the initDisplayText() method** `length = 1 (+ dcs byte)`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 02h	
4	**Call the initDisplayText() method length = 7Eh (+ dcs byte)**		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 7Fh	
5	**Call the initDisplayText() method** `length = 7Fh (+ dcs byte)`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 80h	
6	**Call the initDisplayText() method** `length = F0h (maximum text length)`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is F1h	

6.2.7.10.4 Test Coverage

CRR number	Test case number
N1	2, 3, 4, 5, 6
C1	Does not apply for Proactive Handler
C2	1

6.2.7.11 Method getValueByte

Test Area Reference API_2_PAH_GVBYS

6.2.7.11.1 Conformance requirement

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

```
public byte getValueByte(short valueOffset)
                    throws ToolkitException
```

Normal execution

CRRN1: Gets a byte from the last TLV element which has been found in the handler and returns its value (1 byte).

Parameter errors

CRRP1: if valueOffset is out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.7.11.2 Test Suite files

Test Script: API_2_PAH_GVBYS_1.scr

Test Applet: API_2_PAH_GVBYS_1.java

Load Script: API_2_PAH_GVBYS_1.ldr

Cleanup Script: API_2_PAH_GVBYS_1.clr

6.2.7.11.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Call the init() method** type = FFh qualifier = FEh destination = FDh		
	getValueByte(0)	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**Search TLV 01h (Command Details TLV)**		
	getValueByte(3)	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
3	**Search TLV 01h (Command Details TLV)**		
	getValueByte(2)	Result is FEh (qualifier)	
4	**Search TLV 02h (Device Identities TLV)**		
	getValueByte(0)	Result is 81h (Source)	
5	**initDisplayText()** buffer = 00 01 … 7D length = 7Eh Search TLV 0Dh (Text String TLV)		
	getValueByte(7E)	Result is 7Dh	
6	**initDisplayText()** buffer = 00 01 … 7D 7E length = 7Fh Search TLV 0Dh (Text String TLV)		
	getValueByte(7E)	Result is 7Dh	
7	**getValueByte(7F)**	Result is 7Eh	
8	**initDisplayText()** buffer = 00 01 … EF length = F0h Search TLV 0Dh (Text String TLV)		
	getValueByte(F0)	Result is EFh	

6.2.7.11.4 Test Coverage

CRR number	Test case number
N1	3, 4, 5, 6, 7, 8
P1	2
C1	Does not apply for Proactive Handler
C2	1

6.2.7.12 Method copyValue

Test Area Reference API_2_PAH_CPYVS_BSS

6.2.7.12.1 Conformance requirement

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

```
public short copyValue(short valueOffset,
                       byte[] dstBuffer,
                       short dstOffset,
                       short dstLength)
                throws java.lang.NullPointerException,
                       java.lang.ArrayIndexOutOfBoundsException,
                       ToolkitException
```

Normal execution

CRRN1: copies a part of the last TLV element which has been found, into a destination. buffer.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException is thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.7.12.2 Test Suite files

Test Script: API_2_PAH_CPYVS_BSS_1.scr

Test Applet: API_2_PAH_CPYVS_BSS_1.java

Load Script: API_2_PAH_CPYVS_BSS_1.ldr

Cleanup Script: API_2_PAH_CPYVS_BSS_1.clr

6.2.7.12.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler** **Select a TLV**		
	`copyValue() with a null dstBuffer`	NullPointerException is thrown	
2	**initDisplayText() with length = 15** `Select Text String TLV`		

	dstOffset > dstBuffer.length
	`dstBuffer.length = 5`
	`dstOffset = 6`
	`dstLength = 0`
		ArrayIndexOutOfBoundsException is thrown	

3	**dstOffset < 0**
	`dstBuffer.length = 5`
	`dstOffset = -1`
	`dstLength = 1`
		ArrayIndexOutOfBoundsException is thrown	

4	**dstLength >dstBuffer.length**
	`dstBuffer.length = 5`
	`dstOffset = 0`
	`dstLength = 6`
		ArrayIndexOutOfBoundsException is thrown	

5	**dstOffset + dstLength >dstBuffer.length**
	`dstBuffer.length = 5`
	`dstOffset = 3`
	`dstLength = 3`
		ArrayIndexOutOfBoundsException is thrown	

6	**dstLength < 0**
	`dstBuffer.length = 5`
	`dstOffset = 0`
	`dstLength = -1`
		ArrayIndexOutOfBoundsException is thrown	

7	**initDisplayText() with length = 5** `Select Text String TLV`		
	valueOffset > Text String Length `valueOffset = 7`	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	

	dstBuffer.length = 15 dstOffset = 0 dstLength = 0		
8	**[Select Text String TLV]** valueOffset < 0 valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**[Select Text String TLV]** dstLength > Text String length valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**[Select Text String TLV]** valueOffset + dstLength > Text String length valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Initialise the handler**		
	copyValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F Select Text String TLV		
	Successful call valueOffset = 0 dstBuffer.length = 17 dstOffset = 0 dstLength = 17	Result of copyValue() is 17	
13	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call valueOffset = 2 dstBuffer.length = 20 dstOffset = 3 dstLength = 12	Result of copyValue() is 15	
15	**Compare buffer** buffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55	Result is 00h	

6.2.7.12.4 Test Coverage

CRR number	Test case number
N1	13, 15
N2	12, 14
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for Proactive Handler
C2	11

6.2.7.13 Method compareValue

Test Area Reference API_2_PAH_CPRVS_BSS

6.2.7.13.1 Conformance requirement

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

```
public byte compareValue(short valueOffset,
                         byte[] compareBuffer,
                         short compareOffset,
                         short compareLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

Compares the last found TLV element with a buffer:

CRRN1: returns 0 if identical.

CRRN2: returns -1 if the first miscomparing byte in simple TLV List is less than that in compareBuffer.

CRRN3: returns 1 if the first miscomparing byte in simple TLV List is greater than that in compareBuffer.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.7.13.2 Test Suite files

Test Script:	API_2_PAH_CPRVS_BSS_1.scr
Test Applet:	API_2_PAH_CPRVS_BSS_1.java
Load Script:	API_2_PAH_CPRVS_BSS_1.ldr
Cleanup Script:	API_2_PAH_CPRVS_BSS_1.clr

6.2.7.13.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler** **Select a TLV**		
	compareValue() with a null compareBuffer	NullPointerException is thrown	
2	**initDisplayText() with length = 15** Select Text String TLV		
	compareOffset > compareBuffer.length compareBuffer.length = 5 compareOffset = 6 compareLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 5 compareOffset = -1 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 0 compareLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**compareOffset + compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 3 compareLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**compareLength < 0** compareBuffer.length = 5 compareOffset = 0 compareLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**initDisplayText() with length = 5** **Select Text String TLV**		
	valueOffset > Text String Length valueOffset = 7 compareBuffer.length = 15 compareOffset = 0 compareLength = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**[Select Text String TLV]** valueOffset < 0 valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**[Select Text String TLV]** compareLength > Text String length valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**[Select Text String TLV]** valueOffset + compareLength > Text String length valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Initialise the handler**		
	compareValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F Select Text String TLV		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	Compare buffers valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	
13	**Initialise compareBuffer**		

	compareBuffer = 04 00 01 02 03 04 05 06 07 08 05 0A 0B 0C 0D 0E 10		
	Compare buffers with same parameters	Result is -1	
14	**Initialise compareBuffer** compareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
15	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers valueOffset = 2 compareOffset = 3 compareLength = 12	Result is 00h	
16	**Initialise compareBuffer** compareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
17	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
18	**Initialise compareBuffer** compareBuffer = 55 55 55 99 03 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	

6.2.7.13.4 Test Coverage

CRR number	Test case number
N1	12, 15
N2	13, 16
N3	14, 17, 18
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for Proactive Handler
C2	11

6.2.7.14 Method findAndCopyValue(byte tag, byte[] dstBuffer, short valueOffset)

Test Area Reference API_2_PAH_FACYB_BS

6.2.7.14.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
```

```
        byte[] dstBuffer,
        short dstOffset)
throws java.lang.NullPointerException,
        java.lang.ArrayIndexOutOfBoundsException,
        ToolkitException
```

Normal execution

CRRN1: looks for the first occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + length of the copied value is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.7.14.2 Test Suite files

Test Script: API_2_PAH_FACYB_BS_1.scr

Test Applet: API_2_PAH_FACYB_BS_1.java

Load Script: API_2_PAH_FACYB_BS_1.ldr

Cleanup Script: API_2_PAH_FACYB_BS_1.clr

6.2.7.14.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	FindAndCopyValue() with a null dstBuffer	NullPointerException is thrown	
2	**InitDisplayText() with length = 15**		
	dstOffset > dstBuffer.length tag = 0Dh dstBuffer.length = 20 dstOffset = 21	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 20 dstOffset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > dstBuffer.length** dstBuffer.length = 15 dstOffset = 0	ArrayIndexOutOfBoundsException is thrown	
5	**DstOffset + length >dstBuffer.length** DstBuffer.length = 20 DstOffset = 5	ArrayIndexOutOfBoundsException is thrown	
6	**initDisplayText()**		
	Select a TLV (tag 02h)		
	findAndCopyValue() tag = 03h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	

7	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Successful call Tag = 0Dh DstBuffer.length = 17 DstOffset = 0	Result of findAndcopyValue() is 17	
8	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
9	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call dstBuffer.length = 20 dstOffset = 2	Result of findAndcopyValue() is 19	
10	**Compare buffer** buffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55	Result is 00h	
11	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	append a 2nd Text String TLV		
	Successful call tag = 0Dh dstBuffer.length = 17 dstOffset = 0	Result of findAndcopyValue() is 17	
12	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
13	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Successful call (with tag 8Dh) tag = 8Dh dstBuffer.length = 17 dstOffset = 0	Result of findAndcopyValue() is 17	
14	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
15	**Append tag 0Fh** buffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh dstBuffer.length = 16 dstOffset = 0	Result of findAndcopyValue() is 16	
16	**Compare buffer** buffer = 00 01 … 0F	Result is 00h	

6.2.7.14.4 Test Coverage

CRR number	Test case number
N1	8, 10, 12
N2	6
N3	7, 9, 11
N4	13, 14, 15, 16
P1	1
P2	2, 3, 4, 5
C1	Does not apply for Proactive Handler

6.2.7.15 Method findAndCopyValue(byte tag, byte occurence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)

Test Area Reference API_2_PAH_FACYBBS_BSS

6.2.7.15.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte occurence,
                              short valueOffset,
                              byte[] dstBuffer,
                              short dstOffset,
                              short dstLength)
                       throws java.lang.NullPointerException,
                              java.lang.ArrayIndexOutOfBoundsException,
                              ToolkitException
```

Normal execution

CRRN1: looks for the indicated occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + dstLength is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.7.15.2 Test Suite files

Test Script: API_2_PAH_FACYBBS_BSS_1.scr

Test Applet: API_2_PAH_FACYBBS_BSS_1.java

Load Script: API_2_PAH_FACYBBS_BSS_1.ldr

Cleanup Script: API_2_PAH_FACYBBS_BSS_1.clr

6.2.7.15.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	findAndCopyValue() with a null dstBuffer	NullPointerException is thrown	
2	**initDisplayText() with length = 15**		
	dstOffset > dstBuffer.length tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 5 dstOffset = 6 dstLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**initDisplayText() with length = 5**		
	valueOffset > Text String Length tag = 0Dh, occurrence = 1 valueOffset = 7 dstBuffer.length = 15 dstOffset = 0 dstLength = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**dstLength > Text String length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + dstLength > Text String length** valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**InitDisplayText()**		
	Select a TLV (tag 02h)		
	findAndCopyValue() tag = 0Dh occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
12	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Successful call tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 17 dstOffset = 0 dstLength = 17	Result of findAndCopyValue() is 17	
13	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
14	**initialise dstBuffer**		

	dstBuffer = 55 55 … 55		
	Successful call tag = 0Dh, occurrence = 1 valueOffset = 2 dstBuffer.length = 20 dstOffset = 3 dstLength = 12	Result of findAndcopyValue() is 15	
15	**Compare buffer** buffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55	Result is 00h	
16	**Append a Text String TLV** tag = 0D buffer = 00 11 22 33 44 55 (no specific DCS byte)		
	Successful call tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 17 dstOffset = 0 dstLength = 17	Result of findAndCopyValue() is 17	
17	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
18	**Successful call** tag = 0Dh, occurrence = 2 valueOffset = 0 dstBuffer.length = 6 dstOffset = 0 dstLength = 6	Result of findAndCopyValue() is 6	
19	**Compare buffer** buffer = 00 11 22 33 44 55	Result is 00h	
20	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Successful call (with tag 8Dh) tag = 8Dh occurrence = 1 valueOffset = 0 dstBuffer.length = 17 dstOffset = 0 dstLength = 17	Result of findAndcopyValue() is 17	
21	**Compare buffer** buffer = 04 00 01 … 0F	Result is 00h	
22	**Append tag 0Fh** buffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh occurrence = 1 valueOffset = 0 dstBuffer.length = 16 dstOffset = 0 dstLength = 16	Result of findAndcopyValue() is 16	
23	**Compare buffer** buffer = 00 01 … 0F	Result is 00h	

6.2.7.15.4 Test Coverage

CRR number	Test case number
N1	13, 15, 17, 19
N2	11
N3	12, 14, 16, 18
N4	20, 21, 22, 23
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for ProactiveHandler

6.2.7.16 Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset)

Test Area Reference API_2_PAH_FACRB_BS

6.2.7.16.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte[] compareBuffer,
                                short compareOffset)
                         throws  java.lang.NullPointerException,
                                 java.lang.ArrayIndexOutOfBoundsException,
                                 ToolkitException
```

Normal execution

Looks for the first occurrence of a TLV element from beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical returns 0.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer returns -1.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer returns 1.

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.7.16.2 Test Suite files

Test Script: API_2_PAH_FACRB_BS_1.scr

Test Applet: API_2_PAH_FACRB_BS_1.java

Load Script: API_2_PAH_FACRB_BS_1.ldr

Cleanup Script: API_2_PAH_FACRB_BS_1.clr

6.2.7.16.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	findAndCompareValue() with a null dstBuffer	NullPointerException is thrown	
2	**initDisplayText() with length = 15**		
	compareOffset > compareBuffer.length tag = 0Dh compareBuffer.length = 20 compareOffset = 21	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 20 compareOffset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > compareBuffer.length** compareBuffer.length = 15 compareOffset = 0	ArrayIndexOutOfBoundsException is thrown	
5	**compareOffset + length >** compareBuffer.length compareBuffer.length = 20 compareOffset = 5	ArrayIndexOutOfBoundsException is thrown	
6	**InitDisplayText()**		
	Select a TLV (tag 02h)		
	findAndCompareValue() tag = 03h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
7	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	Compare buffers tag = 0Dh compareOffset = 0	Result is 00h	
8	**Verify current TLV** getValueLength()	Result is 17	
9	**Initialise compareBuffer** compareBuffer = 04 00 01 … 10		
	Compare buffers with same parameters	Result is -1	
10	**Initialise compareBuffer** compareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
11	**Initialise compareBuffer** compareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		
	Compare buffers compareOffset = 2	Result is 00h	
12	**append a Text String TLV** tag = 0Dh buffer = 00 11 22 33 44 55		
	Initialise compareBuffer compareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		

	Compare buffers compareOffset = 2	Result is 00h	
13	**Initialise compareBuffer** compareBuffer = 55 55 04 01 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		
	Compare buffers compareOffset = 2	Result is -1	
14	**Initialise compareBuffer** compareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0D 10 55		
	Compare buffers compareOffset = 2	Result is +1	
15	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Initialise compareBuffer CompareBuffer = 04 00 01 … 0F		
	Successful call (with tag 8Dh) tag = 8Dh compareBuffer.length = 17 compareOffset = 0	Result is 00h	
16	**Append tag 0Fh** buffer = 00 01 … 0F		
	Initialise compareBuffer compareBuffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh compareBuffer.length = 16 compareOffset = 0	Result is 00h	
17	**Initialise compareBuffer** compareBuffer = 00 99 01 03 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh compareBuffer.length = 16 compareOffset = 0	Result is +1	

6.2.7.16.4 Test Coverage

CRR number	Test case number
N1	6
N2	8
N3	7, 11, 12, 17
N4	9, 13
N5	10, 14
N6	15, 16
P1	1
P2	2, 3, 4, 5
C1	Does not apply for Proactive Handler

6.2.7.17 Method findAndCompareValue(byte tag, byte occurence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength)

Test Area Reference API_2_PAH_FACRBBS_BSS

6.2.7.17.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte occurence,
                                short valueOffset,
                                byte[] compareBuffer,
                                short compareOffset,
                                short compareLength)
                        throws  java.lang.NullPointerException,
                                java.lang.ArrayIndexOutOfBoundsException,
                                ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical 0 is returned.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer -1 is returned.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer 1 is returned

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, compareLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

CRRP4: if an input parameter is not valid (e.g. occurence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.7.17.2 Test Suite files

Test Script: API_2_PAH_FACRBBS_BSS_1.scr

Test Applet: API_2_PAH_FACRBBS_BSS_1.java

Load Script: API_2_PAH_FACRBBS_BSS_1.ldr

Cleanup Script: API_2_PAH_FACRBBS_BSS_1.clr

6.2.7.17.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler**		
	findAndCompareValue() with a null compareBuffer	NullPointerException is thrown	
2	**initDisplayText() with length = 15**		
	compareOffset > compareBuffer.length tag = 0Dh, occurrence = 1 valueOffset = 0 compareBuffer.length = 5 compareOffset = 6 compareLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 5 compareOffset = -1 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 0 compareLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**compareOffset + compareLength** >compareBuffer.length compareBuffer.length = 5 compareOffset = 3 compareLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**compareLength < 0** compareBuffer.length = 5 compareOffset = 0 compareLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**initDisplayText() with length = 5**		
	valueOffset > Text String Length tag = 0Dh, occurrence = 1 valueOffset = 7 compareBuffer.length = 15 compareOffset = 0 compareLength = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**compareLength > Text String length** valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + compareLength > Text String length** valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Invalid parameter** occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
12	**InitDisplayText()**		
	Select a TLV (tag 02h)		
	findAndCompareValue() tag = 0Dh occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
13	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	findAndCompareValue()	Result is 00h	

	tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17		
14	**Verify current TLV** getValueLength()	Result is 17	
15	**Initialise compareBuffer** compareBuffer = 04 00 01 … 10		
	Compare buffers with same parameters	Result is -1	
16	**Initialise compareBuffer** compareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
17	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers valueOffset = 2 compareOffset = 3 compareLength = 12	Result is 00h	
18	**Initialise compareBuffer** compareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
19	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
20	**append a Text String TLV** tag = 0Dh buffer = 00 11 22 33 44 55		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	findAndCompareValue() tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	
21	**Initialise compareBuffer** compareBuffer = 00 11 22 33 44 55		
	findAndCompareValue() tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 6	Result is 00h	
22	**Initialise compareBuffer** compareBuffer = 00 11 22 33 44 66		
	findAndCompareValue() tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0	Result is –1	

	compareLength = 6		
23	**initDisplayText()** dcs = 4 buffer = 00 01 … 0F		
	Initialise compareBuffer CompareBuffer = 04 00 01 … 0F		
	Successful call (with tag 8Dh) tag = 8Dh, occurrence = 1 valueOffset = 0 compareBuffer.length = 17 compareOffset = 0 compareLength = 17	Result is 00h	
24	**Append tag 0Fh** buffer = 00 01 … 0F		
	Initialise compareBuffer compareBuffer = 00 01 … 0F		
	Successful call (with tag 8Fh) tag = 8Fh, occurrence = 1 valueOffset = 0 compareBuffer.length = 16 compareOffset = 0 compareLength = 16	Result is 00h	
25	**Initialise compareBuffer** compareBuffer =0099 02 … 0F		
	findAndCompareValue() tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17	Result is +1	

6.2.7.17.4 Test Coverage

CRR number	Test case number
N1	12
N2	14
N3	13, 17, 20, 21
N4	15, 18, 22
N5	16, 19
N6	23, 24
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
P4	11
C1	Does not apply for Proactive Handler

6.2.7.18 Method appendArray

Test Area Reference: API_2_PAH_APDA

6.2.7.18.1 Conformance requirement:

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

```
void appendArray(byte[] buffer,
                 short offset,
                 short length)
         throws  java.lang.NullPointerException,
                 java.lang.ArrayIndexOutOfBoundsException,
                 ToolkitException
```

Normal execution

CRRN1: appends a buffer into the Edithandler buffer

CRRN2: a successful append does not modify the TLV selected

Parameters error

CRRP1: if buffer is null, a java.lang.NullPointerException is thrown

CRRP2: if offset or length or both would cause access outside the array bounds, or if length is negative, a java.lang.ArrayIndexOutOfBoundsException is thrown.

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.7.18.2 Test suite files

Test Script: API_2_PAH_APDA_1.scr

Test Applet: API_2_PAH_APDA_1.java

Load Script: API_2_PAH_APDA_1.ldr

Cleanup Script: API_2_PAH_APDA_1.clr

6.2.7.18.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Null buffer**	NullPointerException is thrown	

2	**offset > buffer.length**
	`buffer.length = 5`
	`offset = 6`
	`length = 0`
		ArrayIndexOutOfBoundsException is thrown	

3	**offset < 0**
	`buffer.length = 5`
	`offset = -1`
	`length = 1`
		ArrayIndexOutOfBoundsException is thrown	

4	**length > buffer.length**
	`buffer.length = 5`
	`offset = 0`
	`length = 6`
		ArrayIndexOutOfBoundsException is thrown	

5	**offset + length > buffer.length**
	`buffer.length = 5`
	`offset = 3`
	`length = 3`
		ArrayIndexOutOfBoundsException is thrown	

6	**length < 0**
	`buffer.length = 5`
	`offset = 0`
	`length = -1`
		ArrayIndexOutOfBoundsException is thrown	

7	**Handler overflow**
	`buffer.length = 256`
	`offset = 0`
	`length = 256`
		ToolkitException.HANDLER_OVERFLOW is thrown	

8	**Initialise handler**		
	Select Command Details TLV		

	Successful call
	`buffer = FF FE … F8`
	`offset = 0`
	`length = 8`		

	Verify Current TLV: Call getValueLength()	Result is 03h	
9	**Clear the handler**		
	Successful call		

	buffer = FF FE … F8 offset = 0 length = 8		
	Call copy() method		
	Compare the arrays compareBuffer = FF FE … F8	Result of javacard.framework.Util.arrayCompare() is 00h	
10	**Successful call** buffer = 00 01 … 07 offset = 2 length = 6		
	Call copy() method		
	Compare the arrays compareBuffer = FF FE … F8 02 03 … 07	Result of javacard.framework.Util.arrayCompare() is 00h	
11	**Successful call** buffer = 11 22 … 88 offset = 2 length = 4		
	Call copy() method		
	Compare the arrays compareBuffer = FF FE … F8 02 03 … 07 33 44 55 66	Result of javacard.framework.Util.arrayCompare() is 00h	
12	**Clear the handler**		
	Successful call buffer = 00 01 … FC offset = 0 length = 253		
	Call getLength() method	result = 253	
	Call copy() method		
	Compare handler compareBuffer = 00 01 … FC	Result of javacard.framework.Util.arrayCompare() is 00h	

6.2.7.18.4 Test Coverage

CRR number	Test case number
N1	9, 10, 11, 12
N2	8
P1	1
P2	2, 3, 4, 5, 6
C1	7
C2	Does not apply for ProactiveHandler

6.2.7.19 Method appendTLV(byte tag, byte value)

Test Area Reference: API_2_PAH_APTLBB

6.2.7.19.1 Conformance requirement:

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

```
void appendTLV  (byte tag, byte value)
                throws ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (1-byte element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

No requirements

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.7.19.2 Test suite files

Test Script: API_2_PAH_APTLBB_1.scr

Test Applet: API_2_PAH_APTLBB_1.java

Load Script: API_2_PAH_APTLBB_1.ldr

Cleanup Script: API_2_PAH_APTLBB_1.clr

6.2.7.19.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Call appendArray()** length = 251		
	Handler Overflow: Call the appendTLV() method	ToolkitException.HANDLER_OVERFLOW is thrown	
2	**Initialise handler**		
	Select Command Details TLV		
	Call the appendTLV() method		
	Verify Current TLV: Call getValueLength()	Result is 03h	
3	**Clear the handler**		
	Successful call tag = 84h value = 00h		
	Call copy() method		
	Compare the arrays compareBuffer = 84 01 00	Result of javacard.framework.Util.arrayCompare() is 00h	
4	**Successful call** tag = 01h value = FEh		
	Call copy() method		
	Compare the arrays compareBuffer = 84 01 00 01 01 FE	Result of javacard.framework.Util.arrayCompare() is 00h	
5	**Clear the handler**		
	Call appendArray() length = 250 buffer = 00 81 F7 03 04 … F9		
	Successful call tag = 84h value = 00h		
	Call getLength() method	result = 253	
	Call copy() method		
	Compare the array compareBuffer = 00 81 F7 03 04 … F9 84 01 00	Result of javacard.framework.Util.arrayCompare() is 00h	

6.2.7.19.4 Test Coverage

CRR number	Test case number
N1	3, 4, 5
N2	2
C1	1
C2	Does not apply for Proactive Handler

6.2.7.20 Method appendTLV(byte tag, byte value1, byte value2)

Test Area Reference: API_2_PAH_APTLBBB

6.2.7.20.1 Conformance requirements:

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

```
void appendTLV  (byte tag,
                 byte value)
          throws ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (2-byte element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

No requirements

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.7.20.2 Test suite files

Test Script: API_2_PAH_APTLBBB_1.scr

Test Applet: API_2_PAH_APTLBBB_1.java

Load Script: API_2_PAH_APTLBBB_1.ldr

Cleanup Script: API_2_PAH_APTLBBB_1.clr

6.2.7.20.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Call the initDisplayText()** `length = 250`		
	Handler Overflow: Call the appendTLV() method	ToolkitException.HANDLER_OVERFLOW is thrown	
2	**Initialise handler**		
	Select Command Details TLV		
	Call the appendTLV() method		
	Verify Current TLV: Call getValueLength()	Result is 03h	
3	**Clear the handler**		

	Successful call
	`tag = 84h`
	`value1 = 00h`
	`value2 = 01h`		

	Call copy() method		
	Compare the arrays `compareBuffer = 84 02 00 01`	Result of javacard.framework.Util.arrayCompare() is 00h	

4	**Successful call**
	`tag = 01h`
	`value1 = FEh`
	`value2 = FDh`		

	Call copy() method		
	Compare the arrays `compareBuffer = 84 02 00 01 01 02 FE FD`	Result of javacard.framework.Util.arrayCompare() is 00h	
5	**Clear the handler**		

	Call appendArray()
	`length = 249`
	`buffer = 00 81 F6 03 04 … F8`		

	Successful call
	`tag = 84h`
	`value1 = 00h`
	`value2 = 01h`		

	Call getLength() method	result = 253	
	Call copy() method		
	Compare handler `compareBuffer = 00 81 F6 03 04 … F8 84 02 00 01`	Result of javacard.framework.Util.arrayCompare() is 00h	

6.2.7.20.4 Test Coverage

CRR number	Test case number
N1	3, 4, 5
N2	2
C1	1
C2	Does not apply for Proactive Handler

6.2.7.21 Method appendTLV(byte tag, byte[ ] value, short valueoffset, short valuelength)

Test Area Reference: API_2_PAH_APTLB_BSS

6.2.7.21.1 Conformance requirement:

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

```
void appendTLV  (byte tag,
```

```
            byte[] value,
            short valueoffset,
            short valuelength)
    throws  java.lang.NullPointerException,
            java.lang.ArrayIndexOutOfBoundsException,
            ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (byte-array element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

CRRP1: if value is null, a java.lang.NullPointerException is thrown

CRRP2: if valueoffset or valuelength or both would cause access outside the array bounds, or if length is negative, a java.lang.ArrayIndexOutOfBoundsException is thrown.

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

CRRC3: if valuelength is greater than 255, a ToolkitException is thrown with reason code BAD_INPUT_PARAMETER

6.2.7.21.2 Test suite files

Test Script: API_2_PAH_APTLB_BSS_1.scr

Test Applet: API_2_PAH_APTLB_BSS_1.java

Load Script: API_2_PAH_APTLB_BSS_1.ldr

Cleanup Script: API_2_PAH_APTLB_BSS_1.clr

6.2.7.21.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Null value**	NullPointerException is thrown	
2	**valueOffset > value.length** value.length = 5 valueOffset = 6 valueLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**valueOffset < 0** value.length = 5 valueOffset = -1 valueLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**valueLength > value.length** value.length = 5 valueOffset = 0 valueLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**valueOffset + valueLength > value.length** value.length = 5 valueOffset = 3 valueLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**valueLength < 0** value.length = 5 valueOffset = 0 valueLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Handler overflow** value.length = 254 valueOffset = 0	ToolkitException.HANDLER_OVERFLOW is thrown	

	valueLength = 254		
8	**Bad parameter** value.length = 256 valueOffset = 0 valueLength = 256	ToolkitException.BAD_INPUT_PARAMETER is thrown	
9	**Initialise handler**		
	Select Command Details TLV		
	Successful call tag = 04 value = FF FE … F8 valueOffset = 0 valueLength = 8		
	Verify Current TLV: Call getValueLength()	Result is 03h	
10	**Clear the handler**		
	Successful call tag = 04 value = FF FE … F8 valueOffset = 0 valueLength = 8		
	Call copy() method		
	Compare the arrays compareBuffer = 04 08 FF FE … F8	Result of javacard.framework.Util.arrayCompare() is 00h	
11	**Successful call** tag = 85h value = 00 01 … 07 valueOffset = 2 valueLength = 6		
	Call copy() method		
	Compare the arrays compareBuffer = 04 08 FF FE … F8 85 06 02 03 … 07	Result of javacard.framework.Util.arrayCompare() is 00h	
12	**Successful call** tag = 01 value = 11 22 … 88 valueOffset = 2 valueLength = 4		
	Call copy() method		
	Compare the arrays compareBuffer = 04 08 FF FE … F8 85 06 02 03 … 07 01 04 33 44 55 66	Result of javacard.framework.Util.arrayCompare() is 00h	
13	**Clear the handler**		
	Successful call tag = 04 value = 00 01 … 7F valueOffset = 0 valueLength = 80h		
	Call copy() method		
	Compare the arrays compareBuffer = 04 81 80 00 01…7F	Result of javacard.framework.Util.arrayCompare() is 00h	
14	Clear the handler		
	Successful call tag = 04 value = 00 01 … F9 valueOffset = 0 valueLength = 250		
	Call getLength() method	result = 253	
	Call copy() method		
	Compare handler compareBuffer = 04 81 FA 00 01…F9	Result of javacard.framework.Util.arrayCompare() is 00h	

6.2.7.21.4 Test Coverage

CRR number	Test case number
N1	10, 11, 12, 13, 14
N2	9
P1	1
P2	2, 3, 4, 5, 6
C1	7
C2	Does not apply for Proactive Handler
C3	8

6.2.7.22 Method appendTLV(byte tag, byte value1, byte[ ] value2, short value2offset, short value2length)

Test Area Reference: API_2_PAH_APTLBB_BSS

6.2.7.22.1 Conformance requirement:

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

```
void appendTLV  (byte tag,
                 byte value1
                 byte[] value2,
                 short value2offset,
                 short value2length)
         throws  java.lang.NullPointerException,
                 java.lang.ArrayIndexOutOfBoundsException,
                 ToolkitException
```

Normal execution

CRRN1: Appends a TLV element to the current TLV list (1 byte and a byte-array element).

CRRN2: A successful append does not modify the TLV selected.

Parameters error

CRRP1: if value2 is null, a java.lang.NullPointerException is thrown

CRRP2: if value2offset or value2length or both would cause access outside the array bounds, or if length is negative, a java.lang.ArrayIndexOutOfBoundsException is thrown.

Context errors

CRRC1: if the EditHandler buffer is too small to append the requested data, a ToolkitException is thrown with reason code HANDLER_OVERFLOW

CRRC2: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

CRRC3: if valuelength is greater than 255, a ToolkitException is thrown with reason code BAD_INPUT_PARAMETER

6.2.7.22.2 Test suite files

Test Script: API_2_PAH_APTLBB_BSS_1.scr

Test Applet: API_2_PAH_APTLBB_BSS_1.java

Load Script: API_2_PAH_APTLBB_BSS_1.ldr

Cleanup Script: API_2_PAH_APTLBB_BSS_1.clr

6.2.7.22.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Null value2**	NullPointerException is thrown	
2	**value2Offset > value2.length** value2.length = 5 value2Offset = 6 value2Length = 0	ArrayIndexOutOfBoundsException is thrown	
3	**value2Offset < 0** value2.length = 5 value2Offset = -1 value2Length = 1	ArrayIndexOutOfBoundsException is thrown	
4	**value2Length > value2.length** value2.length = 5 value2Offset = 0 value2Length = 6	ArrayIndexOutOfBoundsException is thrown	
5	**value2Offset + value2Length > value2.length** value2.length = 5 value2Offset = 3 value2Length = 3	ArrayIndexOutOfBoundsException is thrown	
6	**value2Length < 0** value2.length = 5 value2Offset = 0 value2Length = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Handler overflow** value2.length = 254 value2Offset = 0 value2Length = 254	ToolkitException.HANDLER_OVERFLOW is thrown	
8	**Bad parameter** value2.length = 256 value2Offset = 0 value2Length = 256	ToolkitException.BAD_INPUT_PARAMETER is thrown	
9	**Initialise handler**		
	Select Command Details TLV		
	Successful call tag = 04 value1 = 05 value2 = FF FE … F8 value2Offset = 0 value2Length = 8		
	Verify Current TLV: Call getValueLength()	Result is 03h	
10	**Clear the handler**		
	Successful call tag = 04 value1 = 05 value2 = FF FE … F8 value2Offset = 0 value2Length = 8		
	Call copy() method		
	Compare the arrays CompareBuffer = 04 09 05 FF FE … F8	Result of javacard.framework.Util.arrayCompare() is 00h	
11	**Successful call** tag = 85h value1 = 55h value2 = 00 01 … 07 value2Offset = 2 value2Length = 6		
	Call copy() method		
	Compare the arrays compareBuffer = 04 09 05 FF FE … F8 85 07 55 02 03 … 07	Result of javacard.framework.Util.arrayCompare() is 00h	
12	**Successful call** tag = 01 value1 = 44h value2 = 11 22 … 88 value2Offset = 2 value2Length = 4		
	Call copy() method		
	Compare the arrays CompareBuffer = 04 09 05 FF FE … F8	Result of javacard.framework.Util.arrayCompare() is 00h	

	85 07 55 02 03 … 07 01 05 44 33 44 55 66		
13	**Clear the handler**		
	Successful call tag = 04 value1 = 00 value2 = 01 … 7F value2Offset = 0 value2Length = 7Fh		
	Call copy() method		
	Compare the arrays compareBuffer = 04 81 80 00 01…7F	Result of javacard.framework.Util.arrayCompare() is 00h	
14	**Clear the handler**		
	Successful call tag = 04 value1 = 00 value2 = 01 … F9 value2Offset = 0 value2Length = 249		
	Call getLength() method	result = 253	
	Call copy() method		
	Compare handler compareBuffer = 04 81 FA 00 01…F9	Result of javacard.framework.Util.arrayCompare() is 00h	

6.2.7.22.4 Test Coverage

CRR number	Test case number
N1	10, 11, 12, 13, 14
N2	9
P1	1
P2	2, 3, 4, 5, 6
C1	7
C2	Does not apply for Proactive Handler
C3	8

6.2.7.23 Method clear

Test Area Reference: API_2_PAH_CLER

6.2.7.23.1 Conformance requirement:

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

```
void clear()
        throws ToolkitException EditHandler
```

Normal execution

CRRN1: Clears the TLV list of an EditHandler

CRRN2: Resets the current TLV selected.

Parameters error

No requirements

Context errors

CRRC1: if the EditHandler buffer is busy, a ToolkitException is thrown with reason code HANDLER_NOT_AVAILABLE

6.2.7.23.2 Test suite files

Test Script: API_2_PAH_CLER_1.scr

Test Applet: API_2_PAH_CLER_1.java

Load Script: API_2_PAH_CLER_1.ldr

Cleanup Script: API_2_PAH_CLER_1.clr

6.2.7.23.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Initialise the handler** Select Command Details TLV Call the getLength() method	Result of getLength() is not null	
	Clear the handler Call the getLength() method	Result of getLength() is 0	
2	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT is thrown	

6.2.7.23.4 Test Coverage

CRR number	Test case number
N1	1
N2	2
C1	Does not apply for Proactive Handler

6.2.8 Class ProactiveResponseHandler

6.2.8.1 Method copyAdditionalInformation

Test Area Reference: API_2_PRH_CPAI_BSS

6.2.8.1.1 Conformance requirement

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

```
public short copyAdditionalInformation(byte[] dstBuffer,
                                       short dstOffset,
                                       short dstLength)
                                throws java.lang.NullPointerException,
                                       java.lang.ArrayIndexOutOfBoundsException,
                                       ToolkitException
```

Normal execution

CRRN1: The copyAdditionalInformation() method shall copy a part of the additional information field from Result TLV element in dstBuffer, using dstOffset and dstLength.

CRRN2: dstBuffer shall only be modified from dstOffset to (dstOffset + dstLength – 1) (included).

CRRN3: The method returns (dstOffset + dstLength).

CRRN4: If a Result TLV element is available, it becomes the TLV selected after a call to the method.

CRRN5: The method shall copy from the first Result TLV.

Parameter errors

CRRP1: A NullPointerException shall be thrown if dstBuffer is null.

CRRP2: An ArrayIndexOutOfBoundsException shall be thrown if dstOffset or dstLength or both would cause access outside array bounds.

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Result TLV element.

CRRC2: A ToolkitException.OUT_OF_TLV_BOUNDARIES shall be thrown if dstLength is greater than the value field of the available TLV.

6.2.8.1.2 Test Suite files

Test Script: API_2_PRH_CPAI_BSS_1.scr

Test Applet: API_2_PRH_CPAI_BSS _1.java

Load Script: API_2_PRH_CPAI_BSS _1.ldr

Cleanup Script: API_2_PRH_CPAI_BSS _1.clr

6.2.8.1.3 Test procedure

Id	Description	API Expectation	APDU Expectation

1	**Build and send a DISPLAY TEXT command**
	`qualifier = 0`
	`dcs = 4`
	`buffer = "Text"`
			DISPLAY TEXT Proactive command

	Terminal Response with 11 additional `bytes` `Result TLV = 03 0C 01 01 23 45 67 89 AB CD EF 01 23 45`		
	NULL as parameter to dstBuffer `dstBuffer = NULL`	NullPointerException is thrown	

2	**dstOffset > dstBuffer.length**
	`dstBuffer.length = 10`
	`dstOffset = 11`
	`dstLength = 0`
		ArrayIndexOutOfBoundsException is thrown	

3	**dstOffset < 0**
	`dstBuffer.length = 10`
	`dstOffset = -1`
	`dstLength = 1`
		ArrayIndexOutOfBoundsException is thrown	

4	**dstLength > dstBuffer.length**
	`dstBuffer.length = 10`
	`dstOffset = 0`
	`dstLength = 11`
		ArrayIndexOutOfBoundsException is thrown	

5	**dstOffset + dstLength > dstBuffer.length**
	`dstBuffer.length = 10`
	`dstOffset = 6`
	`dstLength = 5`
		ArrayIndexOutOfBoundsException is thrown	

6	**dstLength < 0**
	`dstBuffer.length = 10`
	`dstOffset = 6`
	`dstLength = -1`
		ArrayIndexOutOfBoundsException is thrown	

7	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 5 additional bytes `Result TLV = 03 06 01 01 23 45 67 89`		

	Successfull call, dstBuffer is the whole buffer dstBuffer.length = 5 dstOffset = 0 dstLength = 5	result of copyAdditionalInformation() is 05h.	
8	**Compare dstBuffer using arrayCompare()** src = {01, 23, 45, 67, 89} srcOffset = 00 dest = dstBuffer destOffset = 0 length = 5	result of arrayCompare() is 00h.	
9	**Call the getValueLength() method**	Result is 06h.	
10	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 6 additional bytes Result TLV = 03 07 01 AB CD EF FE DC BA		
	Successfull call, dstBuffer is part of a buffer dstBuffer.length = 7 dstOffset = 2 dstLength = 5	result of copyAdditionalInformation() is 07h.	
11	**Compare dstBuffer using arrayCompare()** src = {AB, CD, EF, FE, DC} srcOffset = 00 dest = dstBuffer destOffset = 2 length = 5	result of arrayCompare() is 00h.	
12	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 7 additional bytes Result TLV = 03 08 01 FE DC BA 98 76 54 32		
	Successfull call, dstBuffer is part of a buffer dstBuffer.length = 7 dstOffset = 0 dstLength = 5	result of copyAdditionalInformation() is 05h.	
13	**Compare dstBuffer using arrayCompare()** src = {FE, DC, BA, 98, 76} srcOffset = 00 dest = dstBuffer destOffset = 0 length = 5	result of arrayCompare() is 00h.	
14	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 8 additional bytes Result TLV = 03 09 01 00 11 22 33 44 55 66 77		
	Successfull call, dstBuffer is the whole buffer dstBuffer.length = 9 dstOffset = 2 dstLength = 5	result of copyAdditionalInformation() is 07h.	
15	**Compare dstBuffer using arrayCompare()** src = {00, 11, 22, 33, 44} srcOffset = 00 dest = dstBuffer destOffset = 2 length = 5	result of arrayCompare() is 00h.	
16	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with F2h additional bytes Result TLV = 03 81 F3 01 00 01 02 03…		
	Successfull call to the method dstBuffer.length = F2h dstOffset = 0 dstLength = F2h	result of copyAdditionalInformation() is F2h.	
17	**Compare dstBuffer using arrayCompare()**	result of arrayCompare() is 00h.	

	src = {00, 01, 02, 03, 04…} srcOffset = 00 dest = dstBuffer destOffset = 0 length = F2h		
18	**Call the getValueLength() method**	Result is F3h.	
19	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 5 additional bytes Result TLV = 03 06 01 00 11 22 33 44		
	dstLength > data available dstBuffer.length = 6 dstOffset = 0 dstLength = 6	OUT_OF_TLV_BOUNDARIES ToolkitException is thrown	
20	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 5 additional bytes Result TLV = 03 06 01 00 11 22 33 44		
	Initialise dstBuffer dstBuffer = {00h, 01h, 02h, 03h…}		
	Call the copyAdditionalInformation() method dstBuffer.length = 20 dstOffset = 5 dstLength = 5		
	Compare dstBuffer using arrayCompare() src = { 00h, 01h, 02h, 03h, 04h, 00h, 11h, 22h, 33h, 44h, 0Ah, 0Bh, 0Ch, 0Dh, 0Eh, 0Fh, 10h, 11h, 12h, 13h} srcOffset = 0 dest = dstBuffer destOffset = 0 length = 20	result of arrayCompare() is 00h	
21	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 2 Result TLV elements 1st Result TLV = 03 06 01 01 23 45 67 89 2nd Result TLV = 03 01 00		
	Successfull call to copyAdditionalInformation() dstBuffer.length = 5 dstOffset = 0 dstLength = 5	result of copyAdditionalInformation() is 05h.	
22	**Compare dstBuffer using arrayCompare()** src = {01, 23, 45, 67, 89} srcOffset = 00 dest = dstBuffer destOffset = 0 length = 5	result of arrayCompare() is 00h.	
23	**Call the getValueLength() method**	Result is 06h.	
24	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without Result Simple TLV	ToolkitException.UNAVAILABLE_ELEMENT is thrown by send()	
	ProactiveResponseHandler, getTheHandler call copyAdditionalInformation()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	

6.2.8.1.4 Test Coverage

CRR number	Test case number
N1	8, 11, 13, 15, 17, 20, 22
N2	20
N3	7, 10, 12, 14, 16, 21
N4	9, 18, 23
N5	21, 22, 23
P1	1
P2	2, 3, 4, 5, 6
C1	24
C2	19

6.2.8.2 Method copyTextString

Test Area Reference: API_2_PRH_CPTS_BS

6.2.8.2.1 Conformance requirement

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

```
public short copyTextString(byte[] dstBuffer,
                            short dstOffset)
                     throws java.lang.NullPointerException,
                            java.lang.ArrayIndexOutOfBoundsException,
                            ToolkitException
```

Normal execution

CRRN1: The copyTextString() method copies the text string value from the first Text String TLV element, using dstBuffer and dstOffset.

CRRN2: If a Text String TLV element is available, it becomes the TLV selected.

CRRN3: The method returns (dstOffset + length of copied value).

Parameter errors

CRRP1: A NullPointerException shall be thrown if dstBuffer is null.

CRRP2: A ArrayIndexOutOfBoundsException shall be thrown if dstOffset or dstOffset + (length of the TextString to be copied, without the Data Coding Scheme included), as specified for the returned value, would cause access outside array bounds.

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Text String TLV element.

6.2.8.2.2 Test Suite files

Test Script: API_2_PRH_CPTS_BS_1.scr

Test Applet: API_2_PRH_CPTS_BS_1.java

Load Script: API_2_PRH_CPTS_BS_1.ldr

Cleanup Script: API_2_PRH_CPTS_BS_1.clr

6.2.8.2.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a GET INPUT command** qualifier = 00h dcs = 04h buffer = 'Text' minRespLength = 00h maxRespLength = FFh		GET INPUT Proactive command
	Terminal Response Text String TLV = 0D 02 04 41		
	ProactiveResponseHandler.getTheHandler() ; call the copyTextString() method with a null dstBuffer dstBuffer = null dstOffset = 0	NullPointerException is thrown	
2	**Build and send a GET INPUT command**		GET INPUT Proactive command Proactive
	Terminal Response Text String TLV = 0D 04 04 "ABC"		
	dstOffset + text length > dstBuffer.length dstBuffer.length = 04h dstOffset = 02h	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 04h dstOffset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**Build and send a DISPLAY TEXT command** qualifier = 00h dcs = 04h buffer = 'Text'		DISPLAY TEXT Proactive command
	Terminal Response without Text String TLV		
	ProactiveResponseHandler.getTheHandler() ; call the copyTextString() method	UNAVAILABLE_ELEMENT ToolkitException is thrown	
5	**Build and send a GET INPUT command**		GET INPUT Proactive command Proactive
	Terminal Response with a null Text String TLV Text String TLV = 0D 00		
	Initialise dstBuffer dstBuffer = {F00h, F01h, F02h, F03h}		
	Call the copyTextString() method dstBuffer.length = 04h dstOffset = 02h	Result of copyTextString() is 02h	
6	**Compare dstBuffer using arrayCompare()** src = {0F0h, 0F1h, 0F2h, 0F3h} srcOffset = 00h dest = dstBuffer destOffset = 00h length = 04h	Result of arrayCompare() is 00h	
7	**Build and send a GET INPUT command**		GET INPUT Proactive command Proactive
	Terminal Response with text length = 01h Text String TLV = 0D 02 04 41		
	Initialise dstBuffer dstBuffer = {00h, 01h, 02h, 03h}		
	Call the copyTextString() method dstBuffer.length = 04h dstOffset = 00h	Result of copyTextString() is 01h	

8	**Compare dstBuffer using arrayCompare()** src = {41h, 01h, 02h, 03h} srcOffset = 00h dest = dstBuffer destOffset = 00h length = 04h	Result of arrayCompare() is 00h	
9	**Build and send a GET INPUT command**		GET INPUT Proactive command Proactive
	Terminal Response with text length = 02h Text String TLV = 0D 03 04 42 43		
	Initialise dstBuffer dstBuffer = {00h, 01h, 02h, 03h}		
	Call the copyTextString() method dstBuffer.length = 04h dstOffset = 02h	Result of copyTextString() is 04h	
10	**Compare dstBuffer using arrayCompare()** src = {00h, 01h, 42h, 43h} srcOffset = 00h dest = dstBuffer destOffset = 00h length = 04h	Result of arrayCompare() is 00h	
11	**Call the getValueLength() method**	Result is 03h	
12	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 7Eh Text String TLV = 0D 7F 04 01 02 … 7E		
	Initialise dstBuffer dstBuffer = {00h, 00h … 00h}		
	Call the copyTextString() method dstBuffer.length = 7Eh dstOffset = 00h	Result of copyTextString() is 7Eh	
13	**Compare dstBuffer using arrayCompare()** src = {01h, …, 7Eh} srcOffset = 00h dest = dstBuffer destOffset = 00h length = 7Eh	Result of arrayCompare() is 00h	
14	**Call the getValueLength() method**	Result is 7Fh	
15	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 7Fh Text String TLV = 0D 81 80 04 01 02 …7F		
	Initialise dstBuffer dstBuffer = {00h, 01h … FFh}		
	Call the copyTextString() method dstBuffer.length = FFh dstOffset = 10h	Result of copyTextString() is 8Fh	
16	**Compare dstBuffer using arrayCompare()** src = {00h, 01h,… 0Fh, 01h, …7Fh, 8Fh, … FFh} srcOffset = 00h dest = dstBuffer destOffset = 00h length = FFh	Result of arrayCompare() is 00h	
17	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = EFh Text String TLV = 0D 81 F0 04 01 02 … EF		
	Initialise dstBuffer		

	dstBuffer = {00h, 00h … 00h}		
	Call the copyTextString() method dstBuffer.length = FFh dstOffset = 00h	Result of copyTextString() is EFh	
18	**Compare dstBuffer using arrayCompare()** src = {01h, …EFh, 00h … 00h } srcOffset = 00h dest = dstBuffer destOffset = 00h length = FFh	Result of arrayCompare() is 00h	
19	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with two Text String TLV 1st Text String TLV = 0D 03 04 42 43 2nd Text String TLV = 0D 02 04 44		
	Initialise dstBuffer dstBuffer = {00h, 01h, 02h, 03h}		
	Call the copyTextString() method dstBuffer.length = 04h dstOffset = 02h	Result of copyTextString() is 04h	
20	**Compare dstBuffer using arrayCompare()** src = {00h, 01h, 42h, 43h} srcOffset = 00h dest = dstBuffer destOffset = 00h length = 04h	Result of arrayCompare() is 00h	
21	**Call the getValueLength() method**	Result is 03h	

6.2.8.2.4 Test Coverage

CRR number	Test case number
N1	6, 8, 10, 13, 16, 18, 20
N2	11, 14, 21
N3	5, 7, 9, 12, 15, 17, 19
P1	1
P2	2, 3
C1	4

6.2.8.3 Method getAdditionalInformationLength

Test Area Reference: API_2_PRH_GTIL

6.2.8.3.1 Conformance requirement

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

```
public short getAdditionalInformationLength()
                    throws ToolkitException
```

Normal execution

CRRN1: This method returns the length of the additional information field from the first Result TLV in the ProactiveResponseHandler.

CRRN2: After a successful execution of the method, the Result TLV becomes the selected TLV of the ProactiveResponseHandler.

Parameter errors

No requirements

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Result TLV element.

6.2.8.3.2 Test Suite files

Test Script: API_2_PRH_GTIL_1.scr

Test Applet: API_2_PRH_GTIL_1.java

Load Script: API_2_PRH_GTIL_1.ldr

Cleanup Script: API_2_PRH_GTIL_1.clr

6.2.8.3.3 Test procedure

Id	Description	API Expectation	APDU Expectation

1	**Build and send a DISPLAY TEXT command**
	`qualifier = 00h`
	`dcs = 04h`
	`buffer = 'Text'`
			DISPLAY TEXT Proactive command

	Terminal Response without additional information		
	ProactiveResponseHandler.getTheHandler() **; call the getAdditionalInformationLength() method**	Result is 00h	
2	**Call the getValueLength() method**	Result is 01h	
3	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT ProactiveProactive command
	Terminal Response with 1 additional byte `Result TLV = 03 02 02 55`		
	ProactiveResponseHandler.getTheHandler() ; call the getAdditionalInformationLength() method	Result is 01h	
4	**Call the getValueLength() method**	Result is 02h	
5	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT ProactiveProactive command
	Terminal Response with 7Eh additional bytes `Result TLV = 03 7F 02 55 55 55 …`		
	ProactiveResponseHandler.getTheHandler() ; call the getAdditionalInformationLength() method	Result is 7Eh	
6	**Call the getValueLength() method**	Result is 7Fh	
7	Build and send a DISPLAY TEXT command		DISPLAY TEXT Proactive command
	Terminal Response with 7Fh additional `bytes` `Result TLV = 03 81 80 02 55 55 55 …`		
	ProactiveResponseHandler.getTheHandler() ; call the getAdditionalInformationLength() method	Result is 7Fh	
8	**Call the getValueLength() method**	Result is 80h	
9	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 80h additional bytes **Result TLV = 03 81 81 02 55 55 55 …**		
	ProactiveResponseHandler.getTheHandler() ;	Result is 80h	

	call the getAdditionalInformationLength() method		
10	**Call the getValueLength() method**	Result is 81h	
11	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with F2h additional bytes `Result TLV = 03 81 F3 02 55 55 55 …`		
	ProactiveResponseHandler.getTheHandler() ; call the getAdditionalInformationLength() method	Result is F2h	
12	**Call the getValueLength() method**	Result is F3h	
13	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command

	Terminal Response with 2 Result TLV
	
	`1st Result TLV = 03 03 02 01 23`
	`2nd Result TLV = 03 01 00`		

	ProactiveResponseHandler.getTheHandler() ; call the getAdditionalInformationLength() method	Result is 02h	
14	**Call the getValueLength() method**	Result is 03h	
15	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without Result Simple TLV	ToolkitException.UNAVAILABLE_ELEMENT is thrown by send()	
	Get ProactiveResponseHandler		
	Call the getAdditionalInformationLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown by getAdditionalInformationLength ()	

6.2.8.3.4 Test Coverage

CRR number	Test case number
N1	1, 3, 5, 7, 9, 11, 13
N2	2, 4, 6, 8, 10, 12, 14
C1	15

6.2.8.4 Method getGeneralResult

Test Area Reference: API_2_PRH_GTGR

6.2.8.4.1 Conformance requirement

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

```
public byte getGeneralResult()
                    throws ToolkitException
```

Normal execution

CRRN1: This method returns the general result of a proactive command.

CRRN2: After a successful execution of the method, the Result TLV becomes the selected TLV of the ProactiveResponseHandler.

Parameter errors

No requirements

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Result TLV element.

CRRC2: A ToolkitException.OUT_OF_TLV_BOUNDARIES shall be thrown if the general result byte is missing in the Result Simple TLV.

6.2.8.4.2 Test Suite files

Test Script: API_2_PRH_GTGR_1.scr

Test Applet: API_2_PRH_GTGR_1.java

Load Script: API_2_PRH_GTGR_1.ldr

Cleanup Script: API_2_PRH_GTGR_1.clr

6.2.8.4.3 Test procedure

Id	Description	API Expectation	APDU Expectation

1	**Build and send a DISPLAY TEXT command**
	`qualifier = 00h`
	`dcs = 04h`
	`buffer = 'Text'`
			DISPLAY TEXT Proactive command

	Terminal Response with General Result = 00 (command performed successfully)		
	ProactiveResponseHandler.getTheHandler() Call the getGeneralResult() method	Result of getGeneralResult() is 00h	
2	**Call the getValueLength() method**	Result is 01h	
3	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with General Result = 01, without Additional information on result (command performed with partial comprehension)		
	ProactiveResponseHandler.getTheHandler() Call the getGeneralResult() method	Result of getGeneralResult() is 01h	
4	**Call the getValueLength() method**	Result is 01h	
5	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with General Result = 01, with Additional information on result `Result TLV = 03 02 01 55 (command performed with partial comprehension)`		
	ProactiveResponseHandler.getTheHandler() Call the getGeneralResult() method	Result of getGeneralResult() is 01h	
6	**Call the getValueLength() method**	Result is 02h	
7	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with General Result = `02` `Result TLV = 03 04 02 65 43 21 (Missing information)`		
	ProactiveResponseHandler.getTheHandler() Call the getGeneralResult() method	Result of getGeneralResult() is 02h	
8	**Call the getValueLength() method**	Result is 04h	
9	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive

			command
	Terminal Response with 7Fh additional bytes Result TLV = 03 81 80 02 55 55 55 …		
	ProactiveResponseHandler.getTheHandler() ; call the getGeneralResult() method	Result is 02h	
10	**Call the getValueLength() method**	Result is 80h	
11	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 2 Result TLV 1st Result TLV = 03 02 02 12 2nd Result TLV = 03 03 03 34 56		
	ProactiveResponseHandler.getTheHandler() ; call the getGeneralResult() method	Result is 02h	
12	**Call the getValueLength() method**	Result is 02h	
13	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without Result Simple TLV	ToolkitException.UNAVAILABLE_ELEMENT is thrown by send()	
	ProactiveResponseHandler.getTheHandler() ; call the getGeneralResult() method	UNAVAILABLE_ELEMENT ToolkitException is thrown	
14	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without General Result Byte in Result Simple TLV	ToolkitException.UNAVAILABLE_ELEMENT is thrown by send()	
	ProactiveResponseHandler.getTheHandler() ; call the getGeneralResult() method Result TLV = 03 00	OUT_OF_TLV_BOUNDARIES ToolkitException is thrown	

6.2.8.4.4 Test Coverage

CRR number	Test case number
N1	1, 3, 5, 7, 9, 11
N2	2, 4, 6, 8, 10, 12
C1	13
C2	14

6.2.8.5 Method getItemIdentifier

Test Area Reference: API_2_PRH_GTII

6.2.8.5.1 Conformance requirement

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

```
public byte getItemIdentifier()
                    throws ToolkitException
```

Normal execution

CRRN1: The method returns the item identifier byte value from the first Item Identifier TLV element.

CRRN2: If an Item Identifier TLV element is available, it becomes the TLV selected.

Parameter errors

No requirements

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Item Identifier TLV element.

CRRC2: A ToolkitException.OUT_OF_TLV_BOUNDARIES shall be thrown if the item identifier byte is missing in the Item Identifier Simple TLV.

6.2.8.5.2 Test Suite files

Test Script: API_2_PRH_GTII_1.scr

Test Applet: API_2_PRH_GTII_1.java

Load Script: API_2_PRH_GTII_1.ldr

Cleanup Script: API_2_PRH_GTII_1.clr

6.2.8.5.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response (no Item Identifier TLV available)		
	Call to getItemIdentifier() with unavailable Item Identifier TLV	UNAVAILABLE_ELEMENT ToolkitException is thrown	
2	**Build and send a SELECT ITEM command with 2 items (ID=01, 02)**		SELECT ITEM Proactive command
	Terminal Response with Item 1 selected `Item Identifier TLV = 10 01 01`		
	Call the getItemIdentifier() method	Result is 01h	
3	**Call the getValueByte() method** `valueOffset = 00h`	Result is 01h	
4	**Build and send a SELECT ITEM command with 3 items (ID=03, 05, 07)**		SELECT ITEM Proactive command
	Terminal Response with Item 5 selected `Item Identifier TLV = 10 01 05`		
	Call the getItemIdentifier() method	Result is 05h	
5	**Call the getValueByte() method** `valueOffset = 00h`	Result is 05h	
6	**Build and send a SELECT ITEM command with 3 items (ID=FDh, FEh, FFh)**		SELECT ITEM Proactive command
	Terminal Response with Item FFh selected `Item Identifier TLV = 10 01 FF`		
	Call the getItemIdentifier() method	Result is FFh	
7	**Call the getValueByte() method** `valueOffset = 00h`	Result is FFh	
8	**Build and send a SELECT ITEM command with 3 items (ID=FDh, FEh, FFh)**		SELECT ITEM Proactive command

	Terminal Response with 2 Item Identifier TLV 1st Item Identifier TLV = 10 01 FFh 2nd Item Identifier TLV = 10 01 FEh		
	Call the getItemIdentifier() method	Result is FFh	
9	**Call the getValueByte() method** valueOffset = 00h	Result is FFh	
10	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without item identifier in the Item Identifier Simple TLV Item Identifier TLV = 10 00		
	Call to getItemIdentifier()	OUT_OF_TLV_BOUNDARIES ToolkitException is thrown	

6.2.8.5.4 Test Coverage

CRR number	Test case number
N1	2, 4, 6, 8
N2	3, 5, 7, 9
C1	1
C2	10

6.2.8.6 Method getTextStringCodingScheme

Test Area Reference: API_2_PRH_GTCS

6.2.8.6.1 Conformance requirement

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

```
public byte getTextStringCodingScheme()
                              throws ToolkitException
```

Normal execution

CRRN1: This method returns the data coding scheme from the first Text String TLV element.

CRRN2: If a Text String TLV element is available, it becomes the TLV selected.

Parameter errors

No requirements

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Text String TLV element.

CRRC2: A ToolkitException.OUT_OF_TLV_BOUNDARIES shall be thrown if the Text String TLV is present with a length of 0.

6.2.8.6.2 Test Suite files

Test Script: API_2_PRH_GTCS_1.scr

Test Applet: API_2_PRH_GTCS_1.java

Load Script: API_2_PRH_GTCS_1.ldr

Cleanup Script: API_2_PRH_GTCS_1.clr

6.2.8.6.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response (no Text String TLV element available)		
	Call to getTextStringCodingScheme() with unavailable Text String TLV	UNAVAILABLE_ELEMENT ToolkitException is thrown	
2	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with a null Text String TLV `Text String TLV = 0D 00`		
	Call the getTextStringCodingScheme() method	OUT_OF_TLV_BOUNDARIES ToolkitException is thrown	
3	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 01h, `DCS = 04h` `Text String TLV = 0D 02 04 "A"`		
	Call the getTextStringCodingScheme() `method`	Result is 04h	
4	**Call the getValueLength() method**	Result is 02h	
5	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 02h, DCS = 00h `Text String TLV = 0D 03 00 "BB"`		
	Call the getTextStringCodingScheme() method	Result is 00h	
6	**Call the getValueLength() method**	Result is 03h	
7	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 7Eh, DCS = 08h `Text String TLV = 0D 7F 08 01 02 … 7E`		
	Call the getTextStringCodingScheme() method	Result is 08h	
8	**Call the getValueLength() method**	Result is 7Fh	
9	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 7Fh, DCS = 04h `Text String TLV = 0D 81 80 04 01 02 … 7F`		
	Call the getTextStringCodingScheme() method	Result is 04h	
10	**Call the getValueLength() method**	Result is 80h	

11	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = EFh, DCS = 08h `Text String TLV = 0D 81 F0 08 01 02 … EE EF`		
	Call the getTextStringCodingScheme() method	Result is 08h	
12	**Call the getValueLength() method**	Result is F0h	
13	**Build and send a GET INPUT command**		GET INPUT Proactive command

	Terminal Response with 2 Text String TLV
	
	`1st Text String TLV = 0D 02 04 41`
	`2nd Text String TLV = 0D 03 08 42 43`		

	Call the getTextStringCodingScheme() method	Result is 04h	
14	**Call the getValueLength() method**	Result is 02h	

6.2.8.6.4 Test Coverage

CRR number	Test case number
N1	3, 5, 7, 9, 11, 13
N2	4, 6, 8, 10, 12, 14
C1	1
C2	2

6.2.8.7 Method GetTextStringLength

Test Area Reference: API_2_PRH_GTTL

6.2.8.7.1 Conformance requirement

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

```
public short getTextStringLength()
                        throws ToolkitException
```

Normal execution

CRRN1: The getTextStringLength() method returns the text string length value from the first Text String TLV element.

CRRN2: If a Text String TLV element is available, it becomes the TLV selected.

Parameter errors

No requirements

Context errors

CRRC1: A ToolkitException.UNAVAILABLE_ELEMENT shall be thrown in case of unavailable Text String TLV element.

6.2.8.7.2 Test Suite files

Test Script: API_2_PRH_GTTL_1.scr

Test Applet: API_2_PRH_GTTL_1.java

Load Script: API_2_PRH_GTTL_1.ldr

Cleanup Script: API_2_PRH_GTTL_1.clr

6.2.8.7.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response (no Text String TLV element available)		
	Call to getTextStringLength() with unavailable Text String TLV	UNAVAILABLE_ELEMENT ToolkitException is thrown	
2	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with a null Text String TLV Text String TLV = 0D 00		
	Call the getTextStringLength() method	Result is 00h	
3	**Call the getValueLength() method**	Result is 00h	
4	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 01h, DCS = 04h Text String TLV = 0D 02 04 "A"		
	Call the getTextStringLength() method	Result is 01h	
5	**Call the getValueLength() method**	Result is 02h	
6	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 02h, DCS = 00h Text String TLV = 0D 03 00 "BB"		
	Call the getTextStringLength() method	Result is 02h	
7	**Call the getValueLength() method**	Result is 03h	
8	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 7Eh, DCS = 08h Text String TLV = 0D 7F 08 01 02 … 7E		
	Call the getTextStringLength() method	Result is 7Eh	
9	**Call the getValueLength() method**	Result is 7Fh	
10	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = 7Fh, DCS = 04h Text String TLV = 0D 81 80 04 01 02 … 7F		
	Call the getTextStringLength() method	Result is 7Fh	

11	**Call the getValueLength() method**	Result is 80h	
12	**Build and send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response with text length = EFh, DCS = 04h `Text String TLV = 0D 81 F0 04 01 02 … EE EF`		
	Call the getTextStringLength() method	Result is EFh	
13	**Call the getValueLength() method**	Result is F0h	
14	**Build and send a GET INPUT command**		GET INPUT Proactive command

	Terminal Response with 2 Text String TLV
	`1st Text String TLV = 0D 02 04 41`
	`2nd Text String TLV = 0D 03 08 42 43`		

	Call the getTextStringLength() method	Result is 01h	
15	**Call the getValueLength() method**	Result is 02h	

6.2.8.7.4 Test Coverage

CRR number	Test case number
1	2, 4, 6, 8, 10, 12, 14
2	3, 5, 7, 9, 11, 13, 15
3	1

6.2.8.8 Method getTheHandler

Test Area Reference: API_2_PRH_GTHD

6.2.8.8.1 Conformance requirement

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

```
public static ProactiveResponseHandler getTheHandler()
                        throws ToolkitException
```

Normal execution

CRRN1: The method shall return the single system instance of the ProactiveHandler class.

CRRN2: The EnvelopeHandler is a Temporary JCRE Entry Point Object

Parameter errors

No requirements

Context errors

CRRC1: The method shall throw ToolkitException.HANDLER_NOT_AVAILABLE if the handler is busy.

6.2.8.8.2 Test Suite files

Test Script: API_2_PRH_GTHD_1.scr

Test Applet: API_2_PRH_GTHD_1.java

Load Script: API_2_PRH_GTHD_1.ldr

Cleanup Script: API_2_PRH_GTHD_1.clr

6.2.8.8.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a Proactive Command**		Proactive Command
	Terminal Response		
	getTheHandler() twice	The returned objects shall be the same	
2	**getTheHandler()**	The reference shall be a ProactiveResponseHandler	
3	**getTheHandler()**	The reference shall not be null	

6.2.8.8.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	To be checked in Framework tests and insert here cross reference
C1	To be checked in Framework tests and insert here cross reference

6.2.8.9 Method getLength

Test Area Reference API_2_PRH_GLEN

6.2.8.9.1 Conformance requirement

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

```
public short getLength()
                  throws ToolkitException
```

Normal execution

CRRN1: returns the length in bytes of the TLV list.

Parameter errors

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException.HANDLER_NOT_AVAILABLE.

6.2.8.9.2 Test Suite files

Test Script: API_2_PRH_GLEN_1.scr

Test Applet: API_2_PRH_GLEN_1.java

Load Script: API_2_PRH_GLEN_1.ldr

Cleanup Script: API_2_PRH_GLEN_1.clr

6.2.8.9.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Build and send a Display Text command**		DISPLAY TEXT Proactive command
	Terminal Response without additional information in General Result TLV		
	ProactiveResponseHandler.getTheHandler() `getLength()`	Result of getLength() is 12	
2	**Build and send a Display Text command**		DISPLAY TEXT Proactive command
	Terminal Response with F2h additional information in General Result TLV		
	ProactiveResponseHandler.getTheHandler() getLength()	Result of getLength() is FFh	

6.2.8.9.4 Test Coverage

CRR number	Test case number
N1	1, 2
C1	Does not apply for Proactive Response Handler

6.2.8.10 Method copy

Test Area Reference API_2_PRH_COPY_BSS

6.2.8.10.1 Conformance requirement

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

```
public short copy(byte[] dstBuffer,
                  short dstOffset,
                  short dstLength)
         throws java.lang.NullPointerException,
                java.lang.ArrayIndexOutOfBoundsException,
                ToolkitException
```

Normal execution

CRRN1: copies the simple TLV list contained in the handler to the destination byte array.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null a NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative, an ArrayIndexOutOfBoundsException is thrown.

CRRP3: if dstLength is grater than the length of the simple TLV List, an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException. OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.8.10.2 Test Suite files

Test Script: API_2_PRH_COPY_BSS_1.scr

Test Applet: API_2_PRH_COPY_BSS_1.java

Load Script: API_2_PRH_COPY_BSS_1.ldr

Cleanup Script: API_2_PRH_COPY_BSS_1.clr

6.2.8.10.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response without Additional Information in General Result TLV: 81 03 01 21 00 02 02 82 81 03 01 00		
	ProactiveResponseHandler.getTheHandler() copy() with NULL as parameter to dstBuffer	NullPointerException is thrown	
2	**dstOffset > dstBuffer.length** dstBuffer.length = 5 dstOffset = 6 dstLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**dstLength > length of the simple TLV list** dstBuffer.length = 13 dstOffset = 0 dstLength = 13	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**Successful call, dstBuffer is the whole buffer** dstBuffer.length = 12 dstOffset = 0 dstLength = 12	Result of copy() is 12	
9	**Compare the buffer with buffer:** 81 03 01 21 00 02 02 82 81 03 01 00	Result of arrayCompare() is 0	
10	**Successful call, dstBuffer is part of a buffer** dstBuffer.length = 20 dstOffset = 3 dstLength = 12	Result of copy() is 15	
11	**Compare the whole buffer** Reference = 00 01 02 81 03 01 21 00 02 02 82 81 03 01 00 0F 10 11 12 13	Result of arrayCompare() is 0	
12	**Initialize dstBuffer** dstBuffer = 00h 01h 02h … 13h		
	Successful call, dstBuffer is part of a buffer dstBuffer.length = 20 dstOffset = 3 dstLength = 9	Result of copy() is 12	
13	**Compare the whole buffer** Reference = 00 01 02 81 03 01 21 00 02 02 82 81 0C 0D 0E 0F 10 11 12 13	Result of arrayCompare() is 0	

6.2.8.10.4 Test Coverage

CRR number	Test case number
N1	9, 11, 13
N2	8, 10, 12
P1	1
P2	2, 3, 4, 5, 6
P3	7
C1	Does not apply for Proactive Response Handler

6.2.8.11 Method findTLV

Test Area Reference API_2_PRH_FINDBB

6.2.8.11.1 Conformance requirement

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

```
public byte findTLV(byte tag, byte occurrence)
               throws ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of the TLV list (handler buffer):

CRRN1: the method is successful if the required occurrence exists then the corresponding TLV becomes current.

CRRN2: if the method is successful then it returns TLV_FOUND_CR_SET when Comprehension Required flag is set.

CRRN3: if the method is successful then it returns TLV_FOUND_CR_NOT_SET when Comprehension Required flag is not set.

CRRN4: if the required occurrence of the TLV element does not exist, the current TLV is no longer defined and TLV_NOT_FOUND is returned.

CRRN5: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if an input parameter is not valid (e.g. occurrence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.8.11.2 Test Suite files

Test Script: API_2_PRH_FINDBB_1.scr

Test Applet: API_2_PRH_FINDBB_1.java

Load Script: API_2_PRH_FINDBB_1.ldr

Cleanup Script: API_2_PRH_FINDBB_1.clr

6.2.8.11.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a DISPLAY TEXT command**		DISPLAY TEXT Proactive command
	Terminal Response with 2 General Result TLV 81 03 01 21 00 82 02 82 81 03 01 00 03 02 01 12		
	findTLV() with Invalid input parameter occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
2	**Search 1st TLV** tag = 01h occurrence = 1	Result is TLV_FOUND_CR_SET	
3	**Call the getValueLength() method**	Result is 03h	
4	**Search 2nd TLV** tag = 02h occurrence = 1	Result is TLV_FOUND_CR_SET	
5	**Call the getValueLength() method**	Result is 02h	
6	**Select a TLV (tag 02h)**		
	Search a wrong tag tag = 04h occurrence = 1	Result is TLV_NOT_FOUND	
7	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT shall be thrown	
8	**Search a tag with wrong occurrence** tag = 01h occurrence = 2	Result is TLV_NOT_FOUND	
9	**Call the getValueLength() method**	ToolkitException.UNAVAILABLE_ELEMENT shall be thrown.	
10	**Search 3rd TLV** tag = 03h occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	
11	**Call the getValueLength() method**	Result is 01h	
12	**Search 3rd TLV** tag = 03h occurrence = 2	Result is TLV_FOUND_CR_NOT_SET	
13	**Call the getValueLength() method**	Result is 02h	
14	**Search tag 83h** Tag = 83h Occurrence = 1	Result is TLV_FOUND_CR_NOT_SET	
15	**Search tag 82h** Tag = 82h Occurrence = 1	Result is TLV_FOUND_CR_SET	

6.2.8.11.4 Test Coverage

CRR number	Test case number
N1	3, 5, 11, 13
N2	2, 4
N3	10, 12
N4	6, 7,8, 9
N5	14,15
P1	1
C1	Does not apply for Proactive Response Handler

6.2.8.12 Method getValueLength

Test Area Reference API_2_PRH_GVLE

6.2.8.12.1 Conformance requirement

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

```
public short getValueLength()
                      throws ToolkitException
```

Normal execution

CRRN1: gets and returns the binary length of the value field for the last TLV element which has been found in the handler.

Parameter errors

No requirements

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.8.12.2 Test Suite files

Test Script: API_2_PRH_GVLE_1.scr

Test Applet: API_2_PRH_GVLE_1.java

Load Script: API_2_PRH_GVLE_1.ldr

Cleanup Script: API_2_PRH_GVLE_1.clr

6.2.8.12.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response `Text String TLV = 0D 00`		
	ProactiveResponseHandler.getTheHandler() `GetValueLength()`	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**Search TLV 0Dh**		
	`getValueLength()`	Result is 00h	
3	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response `Text String TLV = 0D 02 04 41`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 02h	
4	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 7Eh `Text String TLV = 0D 7F 04 01 02 … 7E`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 7Fh	
5	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 7Fh `Text String TLV = 0D 81 80 04 01 02 … 7E 7F`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is 80h	
6	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = EFh `Text String TLV = 0D 81 F0 04 01 02 … EF`		
	Search TLV 0Dh (Text String TLV)		
	`getValueLength()`	Result is F0h	

6.2.8.12.4 Test Coverage

CRR number	Test case number
N1	2, 3, 4, 5, 6
C1	Does not apply for Proactive Response Handler
C2	1

6.2.8.13 Method getValueByte

Test Area Reference API_2_PRH_GVBYS

6.2.8.13.1 Conformance requirement

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

```
public byte getValueByte(short valueOffset)
                  throws ToolkitException
```

Normal execution

CRRN1: Gets a byte from the last TLV element which has been found in the handler and returns its value (1 byte).

Parameter errors

CRRP1: if valueOffset is out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.8.13.2 Test Suite files

Test Script: API_2_PRH_GVBYS_1.scr

Test Applet: API_2_PRH_GVBYS_1.java

Load Script: API_2_PRH_GVBYS_1.ldr

Cleanup Script: API_2_PRH_GVBYS_1.clr

6.2.8.13.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 7Eh `Text String TLV = 0D 7F 04 01 02 … 7E`		
	ProactiveResponseHandler.getTheHandler()		
	`getValueByte(0)`	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
2	**Search TLV 01h (Command Details TLV)**		
	`getValueByte(3)`	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
3	**Search TLV 01h (Command Details TLV)**		
	`getValueByte(2)`	Result is 00h (qualifier)	
4	**Search TLV 02h (Device Identities TLV)**		
	`getValueByte(0)`	Result is 82h (Source)	
5	**Search TLV 0Dh (Text String TLV)**		
	`getValueByte(7E)`	Result is 7Eh	
6	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = EFh `Text String TLV = 0D 81 F0 04 01 02 … 7E 7F … EF`		
	Search TLV 0Dh (Text String TLV)		
	`getValueByte(7E)`	Result is 7Eh	
7	`GetValueByte(7F)`	Result is 7Fh	
8	`GetValueByte(EF)`	Result is EFh	

6.2.8.13.4 Test Coverage

CRR number	Test case number
N1	3, 4, 5, 6, 7, 8
P1	2
C1	Does not apply for Proactive Response Handler
C2	1

6.2.8.14 Method copyValue

Test Area Reference API_2_PRH_CPYVS_BSS

6.2.8.14.1 Conformance requirement

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

```
public short copyValue(short valueOffset,
                       byte[] dstBuffer,
                       short dstOffset,
                       short dstLength)
                throws java.lang.NullPointerException,
                       java.lang.ArrayIndexOutOfBoundsException,
                       ToolkitException
```

Normal execution

CRRN1: copies a part of the last TLV element which has been found, into a destination. buffer.

CRRN2: returns dstOffset + dstLength.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException is thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException is thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.8.14.2 Test Suite files

Test Script: API_2_PRH_CPYVS_BSS_1.scr

Test Applet: API_2_PRH_CPYVS_BSS_1.java

Load Script: API_2_PRH_CPYVS_BSS_1.ldr

Cleanup Script: API_2_PRH_CPYVS_BSS_1.clr

6.2.8.14.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 5 Text String TLV = 0D 06 04 01 02 … 05		
	ProactiveResponseHandler.getTheHandler() Select Text String TLV		
	CopyValue() with a null dstBuffer	NullPointerException is thrown	
2	**dstOffset > dstBuffer.length** dstBuffer.length = 5 dstOffset = 6 dstLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength >dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**valueOffset > Text String Length** valueOffset = 7 dstBuffer.length = 15 dstOffset = 0 dstLength = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**dstLength > Text String length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**ValueOffset + dstLength > Text String** length ValueOffset = 2 DstBuffer.length = 15 DstOffset = 0 DstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler		
	CopyValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**Select Text String TLV**		
	Successful call ValueOffset = 0 DstBuffer.length = 17 DstOffset = 0 DstLength = 17	Result of copyValue() is 17	
13	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call ValueOffset = 2	Result of copyValue() is 15	

	DstBuffer.length = 20 DstOffset = 3 DstLength = 12		
15	**Compare buffer** Buffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55	Result is 00h	

6.2.8.14.4 Test Coverage

CRR number	Test case number
N1	13, 15
N2	12, 14
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for Proactive Response Handler
C2	11

6.2.8.15 Method compareValue

Test Area Reference API_2_PRH_CPRVS_BSS

6.2.8.15.1 Conformance requirement

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

```
public byte compareValue(short valueOffset,
                         byte[] compareBuffer,
                         short compareOffset,
                         short compareLength)
                  throws java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

Compares the last found TLV element with a buffer:

CRRN1: returns 0 if identical.

CRRN2: returns -1 if the first miscomparing byte in simple TLV List is less than that in compareBuffer.

CRRN3: returns 1 if the first miscomparing byte in simple TLV List is greater than that in compareBuffer.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

CRRC2: in case of unavailable TLV element an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException UNAVAILABLE_ELEMENT.

6.2.8.15.2 Test Suite files

Test Script: API_2_PRH_CPRVS_BSS_1.scr

Test Applet: API_2_PRH_CPRVS_BSS_1.java

Load Script: API_2_PRH_CPRVS_BSS_1.ldr

Cleanup Script: API_2_PRH_CPRVS_BSS_1.clr

6.2.8.15.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 5 `Text String TLV = 0D 06 04 01 02 … 05`		
	ProactiveResponseHandler.getTheHandler() `Select Text String TLV`		
	compareValue() with a null compareBuffer	NullPointerException is thrown	

2	**compareOffset > compareBuffer.length**
	`compareBuffer.length = 5`
	`compareOffset = 6`
	`compareLength = 0`
		ArrayIndexOutOfBoundsException is thrown	

3	**compareOffset < 0**
	`compareBuffer.length = 5`
	`compareOffset = -1`
	`compareLength = 1`
		ArrayIndexOutOfBoundsException is thrown	

4	**compareLength >compareBuffer.length**
	`compareBuffer.length = 5`
	`compareOffset = 0`
	`compareLength = 6`
		ArrayIndexOutOfBoundsException is thrown	

5	**compareOffset + compareLength >compareBuffer.length**
	`compareBuffer.length = 5`
	`compareOffset = 3`
	`compareLength = 3`
		ArrayIndexOutOfBoundsException is thrown	

6	**compareLength < 0**
	`compareBuffer.length = 5`
	`compareOffset = 0`
	`compareLength = -1`
		ArrayIndexOutOfBoundsException is thrown	

7	**valueOffset > Text String Length**
	`valueOffset = 7`
	`compareBuffer.length = 15`
	`compareOffset = 0`
	`compareLength = 0`
		ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	

8	**valueOffset < 0**
	`valueOffset = -1`
	`compareBuffer.length = 15`
	`compareOffset = 0`
	`compareLength = 1`
		ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	

9	**compareLength > Text String length**
	`valueOffset = 0`
	`compareBuffer.length = 15`
	`compareOffset = 0`
	`compareLength = 7`
		ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	

10	**valueOffset + compareLength > Text String length**
	`valueOffset = 2`
	`compareBuffer.length = 15`
	`compareOffset = 0`
	`compareLength = 5`
		ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	

11	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16		

	Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	CompareValue()	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
12	**Select Text String TLV**		
	Initialise compareBuffer CompareBuffer = 04 00 01 … 0F		
	Compare buffers ValueOffset = 0 CompareOffset = 0 CompareLength = 17	Result is 00h	
13	**Initialise compareBuffer** CompareBuffer = 04 00 01 … 10		
	Compare buffers with same parameters	Result is -1	
14	**Initialise compareBuffer** CompareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
15	**Initialise compareBuffer** CompareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers ValueOffset = 2 CompareOffset = 3 CompareLength = 12	Result is 00h	
16	**Initialise compareBuffer** CompareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
17	**Initialise compareBuffer** CompareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	

6.2.8.15.4 Test Coverage

CRR number	Test case number
N1	12, 15
N2	13, 16
N3	14, 17
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for Proactive Response Handler
C2	11

6.2.8.16 Method findAndCopyValue(byte tag, byte[] dstBuffer, short valueOffset)

Test Area Reference API_2_PRH_FACYB_BS

6.2.8.16.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte[] dstBuffer,
                              short dstOffset)
                    throws    java.lang.NullPointerException,
                              java.lang.ArrayIndexOutOfBoundsException,
                              ToolkitException
```

Normal execution

CRRN1: looks for the first occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + length of the copied value is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.8.16.2 Test Suite files

Test Script: API_2_PRH_FACYB_BS_1.scr

Test Applet: API_2_PRH_FACYB_BS_1.java

Load Script: API_2_PRH_FACYB_BS_1.ldr

Cleanup Script: API_2_PRH_FACYB_BS_1.clr

6.2.8.16.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 15 `Text String TLV = 0D 10 04 01 02 … 0F`		
	`ProactiveResponseHandler.getTheHandler()`		
	`FindAndCopyValue() with a null dstBuffer`	NullPointerException is thrown	

2	**dstOffset > dstBuffer.length**
	`tag = 0Dh`
	`dstBuffer.length = 20`
	`dstOffset = 21`
		ArrayIndexOutOfBoundsException is thrown	

3	**dstOffset < 0**
	`dstBuffer.length = 20`
	`dstOffset = -1`
		ArrayIndexOutOfBoundsException is thrown	

4	**length > dstBuffer.length**
	`dstBuffer.length = 15`
	`dstOffset = 0`
		ArrayIndexOutOfBoundsException is thrown	

5	**dstOffset + length >dstBuffer.length** `dstBuffer.length = 20`	ArrayIndexOutOfBoundsException is thrown	

	dstOffset = 5		
6	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Select a TLV (tag 02h)		
	findAndCopyValue() tag = 04h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
7	**Successful call** Tag = 0Dh DstBuffer.length = 17 DstOffset = 0	Result of findAndcopyValue() is 17	
8	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	
9	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call DstBuffer.length = 20 DstOffset = 2	Result of findAndcopyValue() is 19	
10	**Compare buffer** Buffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55	Result is 00h	
11	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, with 2 Text String TLV 0D 11 04 00 01 … 0F 0D 02 04 41		
	ProactiveResponseHandler.getTheHandler()		
	Successful call Tag = 0Dh DstBuffer.length = 17 DstOffset = 0	Result of findAndcopyValue() is 17	
12	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	
13	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Successful call (with tag 8Dh) Tag = 8Dh DstBuffer.length = 17 DstOffset = 0	Result of findAndcopyValue() is 17	
14	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	

6.2.8.16.4 Test Coverage

CRR number	Test case number
N1	8, 10, 12
N2	6
N3	7, 9, 11
N4	13, 14
P1	1
P2	2, 3, 4, 5
C1	Does not apply for Proactive Response Handler

6.2.8.17 Method findAndCopyValue(byte tag, byte occurence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)

Test Area Reference API_2_PRH_FACYBBS_BSS

6.2.8.17.1 Conformance requirement

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

```
public short findAndCopyValue(byte tag,
                              byte occurence,
                              short valueOffset,
                              byte[] dstBuffer,
                              short dstOffset,
                              short dstLength)
                     throws   java.lang.NullPointerException,
                              java.lang.ArrayIndexOutOfBoundsException,
                              ToolkitException
```

Normal execution

CRRN1: looks for the indicated occurrence of a TLV element from the beginning of a TLV list and copy its value into a destination buffer.

CRRN2: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN3: if the method is successful then the corresponding TLV becomes current and dstOffset + dstLength is returned.

CRRN4: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if dstBuffer is null NullPointerException shall be thrown.

CRRP2: if dstOffset or dstLength or both would cause access outside array bounds, or if dstLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, dstLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.8.17.2 Test Suite files

Test Script: API_2_PRH_FACYBBS_BSS_1.scr

Test Applet: API_2_PRH_FACYBBS_BSS_1.java

Load Script: API_2_PRH_FACYBBS_BSS_1.ldr

Cleanup Script: API_2_PRH_FACYBBS_BSS_1.clr

6.2.8.17.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 15 Text String TLV = 0D 10 04 01 02 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	findAndCopyValue() with a null dstBuffer	NullPointerException is thrown	
2	**dstOffset > dstBuffer.length** tag = 0Dh, occurrence = 1 valueOffset = 0 dstBuffer.length = 5 dstOffset = 6 dstLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**dstOffset < 0** dstBuffer.length = 5 dstOffset = -1 dstLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 0 dstLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**dstOffset + dstLength > dstBuffer.length** dstBuffer.length = 5 dstOffset = 3 dstLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**dstLength < 0** dstBuffer.length = 5 dstOffset = 0 dstLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 5 Text String TLV = 0D 06 04 01 02 … 05		
	ProactiveResponseHandler.getTheHandler()		
	valueOffset > Text String Length tag = 0Dh, occurrence = 1 valueOffset = 7 dstBuffer.length = 15 dstOffset = 0 dstLength = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 dstBuffer.length = 15 dstOffset = 0 dstLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**dstLength > Text String length** valueOffset = 0 dstBuffer.length = 15 dstOffset = 0 dstLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + dstLength > Text String length** valueOffset = 2 dstBuffer.length = 15 dstOffset = 0 dstLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Select a TLV (tag 02h)		

	findAndCopyValue() tag = 0Dh occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
12	**Successful call** Tag = 0Dh, occurrence = 1 ValueOffset = 0 DstBuffer.length = 17 DstOffset = 0 DstLength = 17	Result of findAndCopyValue() is 17	
13	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	
14	**initialise dstBuffer** dstBuffer = 55 55 … 55		
	Successful call Tag = 0Dh, occurrence = 1 ValueOffset = 2 DstBuffer.length = 20 DstOffset = 3 DstLength = 12	Result of findAndcopyValue() is 15	
15	**Compare buffer** Buffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55	Result is 00h	
16	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, with 2 Text String TLV 0D 11 04 00 01 02 … 0F 0D 06 00 11 22 33 44 55 (no specific DCS byte)		
	ProactiveResponseHandler.getTheHandler()		
	Successful call Tag = 0Dh, occurrence = 1 ValueOffset = 0 DstBuffer.length = 17 DstOffset = 0 DstLength = 17	Result of findAndCopyValue() is 17	
17	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	
18	**Successful call** Tag = 0Dh, occurrence = 2 ValueOffset = 0 DstBuffer.length = 6 DstOffset = 0 DstLength = 6	Result of findAndCopyValue() is 6	
19	**Compare buffer** Buffer = 00 11 22 33 44 55	Result is 00h	
20	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Successful call (with tag 8Dh) Tag = 8Dh, occurrence = 1 ValueOffset = 0 DstBuffer.length = 17 DstOffset = 0 DstLength = 17	Result of findAndcopyValue() is 17	
21	**Compare buffer** Buffer = 04 00 01 … 0F	Result is 00h	

6.2.8.17.4 Test Coverage

CRR number	Test case number
N1	13, 15, 17, 19
N2	11
N3	12, 14, 16, 18
N4	20, 21
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
C1	Does not apply for Proactive Response Handler

6.2.8.18 Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset)

Test Area Reference API_2_PRH_FACRB_BS

6.2.8.18.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
                                byte[] compareBuffer,
                                short compareOffset)
                         throws  java.lang.NullPointerException,
                                 java.lang.ArrayIndexOutOfBoundsException,
                                 ToolkitException
```

Normal execution

Looks for the first occurrence of a TLV element from beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical returns 0.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer returns -1.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer returns 1.

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset would cause access outside array bounds ArrayIndexOutOfBoundsException shall be thrown.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.8.18.2 Test Suite files

Test Script: API_2_PRH_FACRB_BS_1.scr

Test Applet: API_2_PRH_FACRB_BS_1.java

Load Script: API_2_PRH_FACRB_BS_1.ldr

Cleanup Script: API_2_PRH_FACRB_BS_1.clr

6.2.8.18.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 15 Text String TLV = 0D 10 04 01 02 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	FindAndCompareValue() with a null dstBuffer	NullPointerException is thrown	
2	**compareOffset > compareBuffer.length** tag = 0Dh compareBuffer.length = 20 compareOffset = 21	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 20 compareOffset = -1	ArrayIndexOutOfBoundsException is thrown	
4	**length > compareBuffer.length** compareBuffer.length = 15 compareOffset = 0	ArrayIndexOutOfBoundsException is thrown	
5	**CompareOffset + length >** compareBuffer.length CompareBuffer.length = 20 CompareOffset = 5	ArrayIndexOutOfBoundsException is thrown	
6	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Select a TLV (tag 02h)		
	findAndCompareValue() tag = 04h	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
7	**Initialise compareBuffer** CompareBuffer = 04 00 01 … 0F		
	Compare buffers Tag = 0Dh CompareOffset = 0	Result is 00h	
8	**Verify current TLV** GetValueLength()	Result is 17	
9	**Initialise compareBuffer** CompareBuffer = 04 00 01 … 10		
	Compare buffers with same parameters	Result is -1	
10	**Initialise compareBuffer** CompareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
11	**Initialise compareBuffer** CompareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		
	Compare buffers CompareOffset = 2	Result is 00h	
12	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, with 2 Text String TLV 0D 11 04 00 01 … 0F		

	0D 06 00 11 22 33 44 55		
	ProactiveResponseHandler.getTheHandler()		
	Initialise compareBuffer CompareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		
	Compare buffers CompareOffset = 2	Result is 00h	
13	**Initialise compareBuffer** CompareBuffer = 55 55 04 01 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 55		
	Compare buffers CompareOffset = 2	Result is -1	
14	**Initialise compareBuffer** CompareBuffer = 55 55 04 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0D 10 55		
	Compare buffers CompareOffset = 2	Result is +1	
15	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Initialise compareBuffer CompareBuffer = 04 00 01 … 0F		
	Compare buffers (with tag 8Dh) Tag = 8Dh CompareOffset = 0	Result is 00h	

6.2.8.18.4 Test Coverage

CRR number	Test case number
N1	6
N2	8
N3	7, 11, 12
N4	9, 13
N5	10, 14
N6	15
P1	1
P2	2, 3, 4, 5
C1	Does not apply for Proactive Response Handler

6.2.8.19 Method findAndCompareValue(byte tag, byte occurence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength)

Test Area Reference API_2_PRH_FACRBBS_BSS

6.2.8.19.1 Conformance requirement

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

```
public byte findAndCompareValue(byte tag,
```

```
                byte occurence,
                short valueOffset,
                byte[] compareBuffer,
                short compareOffset,
                short compareLength)
        throws  java.lang.NullPointerException,
                java.lang.ArrayIndexOutOfBoundsException,
                ToolkitException
```

Normal execution

Looks for the indicated occurrence of a TLV element from the beginning of a TLV list and compare its value with a buffer:

CRRN1: if no TLV element is found, the UNAVAILABLE_ELEMENT exception is thrown and the current TLV is no longer defined.

CRRN2: if the method is successful then the corresponding TLV becomes current.

CRRN3: if identical 0 is returned.

CRRN4: if the first miscomparing byte in simple TLV is less than that in compareBuffer -1 is returned.

CRRN5: if the first miscomparing byte in simple TLV is greater than that in compareBuffer 1 is returned

CRRN6: The search method is comprehension required flag independent.

Parameter errors

CRRP1: if compareBuffer is null NullPointerException shall be thrown.

CRRP2: if compareOffset or compareLength or both would cause access outside array bounds, or if compareLength is negative ArrayIndexOutOfBoundsException shall be thrown.

CRRP3: if valueOffset, compareLength or both are out of the current TLV an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException OUT_OF_TLV_BOUNDARIES.

CRRP4: if an input parameter is not valid (e.g. occurence = 0) an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException BAD_INPUT_PARAMETER.

Context errors

CRRC1: if the handler is busy an instance of ToolkitException shall be thrown. The reason code shall be ToolkitException HANDLER_NOT_AVAILABLE.

6.2.8.19.2 Test Suite files

Test Script: API_2_PRH_FACRBBS_BSS_1.scr

Test Applet: API_2_PRH_FACRBBS_BSS_1.java

Load Script: API_2_PRH_FACRBBS_BSS_1.ldr

Cleanup Script: API_2_PRH_FACRBBS_BSS_1.clr

6.2.8.19.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 15 Text String TLV = 0D 10 04 01 02 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	findAndCompareValue() with a null compareBuffer	NullPointerException is thrown	
2	**compareOffset > compareBuffer.length** tag = 0Dh, occurrence = 1 valueOffset = 0 compareBuffer.length = 5 compareOffset = 6 compareLength = 0	ArrayIndexOutOfBoundsException is thrown	
3	**compareOffset < 0** compareBuffer.length = 5 compareOffset = -1 compareLength = 1	ArrayIndexOutOfBoundsException is thrown	
4	**compareLength >compareBuffer.length** compareBuffer.length = 5 compareOffset = 0 compareLength = 6	ArrayIndexOutOfBoundsException is thrown	
5	**CompareOffset + compareLength** >compareBuffer.length CompareBuffer.length = 5 CompareOffset = 3 CompareLength = 3	ArrayIndexOutOfBoundsException is thrown	
6	**compareLength < 0** compareBuffer.length = 5 compareOffset = 0 compareLength = -1	ArrayIndexOutOfBoundsException is thrown	
7	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 5 Text String TLV = 0D 06 04 01 02 … 05		
	ProactiveResponseHandler.getTheHandler()		
	valueOffset ≥ Text String Length tag = 0Dh, occurrence = 1 valueOffset = 7 compareBuffer.length = 15 compareOffset = 0 compareLength = 0	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
8	**valueOffset < 0** valueOffset = -1 compareBuffer.length = 15 compareOffset = 0 compareLength = 1	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
9	**compareLength > Text String length** valueOffset = 0 compareBuffer.length = 15 compareOffset = 0 compareLength = 7	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
10	**valueOffset + compareLength > Text String length** valueOffset = 2 compareBuffer.length = 15 compareOffset = 0 compareLength = 5	ToolkitException.OUT_OF_TLV_BOUNDARIES is thrown	
11	**Invalid parameter** Occurrence = 0	ToolkitException.BAD_INPUT_PARAMETER is thrown	
12	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Select a TLV (tag 02h)		

	findAndCompareValue() tag = 0Dh occurrence = 2	ToolkitException.UNAVAILABLE_ELEMENT is thrown	
	Call the getValueLength() method	ToolkitException.UNAVAILABLE_ELEMENT is thrown.	
13	**Initialise compareBuffer** CompareBuffer = 04 00 01 … 0F		
	findAndCompareValue() tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	
14	**Verify current TLV** GetValueLength()	Result is 17	
15	**Initialise compareBuffer** compareBuffer = 04 00 01 … 10		
	Compare buffers with same parameters	Result is -1	
16	**Initialise compareBuffer** compareBuffer = 03 00 01 … 0F		
	Compare buffers with same parameters	Result is +1	
17	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers valueOffset = 2 compareOffset = 3 compareLength = 12	Result is 00h	
18	**Initialise compareBuffer** compareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55		
	Compare buffers with same parameters	Result is -1	
19	**Initialise compareBuffer** compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55		
	Compare buffers with same parameters	Result is +1	
20	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, with 2 Text String TLV 0D 11 04 00 01 … 0F 0D 06 00 11 22 33 44 55		
	ProactiveResponseHandler.getTheHandler()		
	Initialise compareBuffer compareBuffer = 04 00 01 … 0F		
	findAndCompareValue() tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	
21	**Initialise compareBuffer** compareBuffer = 00 11 22 33 44 55		
	findAndCompareValue()	Result is 00h	

	tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 6		
22	**Initialise compareBuffer** compareBuffer = 00 11 22 33 44 66		
	findAndCompareValue() tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 6	Result is -1	
23	**Send a GET INPUT command**		GET INPUT Proactive command
	Terminal Response, Text String length = 16 Text String TLV = 0D 11 04 00 01 … 0F		
	ProactiveResponseHandler.getTheHandler()		
	Initialise compareBuffer CompareBuffer = 04 00 01 … 0F		
	Compare buffers (with tag 8Dh) tag = 8Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17	Result is 00h	

6.2.8.19.4 Test Coverage

CRR number	Test case number
N1	12
N2	14
N3	13, 17, 20, 21
N4	15, 18, 22
N5	16, 19
N6	23
P1	1
P2	2, 3, 4, 5, 6
P3	7, 8, 9, 10
P4	11
C1	Does not apply for Proactive Response Handler

6.2.9 Class ToolkitRegistry

6.2.9.1 Method allocateTimer

Test Area Reference: API_2_TKR_ATIM

6.2.9.1.1 Conformance requirement:

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

```
public byte allocateTimer() throws ToolkitException
```

Normal execution

CRRN1: the returned timer identifier shall be between 01 and 08 inclusive.

CRRN2: the returned timer identifier shall be different from a previously allocated but not released one.

CRRN3: The SIM Toolkit Framework shall trigger the applet when receiving an ENVELOPE(TIMER EXPIRATION) command for the allocated timer.

CRRN4: A call to isEventSet() method for EVENT_TIMER_EXPIRATION should return true if the applet has at least one timer allocated.

Parameters error

No requirements

Context errors

CRRC1: Shall throw a ToolkitException with reason NO_TIMER_AVAILABLE if all the timers are allocated.

CRRC2: Shall throw a ToolkitException with reason NO_TIMER_AVAILABLE if the maximum number of timers have been allocated to this applet according to installation parameter.

6.2.9.1.2 Test suite files

Test Script: API_2_TKR_ATIM_1.scr

Test Applet: 1. API_2_TKR_ATIM_1.java

2. API_2_TKR_ATIM_2.java

3. API_2_TKR_ATIM_3.java

Installation parameters:

For this test procedure the non-volatile memory of each instance is 200 (Hexa).

The maximum timer parameter value is as follows for each applet:

- applet 1 (API_2_TKR_ATIM_1): 8 timers
- applet 2 (API_2_TKR_ATIM_2): 4 timers
- applet 3 (API_2_TKR_ATIM_3): 0 timer

Load Script: API_2_TKR_ATIM_1.ldr

The load script installs the 6 instances.

Cleanup Script: API_2_TKR_ATIM_1.clr

6.2.9.1.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Allocates up to 8 timers (applet 1)** `8 * allocateTimer().`	No exception shall be thrown. Timer ID returned shall be between 01 and 08 inclusive. It shall be different after each call.	
2	**Allocate timers more than the maximum (applet 1)** `The applet 1 allocates 1 more timer.`	Shall throw a ToolkitException with reason NO_TIMER_AVAILABLE.	

3	**Check applet is Triggered by ENVELOPE(TIMER_EXPIRATION) command (applet1)**
	`Send ENVELOPE(TIMER EXPIRATION) with all timers id (not in an increase order).`
	
	`Calls releaseTimer(id) each time a timer expires.`
		Shall trigger each time an ENVELOPE(TIMER EXPIRATION) is sent to the SIM, for Timer ID = '01' to '08'.	

4	**Allocate up to 4 timers (applet 2)** `4 * allocateTimer().`	No exception shall be thrown. Each time, the returned timer identifier shall be between '01' and '08' inclusive. It shall be different after each call.	
5	**Allocate timers more than the maximum (applet 3)** `The applet 3 allocates 1 more timer.`	Shall throw a ToolkitException with reason NO_TIMER_AVAILABLE.	

6.2.9.1.4 Test Coverage

CRR number	Test case number
N1	1,4
N2	1,4
N3	3
N4	1
C1	2
C2	5

6.2.9.2 Method changeMenuEntry

Test Area Reference: API_2_TKR_CMETB_BSSBZBS

6.2.9.2.1 Conformance requirement:

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

```
public void changeMenuEntry(byte id,
                            byte[] menuEntry,
                            short offset,
                            short length,
                            byte nextAction,
                            boolean helpSupported,
                            byte iconQualifier,
                            short iconIdentifier)
                throws      java.lang.NullPointerException,
                            java.lang.ArrayIndexOutOfBoundsException,
                            ToolkitException
```

Normal execution

CRRN1: The SIM Toolkit Framework shall dynamically update the menu stored in the ME by issuing a SET UP MENU proactive command.The later will reflect the changes done for the entry. The SIM Toolkit Framework shall use the data of the EF sume file in order to build the SET UP MENU command.

CRRN2: The default state of the changed menu entry is 'enabled'.

CRRN3: a call to isEventSet() method on EVENT_MENU_SELECTION shall return true before and after the call.

CRRN4: if helpSupported was true then a call to isEventSet() method on EVENT_MENU_SELECTION_HELP_REQUEST event shall return true.

CRRN5: if helpSupported was true then after the completion of the SETUP MENU command, if an ENVELOPE(MENU_SELECTION_HELP_REQUEST) command is received by the SIM for this entry, then the SIM Toolkit framework shall trigger the applet.

CRRN6: if help supported was true, the SIM Toolkit Framework shall issue a SETUP MENU command with command qualifier = '80'

CRRN7: if helpSupported was false and if no entries is supporting help then a call to isEventSet() method on EVENT_MENU_SELECTION_HELP_REQUEST event shall return false .

CRRN8: if helpSupported was false and if no entries is supporting help then after the completion of the SETUP MENU command, if an ENVELOPE(MENU_SELECTION_HELP_REQUEST) command is received by the SIM, then the SIM Toolkit framework shall not trigger the applet.

CRRN9: The SIM Toolkit Framework shall supply in the SET UP MENU command with the icon identifier provided in the icon identifier list within the item icon identifier list Simple TLV if all the applets registered to the EVENT_MENU_SELECTION provide it.

CRRN10: The SIM Toolkit Framework shall set in the SET UP MENU command with the Icon list qualifier transmitted to the ME as 'icon is not self explanatory' if one of the applet registered prefers this qualifier.

CRRN11: If Next Action Indicator was different from '00', the SIM Toolkit Framework shall issue a SETUP MENU proactive command containing an Items Next Action Indicator simple TLV with the comprehension flag set to 0 as defined in GSM 11.14 [4].

Parameters error

CRRP1: Shall throw java.lang.NullPointerException - if menuEntry is null

CRRP2: Shall throw java.lang.ArrayIndexOutOfBoundsException - if offset would cause access outside array bounds

CRRP3: Shall throw java.lang.ArrayIndexOutOfBoundsException - if length would cause access outside array bounds

CRRP4: Shall throw java.lang.ArrayIndexOutOfBoundsException - if both offset and length would cause access outside array bounds

Context errors

CRRC1: Shall throw a ToolkitException with MENU_ENTRY_NOT_FOUND reason if the Menu Identifier isn't associated to the calling applet instance.

CRRC2: Shall throw ALLOWED_LENGTH_EXCEEDED if the menu entry string is bigger than the allocated space.

6.2.9.2.2 Test suite files

Additional requirements for the GSM personalisation:

- content of EF sume shall be:

- Title Alpha Identifier: "TOOLKIT TEST"

Test Script: API_2_TKR_CMETB_BBSSBZBS_1.scr

Test Applet: API_2_TKR_CMETB_BBSSBZBS_1.java

- entry '01' is "Init1"
- entry '02' is "Init2"

Installation parameter:

Same as default applet but with:

- Maximum text length for a menu entry: 15
- Maximum number of menu entries: 2
- Position / Identifier for each menu entry: '01'/'01','02'/'02'

Load Script: API_2_TKR_CMETB_BBSSBZBS_1.ldr

Cleanup Script: API_2_TKR_CMETB_BBSSBZBS_1.clr

6.2.9.2.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Applet changes the entry's title by menuEntry buffer, with a greater length than the initial length** 1- ChangeMenuEntry()with parameters: Id = '02' MenuEntry = "UseAllBuffer" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0. 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).	1- No exception shall be thrown. 2- shall return true. 3- shall return false.	The SIM shall issue a SETUP MENU proactive command which contains the new text for entry ID '02'.
2	**Changing the title with part of menuEntry buffer** 1- changeMenuEntry()with parameters: Id = '01' MenuEntry = "UsePartOfBuffer" Offset = 3 Length = 12 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0. 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.	The SIM shall issue a SETUP MENU proactive command which contains the new text for entry ID '01'.
3	**Length = 0** 1- changeMenuEntry() for entry '01' and entry '02', with parameters: Id = '01'/'02' MenuEntry = "LengthEquals0" Offset = 0 Length = 0 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0. 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).	1- No exception shall be thrown. 2- Shall return true. 3- shall return false.	The SIM shall issue a SETUP MENU proactive command which contains for entry '01'and entry '02', no text part.
4	**Setting a next action indicator != 0** 1- changeMenuEntry()with parameters: Id = '02' MenuEntry = "NextActionIndic" Offset = 0 Length = menuEntry.length NextAction = '10' (SETUP CALL) HelpSupported = false	1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.	The SIM shall issue a SETUP MENU proactive command which contains an Items Next Action Indicator list and which contains a command qualifier '80'.

	IconQualifier = 0 IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST). 4- changeMenuEntry()with parameters: Id = '02' MenuEntry = "NextActionIndic" Offset = 0 Length = menuEntry.length NextAction = '10' (SETUP CALL) HelpSupported = true IconQualifier = 0 IconIdentifier = 0		
5	**Checking applet is triggered by a MENU_SELECTION_HELP_REQUEST** Send ENVELOPE(MENU_SELECTION_HELP_REQUEST) with Item Identifier = '02'	Applet is trigged by a MENU_SELECTION_HELP_REQUEST and the Item Identifier is 02	
6	**help supported=true** 1- changeMenuEntry()with parameters: Id = '01' MenuEntry = "HelpSupported" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = true IconQualifier = 0 IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).	1- No exception shall be thrown. 2- Shall return true. 3- Shall return true.	The SIM shall issue a SETUP MENU proactive command which contains a command qualifier '80'.
7	**Checking applet is triggered by a MENU_SELECTION_HELP_REQUEST** Send ENVELOPE(MENU_SELECTION_HELP_REQUEST) with Item Identifier = '01'	Applet is trigged by a MENU_SELECTION_HELP_REQUEST and the Item Identifier is 01	
8	**Setting icons, help supported = false** 1- changeMenuEntry() for entries '01','02', with parameters: Id = '01'/'02' MenuEntry = "IconQualifier" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = '01' IconIdentifier = '02' / '01' 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).	1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.	The SIM shall issue a SETUP MENU proactive command which contains an Icon Identifier List.
9	**MenuEntry is disabled** 1- disableMenuEntry('01'). 2- changeMenuEntry()with parameters:	1- No exception shall be thrown. 2- No exception shall be thrown. 3- Shall return true.	The SIM shall issue a SETUP MENU proactive command which contains the entry. Without Icon identifier List Simple TLV

	Id = '01' MenuEntry = "EnableEntry" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 3- isEventSet(EVENT_MENU_SELECTION). 4- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).	4- Shall return false.	
10	**MenuEntry is null** changeMenuEntry()with: MenuEntry = NULL	Shall throw java.lang.NullPointerException.	
11	**Offset causes access outside array bounds** Id = '01' MenuEntry = "Violation" Offset = menuEntry.length +1 Length = 0 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
12	**Big Offset causes access outside array bounds** Id = '01' MenuEntry = "Violation" Offset = 255 Length = 1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
13	**Offset < 0 causes access outside array bounds** Id = '01' MenuEntry = "Violation" Offset = -1 Length = 1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
14	**Length causes access outside array bounds** Id = '01' MenuEntry = "Violation" Offset = 0 Length = MenuEntry.length + 1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0.	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
15	**Length < 0 causes access outside array bounds** Id = '01' MenuEntry = "Violation" Offset = 0 Length = -1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0.	Shall throw java.lang.ArrayIndexOutOfBoundsException.	

16	**Both offset and length causes access outside array bounds** Id = '01' MenuEntry = "Violation" Offset ∈ [1, MenuEntry.length] Length = MenuEntry.length NextAction = 1 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw java.lang.ArrayIndexOutOfBoundsException. .	
17	**Invalid ID used** Id = '00' MenuEntry = contains text, != null Offset = 0 Length = menuEntry.length < 16 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw a ToolkitException with MENU_ENTRY_NOT_FOUND reason code.	
18	**ID isn't allocated to a menu entry of this applet instance** Id = '0A' MenuEntry = contains text, != null Offset = 0 Length = menuEntry.length < 16 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw a ToolkitException with reason code: MENU_ENTRY_NOT_FOUND.	
19	**The text is bigger than the allocated space** Id = '02' MenuEntry = contains text, != null Offset = 0 Length = menuEntry.length > 15 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0	Shall throw a ToolkitException with reason code: ALLOWED_LENGTH_EXCEEDED.	
20	**With a smaller text length than the initial length** 1. changeMenuEntry()with parameters: Id = '02' MenuEntry = "Init" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 2. isEventSet(EVENT_MENU_SELECTION) 3. isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1. No exception shall be thrown. 2. Shall return true. 3. Shall return false.	The SIM shall issue a SETUP MENU proactive command which contains the new text for entry ID '02'.

6.2.9.2.4 Test Coverage

CRR number	Test case number
N1	1,2,3,4,6,8,9,20
N2	9
N3	1,2,3,4,6,8,9,20
N4	6
N5	7,5
N6	6
N7	1,2,3,4,8,9,20
N8	To be checked in framework tests and insert cross reference here
N9	8, 9
N10	8
N11	4
P1	10
P2	11,12,13
P3	14,15
P4	16
C1	17,18
C2	19

6.2.9.3 Method clearEvent

Test Area Reference: API_2_TKR_CEVTB

6.2.9.3.1 Conformance requirement:

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

```
public void clearEvent(byte event)
             throws ToolkitException
```

Normal execution

CRRN1: A call to isEventSet() method for a cleared event should return false after a call to clearEvent.

CRRN2:The SIM Toolkit Framework shall not trigger the applet on the occurrence of the cleared event anymore.

CRRN3: if event was EVENT_CALL_CONTROL_BY_SIM and after the call, no applet is registered to it, The SIM Toolkit Framework shall allow an applet to register to this event.

CRRN4: if event was EVENT_CALL_CONTROL_BY_SIM and one applet is still registered to these event, The SIM Toolkit Framework shall not allow an applet to register to this event.

CRRN5: if event was EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM and after the call, no applet is registered to it, The SIM Toolkit Framework shall allow an applet to register to this event.

CRRN6: if event was EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM and one applet is still registered to these event, The SIM Toolkit Framework shall not allow an applet to set this event.

Parameters error

CRRP1: Shall throw a Toolkit Exception with reason EVENT_NOT_ALLOWED if event was EVENT_MENU_SELECTION.

CRRP2: Shall throw a Toolkit Exception with reason EVENT_NOT_ALLOWED if event was EVENT_MENU_SELECTION_HELP_REQUEST.

CRRP3: Shall throw a Toolkit Exception with reason EVENT_NOT_ALLOWED if event was EVENT_TIMER_EXPIRATION.

CRRP4: Shall throw a Toolkit Exception with reason EVENT_NOT_ALLOWED if event was EVENT_STATUS_COMMAND.

Context errors

No requirements

6.2.9.3.2 Test suite files

Test Script: API_2_TKR_CEVTB_1.scr

Test Applet: API_2_TKR_ CEVTB _1.java

As default but applet registers to an event list which contains all defined events in GSM 03.19 [7] excepted those that aren't allowed or supported by setEvent().

Load Script: API_2_TKR_ CEVTB_1.ldr

Cleanup script: API_2_TKR_ CEVTB_1.clr

6.2.9.3.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Clear ALLOWED unregistered events** For events ranging from 1 to 127 excepted those that aren't allowed (EVENT_MENU_SELECTION, EVENT_MENU_SELECTION_HELP_REQUEST, EVENT_TIMER_EXPIRATION, EVENT_STATUS_COMMAND), the applet calls: 1- clearEvent() method 2- isEventSet() method	1- No exception is thrown each time. 2- Shall return false each time.	
2	**Clear registered events** 1- For each ALLOWED and SUPPORTED events, the applet calls setEvent() method. 2- For events ranging from 1 to 127 excepted those that aren't allowed, the applet calls: 2.1- clearEvent() method 2.2- isEventSet() method	1- No exception shall be thrown. 2.1- No exception shall be thrown. 2.2- Shall return false.	
3	**Clearing NOT ALLOWED events** For each event among: EVENT_MENU_SELECTION, EVENT_MENU_SELECTION_HELP_REQUEST, EVENT_TIMER_EXPIRATION, EVENT_STATUS_COMMAND 1- The applet calls clearEvent(event) method.	1- Each time, clearEvent shall throw a Toolkit Exception with reason EVENT_NOT_ALLOWED.	
4	**Checking applet isn't triggered by an ENVELOPE(SMS-PP DOWNLOAD) command** 1 - reset and initialise the card 2 - An ENVELOPE(SMS-PP DOWNLOAD) is sent with a TAR referencing applet.	Applet is not trigged by an ENVELOPE(SMS-PP DOWNLOAD) command	

6.2.9.3.4 Test Coverage

CRR number	Test case number
N1	1,2
N2	4
N3	Framework
N4	Framework
N5	Framework
N6	Framework
P1	3
P2	3
P3	3
P4	3

6.2.9.4 Method disableMenuEntry

Test Area Reference: API_2_TKR_DMETB

6.2.9.4.1 Conformance requirement:

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

```
public void disableMenuEntry(byte id)
        throws ToolkitException
```

Normal execution

CRRN1: A call to isEventSet() method on EVENT_MENU_SELECTION shall return the same result before and after the call to disableMenuEntry() method.

CRRN2: A call to isEventSet() method on EVENT_MENU_SELECTION_HELP_REQUEST shall return the same result before and after the call to disableMenuEntry() method.

CRRN3: After invocation of this method the SIM Toolkit Framework shall dynamically update the menu stored in the ME .

CRRN4: After invocation of this method, if there is no more enabled menu entries then the SIM Toolkit framework shall issue a SETUP MENU proactive command containing Item Data Object for Item 1 TLV with a length of zero and no value part.

Parameters error

No requirements

Context errors

CRRC1: shall throw a ToolkitException with reason = ENTRY_NOT_FOUND if the menu entry doesn't exist for this applet

6.2.9.4.2 Test suite files

Additional requirements for the GSM personalisation:

- content of EF sume shall be:

  - Title Alpha Identifier: "TOOLKIT TEST"

Test Script: API_2_TKR_DMETB_1.scr

Test Applet: API_2_TKR_DMETB_1.java

Installation parameter:

Same as default applet but with:

- Maximum text length for a menu entry: 15
- Maximum number of menu entries: 2
- Position / Identifier for each menu entry: '01'/'01', '02'/'02'

Load Script: API_2_TKR_DMETB_1.ldr

Cleanup script: API_2_TKR_DMETB_1.clr

6.2.9.4.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Check the menu state before disabling a previously enabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- reset and initialise the card 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- Shall return true 2- Shall return false	1- The SIM shall issue a SET UP MENU proactive command with entry '01' and '02'.
2	**Check the menu state after disabling a previously enabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- disableMenuEntry('01') 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.	3- The SIM shall issue a SET UP MENU proactive command with entry '02' only.
3	**Check the menu before disabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- change Menu Entry '02' to indicate help supported 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	2- Shall return true 3- Shall return true	3- The SIM shall issue a SET UP MENU proactive command with entry '02', indicating help supported.
4	**Check the menu after disabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- disableMenuEntry('02') 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown. 2- Shall return true. 3- Shall return true.	3- The SIM shall issue a SET UP MENU proactive command with 1st Item TLV with a length of 0.
5	**Disabling invalid entries** For ID ranging from '00' to 'FF' except '01' and '02', the applet calls disableMenuEntry(ID) method.	Each time a Toolkit Exception with MENU_ENTRY_NOT_FOUND reason code shall be thrown.	

6.2.9.4.4 Test Coverage

CRR number	Test case number
N1	1,2,3,4
N2	1,2,3,4
N3	2,4
N4	4
C1	5

6.2.9.5 Method enableMenuEntry

Test Area Reference: API_2_TKR_EMETB

6.2.9.5.1 Conformance requirement:

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

```
public void enableMenuEntry(byte id)
        throws ToolkitException
```

Normal execution

CRRN1: A call to isEventSet() method on EVENT_MENU_SELECTION shall return the same result before and after the call to enableMenuEntry() method.

CRRN2: A call to isEventSet() method on EVENT_MENU_SELECTION_HELP_REQUEST shall return the same result before and after the call to enableMenuEntry() method.

CRRN3:The SIM Toolkit Framework shall dynamically issue a SETUP MENU proactive command which does contain an ITEM SIMPLE TLV object for this entry.

Parameters error

No requirements

Context errors

CRRC1: shall throw a ToolkitException with reason = MENU_ENTRY_NOT_FOUND if the menu entry doesn't exist for this applet

6.2.9.5.2 Test suite files

Additional requirements for the GSM personalisation:

- content of EF sume shall be:

  - Title Alpha Identifier: "TOOLKIT TEST"

Test Script: API_2_TKR_EMETB_1.scr

Test Applet: API_2_TKR_EMETB_1.java

Installation parameter:

Same as default applet but with:

- Maximum text length for a menu entry: 15
- Maximum number of menu entries: 2
- Position / Identifier for each menu entry: '01'/'01', '02'/'02'

Load Script: API_2_TKR_EMETB_1.ldr

Cleanup script: API_2_TKR_EMETB_1.clr

6.2.9.5.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Check menu state before enabling a previously disabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- isEventSet(EVENT_MENU_SELECTION) 2- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST) 3- disableMenuEntry('01')	1- Shall return true 2- Shall return false 3- No exception shall be thrown.	3- The SIM shall issue a SET UP MENU proactive command with entry '02' only.
2	**Check menu state after enabling a previously disabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- enableMenuEntry('01') 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.	3- The SIM shall issue a SET UP MENU proactive command with entry '01' and '02'.
3	**Check menu state before enabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- change Menu Entry '02' to indicate help supported 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST) 4- disableMenuEntry('02')	2- Shall return true 3- Shall return true 4- No exception shall be thrown	4- The SIM shall issue a SET UP MENU proactive command with entry '01'. The help information available flag.is not verified
4	**Check menu state after enabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST** 1- enableMenuEntry('02'). 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown. 2- Shall return true. 3- Shall return true.	3- The SIM shall issue a SET UP MENU proactive command with entries '01' and '02' indicating help supported.
5	**Enabling invalid entries** For ID ranging from '00' to 'FF' except '01' and '02', the applet calls enableMenuEntry(ID) method.	Each time a Toolkit Exception with MENU_ENTRY_NOT_FOUND reason code shall be thrown.	

6.2.9.5.4 Test Coverage

CRR number	Test case number
N1	1,2,3,4
N2	1,2,3,4
N3	1,2,3,4
C1	5

6.2.9.6 Method getEntry

Test Area Reference: API_2_TKR_GETY

6.2.9.6.1 Conformance requirement:

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

```
public static ToolkitRegistry getEntry()
            throws ToolkitException
```

Normal execution

CRRN1: returns a reference to the applet ToolkitRegistry object of the calling applet.

CRRN2: Each successive call to getEntry() method shall return the same object.

Parameters error

No requirements

6.2.9.6.2 Test suite files

Test Script: API_2_TKR_GETY_1.scr

Test Applet: API_2_TKR_GETY_1.java

Load Script: API_2_TKR_GETY_1.ldr

Cleanup script: API_2_TKR_GETY_1.clr

6.2.9.6.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Installalation** `In the constructor, the applet instance calls the getEntry() method.`	Returns a not null ToolkitRegistry instance.	
2	**Check it returns the same entry** `The applet calls the getEntry() method again.`	Returns the same ToolkitRegistry instance as for test case 1.	

6.2.9.6.4 Test Coverage

CRR number	Test case number
N1	1
N2	2

6.2.9.7 Method getPollInterval

Test Area Reference: API_2_TKR_GPOL

6.2.9.7.1 Conformance requirement:

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

```
public short getPollInterval()
```

Normal execution

CRRN1: shall return a value between 1 and 15300 if applet is registered to EVENT_STATUS_COMMAND event.

CRRN2: shall return POLL_NO_DURATION value (0) if the toolkit applet is not registered to EVENT_STATUS_COMMAND event.

Parameters error

No requirements.

Context errors

No requirements.

6.2.9.7.2 Test suite files

Test Script: API_2_TKR_GPOL_1.scr

Test Applet: API_2_TKR_ GPOL_1.java

Load Script: API_2_TKR_ GPOL_1.ldr

Cleanup script: API_2_TKR_ GPOL_1.clr

6.2.9.7.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Applet isn't registered to EVENT_STATUS_COMMAND** `getPollInterval().`	Shall return 0.	

2	**Requesting max duration**
	`1- requestPollInterval(15300)`
	`2- Reset and initialize the card`
	`3- getPollInterval()`
		1- No exception shall be thrown.
		3- Shall return a value between 1 and 15300.	

3	**Requesting System Duration**
	`1- requestPollInterval(POLL_SYSTEM_DURATION)`
	`2- Reset and initialize the card`
	`3- getPollInterval().`
		1- No exception shall be thrown.
		3- Shall return a value between 1 and 15300.	

4	**Requesting no Duration**
	`1- requestPollInterval(POLL_NO_DURATION)`
	`2- Reset and initialize the card`
	`3- getPollInterval().`
		1- No exception shall be thrown.
		3- Shall return 0.	

6.2.9.7.4 Test Coverage

CRR number	Test case number
N1	2,3
N2	1,4

6.2.9.8 Method initMenuEntry

Test Area Reference: API_2_TKR_IMET_BSSBZBS

6.2.9.8.1 Conformance requirement:

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

```
public byte initMenuEntry(byte[] menuEntry,
                short offset,
                short length,
                byte nextAction,
                boolean helpSupported,
                byte iconQualifier,
                short iconIdentifier)
        throws  java.lang.NullPointerException,
                java.lang.ArrayIndexOutOfBoundsException,
                ToolkitException
```

Normal execution

CRRN1: The SIM Toolkit Framework shall automatically update the menu stored in the ME by issuing a SETUP MENU proactive command.The later will reflect the changes done for the entry. The SIM Toolkit Framework shall use the data of the EF sume file in order to build the SET UP MENU command.

CRRN2: a call to isEventSet() method on EVENT_MENU_SELECTION shall return true after the 1st successful call (without an exception).

CRRN3: if helpSupported was true then a following call to isEventSet() method on EVENT_MENU_SELECTION_HELP_REQUEST event shall return true .

CRRN4: if helpSupported was true then after the completion of the SETUP MENU command, if an ENVELOPE(MENU_SELECTION_HELP_REQUEST) command is received by the SIM for this entry, then the SIM Toolkit framework shall trigger the applet.

CRRN5: if help supported was true, the SIM Toolkit Framework shall issue a SETUP MENU command with command qualifier = '80'

CRRN6: if helpSupported was false and there isn't any menu entry supporting help then a call to isEventSet() method on EVENT_MENU_SELECTION_HELP_REQUEST event shall return false.

CRRN7: The SIM Toolkit Framework shall supply in the SET UP MENU command with the icon identifier provided in the icon identifier list within the item icon identifier list Simple TLV if all the applets registered to the EVENT_MENU_SELECTION provide it.

CRRN8: The SIM Toolkit Framework shall set in the SET UP MENU command with the Icon list qualifier transmitted to the ME as 'icon is not self explanatory' if one of the applet registered prefers this qualifier.

CRRN9: If Next Action Indicator was different from '00', the SIM Toolkit Framework shall issue a SETUP MENU proactive command containing an Items Next Action Indicator simple TLV with the comprehension flag set to 0.

CRRN10: After the completion of the SETUP MENU command, if an ENVELOPE (MENU_SELECTION) command is received by the SIM for this identifier, then the SIM Toolkit framework shall trigger the applet.

Parameters error

CRRP1: Shall throw java.lang.NullPointerException - if menuEntry is null

CRRP2: Shall throw java.lang.ArrayIndexOutOfBoundsException - if offset would cause access outside array bounds

CRRP3: Shall throw java.lang.ArrayIndexOutOfBoundsException - if length would cause access outside array bounds

CRRP4:Shall throw java.lang.ArrayIndexOutOfBoundsException - if both offset and length would cause access outside array bounds

Context errors

CRRC1: Shall throw ALLOWED_LENGTH_EXCEEDED if the menu entry string is bigger than the allocated space

CRRC2: Shall throw REGISTRY_ERROR if the menu entry cannot be initialised (eg no more item data in applet loading parameter)

6.2.9.8.2 Test suite files

Additional requirements for the GSM personalisation:

- content of EF sume shall be:
  - Title Alpha Identifier: "TOOLKIT TEST"
  - Test case trigger: 1- Applet instantiation

    2- Menu selection

    3- Menu selection Help Supported

Test Script: API_2_TKR_IMET_BSSBZBS_1.scr

Test Applet: API_2_TKR_IMET_BSSBZBS_1.java

Installation parameter:

Same as default applet but with:

- Maximum text length for a menu entry: 15
- Maximum number of menu entries: 6
- Position / Identifier for each menu entry: '01'/'01', '02'/'02', '03'/'03', '04'/'04', '05'/'05', and '06'/'06'

Load Script: API_2_TKR_IMET_BSSBZBS_1.ldr

Cleanup script: API_2_TKR_IMET_BSSBZBS_1.clr

6.2.9.8.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**NULL as parameter to menuEntry** `MenuEntry = NULL`	Shall throw a java.lang.NullPointerException.	

2	**Offset > menuEntry.length**
	`MenuEntry = "ToolkitTest"`
	`Offset = 12`
	`Length = 0`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

3	**Offset < 0**
	`MenuEntry = "ToolkitTest"`
	`Offset = -1`
	`Length = 11`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

4	**Offset = 255**
	`MenuEntry = "ToolkitTest"`
	`Offset = 255`
	`Length = 11`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

5	**Length = menuEntry.length+1**
	`MenuEntry = "ToolkitTest"`
	`Offset = 0`
	`Length = 12`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

6	**Length < 0**
	`MenuEntry = "ToolkitTest"`
	`Offset = 0`
		Shall throw java.lang.ArrayIndexOutOfBoundsException.	

	Length = -1		
7	**Offset + length > menuEntry.length** MenuEntry = "ToolkitTest" Offset = 11 Length = 1	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
8	**MenuEntry.length > size allocated at loading for each menu entry** MenuEntry = "ToolkitTest impossible" Offset = 0 Length = 16	ALLOWED_LENGTH_EXCEEDED ToolkitException is thrown.	
9	**Successful call, menuEntry is the whole buffer** 1- initMenuEntry() MenuEntry = "TOOLKIT TEST 1" Offset = 0 Length = 14 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION)	1- No exception shall be thrown, Shall return ID '01'. 2- Shall return true.	
10	**Successful call, menuEntry part of a buffer** 1- initMenuEntry() MenuEntry = "1234567TOOLKIT TEST 2" Offset = 7 Length = 14 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown,Shall return ID '02'. 2- Shall return false.	
11	**Successful call, menuEntry with help supported** 1- initMenuEntry() MenuEntry = "TOOLKIT TEST 3" Offset = 0 Length = 14 NextAction = '00' HelpSupported = true IconQualifier = '00' IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)	1- No exception shall be thrown, Shall return ID '03' 2- Shall return true.	
12	**Successful call, menuEntry with an Icon** MenuEntry = "TOOLKIT TEST 4" Offset = 0 Length = 14 NextAction = '00' HelpSupported = false IconQualifier = '01' [icon not self explanatory] IconIdentifier = 1	1- No exception shall be thrown. 2- Shall return ID '04'	
13	**Successful call,**	1- No exception shall be thrown.	

	menuEntry with a next action indication MenuEntry = "TOOLKIT TEST 5" Offset = 0 Length = 14 NextAction = '24' [Select Item] HelpSupported = false IconQualifier = '00' IconIdentifier = 0	2- Shall return ID '05'	
14	**Successful call, length = 0** initMenuEntry() MenuEntry = "ToolkitTest" Offset = 0 Length = 0 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0	No exception shall be thrown,Shall return ID '06'.	
15	**Initialize more entry than allocated at loading** MenuEntry = "ToolkitTest" Offset = 0 Length = 11	REGISTRY_ERROR ToolkitException is thrown.	
16	**Dynamic update of the menu stored by the** ME Fetch		Card shall Send a SetUpMenu Proactive command: [CommandQualifier]=help supported [AlphaId]="TOOLKIT TEST" [ItemId=1] = "TOOLKIT TEST 1" [ItemId=2] = "TOOLKIT TEST 2" [ItemId=3] = "TOOLKIT TEST 3" [ItemId=4] = "TOOLKIT TEST 4" [ItemId=5] = "TOOLKIT TEST 5" [ItemId=6] = "" [ItemsNextAction]=06000000002400
17	**Check Applet is triggered by ENVELOPE(MENU_SELECTION) command** Menu Entry ID = '01'	Applet is trigged by an ENVELOPE(MENU_SELECTION) command & Menu Entry ID = '01'	
18	**Check Applet is triggered by ENVELOPE(MENU_SELECTION) command** Menu Entry ID = '02'	Applet is trigged by an ENVELOPE(MENU_SELECTION) command & Menu Entry ID = '02'	
19	**Check Applet is triggered by ENVELOPE(MENU_SELECTION) command** Menu Entry ID = '03'	Applet is trigged by an ENVELOPE(MENU_SELECTION) command & Menu Entry ID = '03'	
20	**Check Applet is triggered by ENVELOPE(MENU_SELECTION) command** Menu Entry ID = '04'	Applet is trigged by an ENVELOPE(MENU_SELECTION) command & Menu Entry ID = '04'	
21	**Check Applet is triggered by ENVELOPE(MENU_SELECTION) command** Menu Entry ID = '05'	Applet is trigged by an ENVELOPE(MENU_SELECTION) command & Menu Entry ID = '05'	

22	Check Applet is triggered by ENVELOPE (MENU_SELECTION_HELP_REQUEST) command `Menu Entry ID = '03'`	Applet is trigged by an ENVELOPE(MENU_SELECTION_HELP_REQUEST) command & Menu Entry ID = '03'	
23	**Check Applet is triggered by ENVELOPE(MENU_SELECTION) command** `Menu Entry ID = '06'`	Applet is trigged by an ENVELOPE(MENU_SELECTION) command & Menu Entry ID = '06'	

6.2.9.8.4 Test Coverage

CRR number	Test case number
N1	16
N2	9
N3	11
N4	22
N5	11,16
N6	10
N7	12,16
N8	12,16
N9	13,16
N10	9,10,11,12,13,14,17,18,19,20,21,23
P1	1
P2	2,3,4
P3	5,6
P4	7
C1	8
C2	14

6.2.9.9 Method isEventSet

Test Area Reference: API_2_TKR_IEVSB

6.2.9.9.1 Conformance requirement:

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

```
public boolean isEventSet(byte event)
```

Normal execution

CRRN1: shall return true if the event is set in the Toolkit Registry for the applet

CRRN2: shall return false if the event isn't set in the Toolkit Registry for the applet

Parameters error

No requirements.

Context errors

No requirements

6.2.9.9.2 Test suite files

Test Script: API_2_TKR_IEVSB_1.scr

Test Applet: API_2_TKR_ IEVSB _1.java

Installation parameter:

Same as default applet but with:

- Maximum text length for a menu entry: 15
- Maximum number of menu entries: 1
- Position / Identifier for each menu entry: '01'/'01'
- Maximum number of timers: 1

Load Script: API_2_TKR_ IEVSB_1.ldr

Cleanup script: API_2_TKR_ IEVSB_1.clr

6.2.9.9.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Events aren't set** Applet calls isEventSet() for each events ranging from 1 to 127 excepted EVENT_FORMATTED_SMS_PP_ENV and EVENT_MENU_SELECTION.	Shall return false each time.	
2	**For EVENT_FORMATTED_SMS_PP_ENV** isEventSet (EVENT_FORMATTED_SMS_PP_ENV)	Shall return true.	
3	**For EVENT_MENU_SELECTION** isEventSet (EVENT_MENU_SELECTION)	Shall return true	
4	**After clearing EVENT_FORMATTED_SMS_PP_ENV** 1- clearEvent(EVENT_FORMATTED_SMS_PP_ENV) 2- isEventSet(EVENT_FORMATTED_SMS_PP_ENV) .	1- No exception shall be thrown. 2- Shall return false.	
5	**Setting events** 1- For each SUPPORTED and ALLOWED events for setEvent(), applet calls: 1.1- setEvent() method 1.2- isEventSet() method.	1.1- No exception shall be thrown. 1.2- Shall return true each time.	
6	**For EVENT_MENU_SELECTION_HELP_REQUEST** 1- isEventSet (EVENT_MENU_SELECTION_HELP_REQUEST) 2- call changeMenuEntry with help supported 3- isEventSet (EVENT_MENU_SELECTION_HELP_REQUEST)	1- Shall return false. 3- Shall return true	
7	**For EVENT_TIMER_EXPIRATION** 1- isEventSet(EVENT_TIMER_EXPIRATION)	1- Shall return false.	

	2- call allocateTimer() 3- isEventSet(EVENT_TIMER_EXPIRATION)	3- Shall return true	
8	**For EVENT_STATUS_COMMAND** 1- isEventSet(EVENT_STATUS_COMMAND) 2- call requestPollInterval(POLL_SYSTEM_DURATION) 3- isEventSet(EVENT_STATUS_COMMAND)	1- Shall return false. 3- Shall return true	

6.2.9.9.4 Test Coverage

CRR number	Test case number
N1	2,3,4,5,6,7,8
N2	1,5,6,7,8

6.2.9.10 Method releaseTimer

Test Area Reference: API_2_TKR_RTIMB

6.2.9.10.1 Conformance requirement:

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

```
public void releaseTimer(byte timerIdentifier)
            throws ToolkitException
```

Normal execution

CRRN1: if it was the last allocated timer for the applet then a following call to isEventSet() method for EVENT_TIMER_EXPIRATION should return false.

CRRN2: if applet has timers allocated then a call to isEventSet(EVENT_TIMER_EXPIRATION) shall return true.

CRRN3: After invocation of the method the indicated timer shall be released and available for reallocation.

CRRN4: The applet is deregistered of the EVENT_TIMER_EXPIRATION for the indicated Timer Identifier.

Parameters error

CRRP1: shall throw a ToolkitException with INVALID_TIMER_ID reason if the timer identifier isn't between 1 and 8.

Context errors

CRRC1: shall throw a ToolkitException with INVALID_TIMER_ID reason if the timer is valid but isn't allocated to this applet.

6.2.9.10.2 Test suite files

Test Script: API_2_TKR_RTIMB_1.scr

Test Applet: API_2_TKR_RTIMB_1.java

Installation parameter:

As Default, except max timer which is set to 8.

Load Script: API_2_TKR_RTIMB_1.ldr

Cleanup script: API_2_TKR_RTIMB_1.clr

6.2.9.10.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Releasing not allocated timers** For each timer ID ranging from '00' to 'FF', applet calls releaseTimer(ID).	Each time, method shall throw a ToolkitException with reason code INVALID_TIMER_ID.	
2	**Releasing allocated timers** 1- 8 * allocateTimer() . 2- 7 * releaseTimer(id). 3- isEventSet(EVENT_TIMER_EXPIRATION)	1- No exception shall be thrown. 2- Each time, no exception shall be thrown. 3- Shall return true	
3	**Releasing invalid timer ID** 1- releaseTimer('FF') method 2- isEventSet(EVENT_TIMER_EXPIRATION)	1- Shall throw a ToolkitException with INVALID_TIMER_ID reason code. 2- Shall return true.	
4	**Releasing last timer** 1- releaseTimer(last timer allocated) 2- isEventSet(EVENT_TIMER_EXPIRATION)	1- No exception shall be thrown. 2- Shall return false.	
5	**Checking we can allocate timers after they** have been released 8 * allocateTimer().	No exception shall be thrown.	
6	**Releasing all timers.** For 1 to 8, releaseTimer(id).	No exception shall be thrown.	
7	**Checking applet isn't triggered by** ENVELOPE(TIMER_EXPIRATION) command Send ENVELOPE(TIMER_EXPIRATION)	Applet is not trigged by an ENVELOPE(TIMER_EXPIRATION) command	

6.2.9.10.4 Test Coverage

CRR number	Test case number
N1	4
N2	2,3
N3	5,6
N4	7
P1	1,3
C1	Framework

6.2.9.11 Method requestPollInterval

Test Area Reference: API_2_TKR_RPOLS

6.2.9.11.1 Conformance requirement:

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

```
public void requestPollInterval(short duration)
            throws ToolkitException
```

Normal execution

CRRN1: If duration is between 1 and 15300 or equal to POLL_SYSTEM_DURATION, the applet registers to EVENT_STATUS_COMMAND.

CRRN2: If duration is POLL_NO_DURATION, the applet is deregistered from EVENT_STATUS_COMMAND.

Parameters error

CRRP1: the method should throw a ToolkitException with REGISTRY_ERROR reason if duration is > 15300 or is < -1 (POLL_SYSTEM_DURATION).

Context errors

No Requirements.

6.2.9.11.2 Test suite files

Test Script: API_2_TKR_RPOLS_1.scr

Test Applet: API_2_TKR_RPOLS_1.java

Load Script: API_2_TKR_RPOLS_1.ldr

Cleanup script: API_2_TKR_RPOLS_1.clr

6.2.9.11.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Requesting a value between 1 and 15300 s** 1- isEventSet(EVENT_STATUS_COMMMAND) 2- For duration ranging from 1 to 15300, requestPollInterval(duration). 3- isEventSet(EVENT_STATUS_COMMAND).	1- Shall return false. 2- No exception shall be thrown. 3- Shall return true.	
2	1- Check Applet is triggered by a STATUS commandreset and card initialisation 2- Send STATUS command	2- Applet is trigged by a STATUS command	
3	**Requesting POLL SYSTEM DURATION** 1- isEventSet(EVENT_STATUS_COMMMAND). 2- RequestPollInterval(POLL_SYSTEM_DURATION). 3- IsEventSet(EVENT_STATUS_COMMAND).	1- Shall return true. 2- No exception shall be thrown. 3- Shall return true.	
4	**Check Applet is triggered by a STATUS command** 1- reset and card initialisation 2- Send STATUS command	2- Applet is trigged by a STATUS command	
5	**Requesting invalid duration** For duration ranging from 15301 to 15305, -2 requestPollInterval(duration)	Each time, a ToolkitException with REGISTRY_ERROR reason code, shall be thrown.	
6	**Requesting POLL NO DURATION** 1- isEventSet(EVENT_STATUS_COMMMAND) 2- requestPollInterval(POLL_NO_DURATION) 3- isEventSet(EVENT_STATUS_COMMAND)	1- Shall return true. 2- No exception shall be thrown. 3- Shall return false.	

7	**Check Applet isn't triggered by an STATUS command.** 1- reset and card initialisation 2- Send STATUS command	2- Applet is not trigged by a STATUS command	

6.2.9.11.4 Test Coverage

CRR number	Test case number
N1	1,2,3,4
N2	6,7
P1	5

6.2.9.12 Method setEvent

Test Area Reference: API_2_TKR_SEVTB

6.2.9.12.1 Conformance Requirement:

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

```
public void setEvent(byte id)
        throws ToolkitException
```

Normal execution

CRRN1: a following call to isEventSet() method with the same event id shall answer true for the applet.

CRRN2: the SIM Toolkit Framework shall trigger the applet if an occurrence of the set event happens.

CRRN3: this method shall accept all the events defined in GSM 0319 excepted: EVENT_MENU_SELECTION, EVENT_MENU_SELECTION_HELP_REQUEST, EVENT_TIMER_EXPIRATION , EVENT_STATUS_COMMAND

Parameters error

CRRP1: shall throw a ToolkitException with EVENT_NOT_SUPPORTED reason if event is 0.

CRRP2: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if event is EVENT_MENU_SELECTION.

CRRP3: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if event is EVENT_MENU_SELECTION_HELP_REQUEST.

CRRP4: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if event is EVENT_TIMER_EXPIRATION.

CRRP5: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if event is EVENT_STATUS_COMMAND.

Context errors

CRRC1: shall throw a ToolkitException with EVENT_ALREADY_REGISTERED if event is EVENT_CALL_CONTROL_BY_SIM but another applet is already registered to it.

CRRC2: shall throw a ToolkitException with EVENT_ALREADY_REGISTERED if event is EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM but another applet is already registered to it.

6.2.9.12.2 Test suite files

Test Script: API_2_TKR_SEVTB_1.scr

Test Applet: 1. API_2_TKR_SEVTB_1.java

2. API_2_TKR_SEVTB_2.java

Load Script: API_2_TKR_SEVTB_1.ldr

The load script installs the 2 instances.

Cleanup script: API_2_TKR_SEVTB_1.clr

6.2.9.12.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Applet 1 is triggered by ENVELOPE(SMS_PP_FORMATTED) command.** `Send ENVELOPE(SMS_PP_FORMATTED)`	Applet 1 shall be triggered	
2	**Setting ALLOWED and SUPPORTED events** `1- For all events defined in GSM 0319 (from 1 to 19) and allowed: EVENT_PROFILE_DOWNLOAD, EVENT_FORMATTED_SMS_PP_ENV, EVENT_FORMATTED_SMS_PP_UPD, EVENT_UNFORMATTED_SMS_PP_ENV, EVENT_UNFORMATTED_SMS_PP_UPD, EVENT_UNFORMATTED_SMS_CB, EVENT_CALL_CONTROL_BY_SIM, EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM, EVENT_EVENT_DOWNLOAD_MT_CALL, EVENT_EVENT_DOWNLOAD_CALL_CONNECTED, EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED, EVENT_EVENT_DOWNLOAD_LOCATION_STATUS, EVENT_EVENT_DOWNLOAD_USER_ACTIVITY, EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE, EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS`  `1.1- clearEvent(event)`  `1.2- isEventSet(event)`  `1.3- setEvent(event)`  `1.4- isEventSet(event)`  `1.5- clearEvent(event)`	1.1- No exception shall be thrown. 1.2- Shall return false. 1.3- No exception shall be thrown. 1.4- Shall return true. 1.5- No exception shall be thrown.	
3	**Event 0** `Call setEvent(0)`	Shall throw a ToolkitException with EVENT_NOT_SUPPORTED reason code.	
4	**Setting EVENT_MENU_SELECTION** `Call setEvent(EVENT_MENU_SELECTION)`	Shall throw a ToolkitException with EVENT_NOT_ALLOWED reason code.	
5	**Setting EVENT_MENU_SELECTION_HELP_REQUEST** `Call setEvent(EVENT_MENU_SELECTION_HELP_REQUEST)`	Shall throw a ToolkitException with EVENT_NOT_ALLOWED reason code.	
6	**Setting EVENT_TIMER_EXPIRATION** `Call setEvent(EVENT_TIMER_EXPIRATION)`	Shall throw a ToolkitException with EVENT_NOT_ALLOWED reason code.	
7	**Setting EVENT_STATUS_COMMAND**	Shall throw a ToolkitException with	

	`Call setEvent(EVENT_STATUS_COMMAND)`	EVENT_NOT_ALLOWED reason code.	
8	**Setting EVENT_CALL_CONTROL_BY_SIM** `Call setEvent(EVENT_CALL_CONTROL_BY_SIM)`	No Exception shall be thrown	
9	**Setting EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM** `Call setEvent(EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM)`	No Exception shall be thrown	
10	**Check applet is triggered by an ENVELOPE(CALL_CONTROL_BY_SIM)** Trigger the applet	Applet is trigged by an ENVELOPE(CALL_CONTROL_BY_SIM)	
11	**Check applet is triggered by an ENVELOPE(MO_SHORT_MESSAGE_CONTROL_BY_SIM)** Trigger the Applet	Applet is trigged by an ENVELOPE(MO_SHORT_MESSAGE_CONTROL_BY_SIM)	
12	**Applet 2 is triggered by ENVELOPE(SMS_PP_DOWNLOAD) command.** `Trigger the applet 2`	Applet 2 is trigged by an ENVELOPE(SMS_PP_DOWNLOAD) command	
13	**Applet 2 registers to CALL_CONTROL_BY_SIM but it is already assigned** `setEvent(EVENT_CALL_CONTROL_BY_SIM)`	Shall throw a ToolkitException with EVENT_ALREADY_REGISTERED reason code.	
14	**Applet 2 registers to MO_MESSAGE_CONTROL_BY SIM but it is already assigned** `setEvent(EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM)`	Shall throw a ToolkitException with EVENT_ALREADY_REGISTERED reason code.	

6.2.9.12.4 Test Coverage

CRR number	Test case number
N1	2
N2	1, 8,9,10, 11, 12
N3	2,4,5,6,7
P1	3
P2	4
P3	5
P4	6
P5	7
C1	13
C2	14

6.2.9.13 Method setEventList

Test Area Reference: API_2_TKR_SEVL_BSS

6.2.9.13.1 Conformance Requirement:

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

```
public void setEventList(byte[] eventList,
                         short offset,
                         short length)
                throws   java.lang.NullPointerException,
                         java.lang.ArrayIndexOutOfBoundsException,
                         ToolkitException
```

Normal execution

CRRN1: for all events set successfully by this method, a call to isEventSet() method should return true.

CRRN2: the SIM Toolkit Framework shall trigger the applet if an occurrence of one of the successfully registered events happens.

CRRN3: this method shall accept all the events defined in GSM 0319 excepted: EVENT_MENU_SELECTION, EVENT_MENU_SELECTION_HELP_REQUEST, EVENT_TIMER_EXPIRATION , EVENT_STATUS_COMMAND.

Parameters error

CRRP1: shall throw a java.lang.NullPointerException if eventList is null.

CRRP2: shall throw a java.lang.ArrayIndexOutOfBoundsException if offset would cause access outside array bounds.

CRRP3: shall throw a java.lang.ArrayIndexOutOfBoundsException if length would cause access outside array bounds.

CRRP4: shall throw a java.lang.ArrayIndexOutOfBoundsException if both offset and length would cause access outside array bounds.

CRRP5: shall throw a ToolkitException with EVENT_NOT_SUPPORTED reason if event is 0.

CRRP6: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if eventList contains EVENT_MENU_SELECTION.

CRRP7: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if eventList contains EVENT_MENU_SELECTION_HELP_REQUEST.

CRRP8: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if eventList contains EVENT_TIMER_EXPIRATION.

CRRP9: shall throw a ToolkitException with EVENT_NOT_ALLOWED reason if eventList contains EVENT_STATUS_COMMAND.

Context errors

CRRC1: shall throw a ToolkitException with EVENT_ALREADY_REGISTERED if eventList contains EVENT_CALL_CONTROL_BY_SIM but another applet is already registered to it.

CRRC2: shall throw a ToolkitException with EVENT_ALREADY_REGISTERED if eventList contains EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM but another applet is already registered to it.

6.2.9.13.2 Test suite files

Test Script: API_2_TKR_SEVL_BSS_1.scr

Test Applet: 1. API_2_TKR_ SEVL_BSS _1.java

2. API_2_TKR_ SEVL_BSS _2.java

Load Script: API_2_TKR_ SEVL_BSS_1.ldr

The load script installs the 2 instances.

Cleanup script: API_2_TKR_ SEVL_BSS_1.clr

6.2.9.13.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Applet 1 Registering all eventList buffer** `EventList = all allowed events defined in`	1- No exception shall be thrown. 2- No exception shall be thrown.	

	GSM 0319: EVENT_PROFILE_DOWNLOAD, EVENT_FORMATTED_SMS_PP_ENV, EVENT_FORMATTED_SMS_PP_UPD, EVENT_UNFORMATTED_SMS_PP_ENV, EVENT_UNFORMATTED_SMS_PP_UPD, EVENT_UNFORMATTED_SMS_CB, EVENT_CALL_CONTROL_BY_SIM, EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM, EVENT_EVENT_DOWNLOAD_MT_CALL, EVENT_EVENT_DOWNLOAD_CALL_CONNECTED, EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED, EVENT_EVENT_DOWNLOAD_LOCATION_STATUS, EVENT_EVENT_DOWNLOAD_USER_ACTIVITY, EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE , EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS 1- For each event in EventList clearEvent(event) 2- setEventList(eventList) Offset = 0 Length = eventList.lentgh 3- For all events in eventList isEventSet(event) 4- For each event in EventList clearEvent(event)	3- Each time shall return true. 4- No exception shall be thrown.	
2	**Registering part of eventList buffer** EventList = all allowed events defined in GSM 0319 (see test case 1). 1- For each event in EventList clearEvent(event) 2- setEventList(eventList, offset, length) Offset > 0 Length = eventList.lentgh – offset 3- For all events in eventList: isEventSet(event) 4- For each event in EventList: clearEvent(event)	1- No exception shall be thrown. 2- No exception shall be thrown. 3- Each time shall return true for events ranging from offset to offset+length else shall return false. 4- No exception shall be thrown.	
3	**Null buffer** EventList = null	Shall throw a java.lang.NullPointerException Exception	
4	**Out of bounds offset** Offset = eventList.length Length = 1	Shall throw a java.lang.ArrayIndexOutOfBounds Exception	
5	**Out of bounds and big offset** Offset = 255 Length = 1	Shall throw a java.lang.ArrayIndexOutOfBounds Exception	
6	**Offset < 0** Offset = -1 Length = 1	Shall throw a java.lang.ArrayIndexOutOfBounds Exception	
7	**Out of bounds length** Offset = 0 Length = eventList.length + 1	Shall throw a java.lang.ArrayIndexOutOfBounds Exception	

8	**Out of bounds and big length**
	
	`Offset = 0`
	`Length = 255`
		Shall throw a java.lang.ArrayIndexOutOfBounds Exception	

9	**Length < 0**
	
	`Offset = 0`
	`Length = -1`
		Shall throw a java.lang.ArrayIndexOutOfBounds Exception	

10	**Out of bounds offset + Length** `Offset + length > eventList.length + 1`	Shall throw a java.lang.ArrayIndexOutOfBounds Exception	
11	**Event 0** `Call setEventList(eventList) with eventList indicating event 0`	Shall throw a ToolkitException with EVENT_NOT_SUPPORTED reason code.	
12	**EVENT_MENU_SELECTION** `Call setEventList(eventList) with eventList indicating EVENT_MENU_SELECTION`	Shall throw a ToolkitException with reason code EVENT_NOT_ALLOWED.	
13	**EVENT_MENU_SELECTION_HELP_REQUEST** `Call setEventList(eventList) with eventList indicating EVENT_MENU_SELECTION_HELP_REQUEST`	Shall throw a ToolkitException with reason code EVENT_NOT_ALLOWED.	
14	**EVENT_TIMER_EXPIRATION** `Call setEventList(eventList) with eventList indicating EVENT_TIMER_EXPIRATION`	Shall throw a ToolkitException with reason code EVENT_NOT_ALLOWED.	
15	**EVENT_STATUS_COMMAND** `Call setEventList(eventList) with eventList indicating EVENT_STATUS_COMMAND`	Shall throw a ToolkitException with reason code EVENT_NOT_ALLOWED.	
16	**Setting EVENT_CALL_CONTROL_BY_SIM** `setEventList(List, 0, 2) with List containing EVENT_CALL_CONTROL_BY_SIM & EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM`	Shall not throw an exception	

17	**Check applet is triggered by an ENVELOPE(CALL_CONTROL_BY_SIM)**
	`Reset and initialise the card`
	`Trigger the applet`
		Applet is trigged by an ENVELOPE(CALL_CONTROL_BY_SIM)	

18	**Check applet is triggered by an ENVELOPE(MO_SHORT_MESSAGE_CONTROL_BY_SIM)** `Trigger the applet`	Applet is trigged by an ENVELOPE(MO_SHORT_MESSAGE_CONTROL_BY_SIM)	
19	**Applet 2 registers to CALL_CONTROL_BY_SIM but it is already assigned** `setEventList(MonoEventList,0,1) with MonoEventList containing EVENT_CALL_CONTROL_BY_SIM`	Shall throw a ToolkitException with EVENT_ALREADY_REGISTERED reason code.	
20	**Applet 2 registers to MO_SHORT_MESSAGE_CONTROL_BY_SIM but it is already assigned setEventList(MonoEventList,0,1) with MonoEventList containing EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM**	Shall throw a ToolkitException with EVENT_ALREADY_REGISTERED reason code.	

6.2.9.13.4 Test Coverage

CRR number	Test case number
N1	1,2
N2	16,17,18
N3	1,2,11, 12,13,14,15
P1	3
P2	4,5,6
P3	7,8,9
P4	10
P5	11
P6	12
P7	13
P8	14
P9	15
C1	19
C2	20

6.2.10 Class ViewHandler

It is not possible to test the methods provided by this class as it is declared 'abstract'; it will be done in the class inheriting it: EditHandler, EnvelopeHandler, ProactiveResponseHandler, ProactiveHandler.

6.2.11 Class ToolkitException

6.2.11.1 Exception Constants

Test Area Reference: API_2_TKE_CONS

6.2.11.1.1 Conformance requirement:

There is no API, only constants.

Normal execution

CRRN1: The Constants of the class ToolkitException shall all have the same name and value defined in the GSM03.19 .

Parameters error

No requirements

Context errors

No requirements

6.2.11.1.2 Test suite files

None

6.2.11.1.3 Test procedure

The constants in Java are resolved at compilation time, therefore a runtime test is not useful. No test of constants will be performed.

6.2.11.2 Constructor ToolkitException

Test Area Reference: API_2_TKE_COORS

6.2.11.2.1 Conformance requirement:

The constructor with following headershall compliant to its definition in the API.

```
public ToolkitException(short reason)
```

Normal execution

CRRN1: Construct a ToolkitException instance with the specified reason.

Parameters error

No requirements

Context errors

No requirements

6.2.11.2.2 Test suite files

No additional requirements for the GSM personalisation:

Test Script: API_2_TKE _COORS_1.scr

Test Applet: API_2_TKE _COORS_1.java

Load Script: API_2_TKE _COORS_1.ldr

Cleanup script: API_2_TKE _COORS_1.clr

6.2.11.2.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**reason = (short) 19**	ToolkitException.getReason() = (short)19	

6.2.11.2.4 Test Coverage

CRR number	Test case number
N1	1

6.2.11.3 Method throwIt

Test Area Reference: API_2_TKE_THITS

6.2.11.3.1 Conformance requirement:

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

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

Normal execution

CRRN1: Throws the JCRE instance of the ToolkitException class with the specified reason.

CRRN2: extends javacard.framework.CardRuntimeException

Parameters error

No requirements

Context errors

No requirements

6.2.11.3.2 Test suite files

No additional requirements for the GSM personalisation:

Test Script: API_2_TKE_ THITS_1.scr

Test Applet: API_2_TKE_ THITS_1.java

Load Script: API_2_TKE_ THITS_1.ldr

Cleanup Script: API_2_TKE_THITS_1.clr

6.2.11.3.3 Test procedure

Id	Description	API Expectation	APDU Expectation
1	**Throws the JCRE instance of ToolkitException with the specified reason**	Reason = 0	
2	**Throws the JCRE instance of ToolkitException with the specified reason**	Reason = 1	
3	**Throws the JCRE instance of ToolkitException with the specified reason**	Reason = 15	
4	**ToolkitException extends javacard.framework.CardRuntimeException**	Reason = 0	
5	**ToolkitException extends javacard.framework.CardRuntimeException**	Reason = 1	
6	**ToolkitException extends javacard.framework.CardRuntimeException**	Reason = 15	

6.2.11.3.4 Test Coverage

CRR number	Test case number
N1	1, 2, 3
N2	4, 5, 6

6.3 SIM Toolkit Framework

6.3.1 Minimum Handler Availability

This test area tests the rules that define the minimum requirements for the availability of the system handlers.

6.3.1.1 ProactiveHandler

Test Area Reference: FWK_MHA_ PAHD

6.3.1.1.1 Conformance Requirement

Normal Execution

CRRN1: If a proactive session is not ongoing the ProactiveHandler is available from the invocation to the termination of the processToolkit method for the following events:

EVENT_FORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_CB

EVENT_MENU_SELECTION

EVENT_MENU_SELECTION_HELP_REQUEST

EVENT_TIMER_EXPIRATION

EVENT_EVENT_DOWNLOAD_MT_CALL

EVENT_EVENT_DOWNLOAD_CALL_CONNECTED

EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED

EVENT_EVENT_DOWNLOAD_LOCATION_STATUS

EVENT_EVENT_DOWNLOAD_USER_ACTIVITY

EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE

EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS

EVENT_UNRECOGNIZED_ENVELOPE

EVENT_STATUS_COMMAND

EVENT_FORMATTED_SMS_PP_UPD

EVENT_UNFORMATTED_SMS_PP_UPD

EVENT_CALL_CONTROL

EVENT_SMS_MO_CONTROL

EVENT_PROFILE_DOWNLOAD

6.3.1.1.2 Test Suite Files

Test Script: FWK_MHA_ PAHD_1.scr

Test Applet: FWK_MHA_ PAHD_1.java

FWK_MHA_PAHD_2.java

Load Script: FWK_MHA_ PAHD_1.ldr

Cleanup Script: FWK_MHA_ PAHD_1.clr

Parameter File: FWK_MHA_ PAHD_1.par

6.3.1.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.1.1.4 Test Coverage

CRR Number	Test Case Number

6.3.1.2 ProactiveResponseHandler

Test Area Reference: FWK_MHA_ PRHD

6.3.1.2.1 Conformance Requirement

Normal Execution

CRRN1: The ProactiveResponseHandler is available after the first call to the ProactiveHandler.send method to the termination of the processToolkit method for the following events:

EVENT_FORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_CB

EVENT_MENU_SELECTION

EVENT_MENU_SELECTION_HELP_REQUEST

EVENT_TIMER_EXPIRATION

EVENT_EVENT_DOWNLOAD_MT_CALL

EVENT_EVENT_DOWNLOAD_CALL_CONNECTED

EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED

EVENT_EVENT_DOWNLOAD_LOCATION_STATUS

EVENT_EVENT_DOWNLOAD_USER_ACTIVITY

EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE

EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS

EVENT_UNRECOGNIZED_ENVELOPE

EVENT_STATUS_COMMAND

EVENT_FORMATTED_SMS_PP_UPD

EVENT_UNFORMATTED_SMS_PP_UPD

EVENT_CALL_CONTROL

EVENT_SMS_MO_CONTROL

EVENT_PROFILE_DOWNLOAD

6.3.1.2.2 Test Suite Files

Test Script: FWK_MHA_ PRHD_1.scr

Test Applet: FWK_MHA_ PRHD_1.java

FWK_MHA_PRHD_2.java

Load Script: FWK_MHA_ PRHD_1.ldr

Cleanup Script: FWK_MHA_ PRHD_1.clr

Parameter File: FWK_MHA_ PRHD_1.par

6.3.1.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

Id	Description	API Expectation	APDU Expectation

6.3.1.2.4 Test Coverage

CRR Number	Test Case Number

6.3.1.3 EnvelopeHandler

Test Area Reference: FWK_MHA_ ENHD

6.3.1.3.1 Conformance Requirement

Normal Execution

CRRN1: The EnvelopeHandler and its content are available for all toolkit applets triggered from the invocation to the termination of their processToolkit method for the following events:.

EVENT_FORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_CB

EVENT_MENU_SELECTION

EVENT_MENU_SELECTION_HELP_REQUEST

EVENT_TIMER_EXPIRATION

EVENT_EVENT_DOWNLOAD_MT_CALL

EVENT_EVENT_DOWNLOAD_CALL_CONNECTED

EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED

EVENT_EVENT_DOWNLOAD_LOCATION_STATUS

EVENT_EVENT_DOWNLOAD_USER_ACTIVITY

EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE

EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS

EVENT_UNRECOGNIZED_ENVELOPE

EVENT_FORMATTED_SMS_PP_UPD

EVENT_UNFORMATTED_SMS_PP_UPD

EVENT_CALL_CONTROL

EVENT_SMS_MO_CONTROL

Context Errors

CRRC1: The EnvelopeHandler and its content are not available for any toolkit applet triggered from the invocation to the termination of their processToolkit method for the following events:

EVENT_STATUS_COMMAND

EVENT_PROFILE_DOWNLOAD

6.3.1.3.2 Test Suite Files

Test Script: FWK_MHA_ ENHD_1.scr

Test Applet: FWK_MHA_ ENHD_1.java

FWK_MHA_ENHD_2.java

Load Script: FWK_MHA_ ENHD_1.ldr

Cleanup Script: FWK_MHA_ ENHD_1.clr

Parameter File: FWK_MHA_ ENHD_1.par

6.3.1.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.1.3.4 Test Coverage

CRR Number	Test Case Number

6.3.1.4 EnvelopeResponseHandler

Test Area Reference: FWK_MHA_ ERHD

6.3.1.4.1 Conformance Requirement

Normal Execution

CRRN1: The handler is available for all triggered toolkit applets from the invocation of the processToolkit method of the toolkit applet until a toolkit applet has posted an envelope response or the first invocation of the ProactiveHandler.send method for the following events:.

EVENT_FORMATTED_SMS_PP_ENV

EVENT_UNFORMATTED_SMS_PP_ENV

EVENT_CALL_CONTROL

EVENT_SMS_MO_CONTROL

EVENT_UNRECOGNIZED_ENVELOPE

CRRN2: After a call to the post method the handler is not longer available

Context Errors

CRRC1: The handler is not available for the following events:

EVENT_UNFORMATTED_SMS_CB

EVENT_MENU_SELECTION

EVENT_MENU_SELECTION_HELP_REQUEST

EVENT_TIMER_EXPIRATION

EVENT_EVENT_DOWNLOAD_MT_CALL

EVENT_EVENT_DOWNLOAD_CALL_CONNECTED

EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED

EVENT_EVENT_DOWNLOAD_LOCATION_STATUS

EVENT_EVENT_DOWNLOAD_USER_ACTIVITY

EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE

EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS

EVENT_STATUS_COMMAND

EVENT_FORMATTED_SMS_PP_UPD

EVENT_UNFORMATTED_SMS_PP_UPD

EVENT_PROFILE_DOWNLOAD

6.3.1.4.2 Test Suite Files

Test Script: FWK_MHA_ ERHD_1.scr

Test Applet: FWK_MHA_ ERHD_1.java

FWK_MHA_ERHD_2.java

Load Script: FWK_MHA_ ERHD_1.ldr

Cleanup Script: FWK_MHA_ ERHD_1.clr

Parameter File: FWK_MHA_ ERHD_1.par

6.3.1.4.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.1.4.4 Test Coverage

CRR Number	Test Case Number

6.3.2 Handler Integrity

6.3.2.1 ProactiveHandler

Test Area Reference: FWK_HIN_ PAHD

6.3.2.1.1 Conformance Requirement

Normal Execution

CRRN1: At the processToolkit invocation the TLV-List is cleared.

CRRN2: After a call to ProactiveHandler.send method the handler will remain unchanged until the ProactiveHandler.init or appendTLV method are called.

6.3.2.1.2 Test Suite Files:

Test Script: FWK_HIN_ PAHD_1.scr

Test Applet: FWK_ HIN_ PAHD_1.java

FWK_HIN_PAHD_2.java

Load Script: FWK_ HIN_ PAHD_1.ldr

Cleanup Script: FWK_ HIN_ PAHD_1.clr

Parameter File: FWK_ HIN_ PAHD_1.par

6.3.2.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.2.1.4 Test Coverage

CRR Number	Test Case Number

6.3.2.2 ProactiveResponseHandler

Test Area Reference: FWK_HIN_ PRHD

6.3.2.2.1 Conformance Requirement

Normal Execution

CRRN1: The ProactiveResponseHandler content is changed after the call to ProactiveHandler.send method and remains unchanged until next call to the ProactiveHandler.send method.

CRRN2: The ProactiveResponseHandler may not be available before the first call to ProactiveHandler.send method, if available the content is cleared.

6.3.2.2.2 Test Suite Files

Test Script: FWK_HIN_ PRHD_1.scr

Test Applet: FWK_ HIN_ PRHD_1.java

Load Script: FWK_ HIN_ PRHD_1.ldr

Cleanup Script: FWK_ HIN_ PRHD_1.clr

Parameter File: FWK_ HIN_ PRHD_1.par

6.3.2.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.2.2.4 Test Coverage

CRR Number	Test Case Number

6.3.2.3 EnvelopeHandler

Test Area Reference: FWK_HIN_ ENHD

6.3.2.3.1 Conformance Requirement

Normal Execution

CRRN1: The EnvelopeHandler content shall have the same value during the processToolkit

CRRN2: The SIM Toolkit Framework guarantees that all triggered toolkit applets receive the data.

6.3.2.3.2 Test Suite Files

Test Script: FWK_HIN_ ENHD_1.scr

Test Applet: FWK_ HIN_ ENHD_1.java

Load Script: FWK_ HIN_ ENHD_1.ldr

Cleanup Script: FWK_ HIN_ ENHD_1.clr

Parameter File: FWK_ HIN_ ENHD_1.par

6.3.2.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.2.3.4 Test Coverage

CRR Number	Test Case Number

6.3.3 Applet Triggering

6.3.3.1 EVENT_PROFILE_DOWNLOAD

Test Area Reference: FWK_APT_EPDW

6.3.3.1.1 Conformance Requirement

Normal Execution

CRRN1: Upon the reception of Terminal Profile command by the SIM, the STF stores the ME Profile and then triggers the registered toolkit applets.

CRRN2: The applet is not triggered by the EVENT_PROFILE_DOWNLOAD once it has deregistered from this event.

CRRN3: The STF shall not reply busy to a Terminal Profile command

6.3.3.1.2 Test Suite Files

Test Script: FWK_APT_EPDW_1.scr

Test Applet: FWK_APT_EPDW_1.java

FWK_APT_EPDW_2.java

FWK_APT_EPDW_3.java

Load Script: FWK_APT_EPDW_1.ldr

Cleanup Script: FWK_APT_EPDW_1.clr

Parameter File: FWK_APT_EPDW_1.par

6.3.3.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.1.4 Test Coverage

CRR Number	Test Case Number

6.3.3.2 EVENT_MENU_SELECTION

Test Area Reference: FWK_APT_EMSE

6.3.3.2.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_MENU_SELECTION when an Envelope Menu Selection is received with the item identifier of a menu entry of this applet if no proactive session is ongoing.

6.3.3.2.2 Test Suite Files

Test Script: FWK_APT_EMSE_1.scr

Test Applet: FWK_APT_EMSE_1.java

Load Script: FWK_APT_EMSE_1.ldr

Cleanup Script: FWK_APT_EMSE_1.clr

Parameter File: FWK_APT_EMSE_1.par

6.3.3.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.2.4 Test Coverage

CRR Number	Test Case Number

6.3.3.3 EVENT_MENU_SELECTION_HELP_REQUEST

Test Area Reference: FWK_APT_EMSH

6.3.3.3.1 Conformance Requirement

Normal Execution

CRRN1: If and ENVELOPE (MENU_SELECTION_HELP_SUPPORTED) command is received for one entry supporting help, then STF shall trigger the corresponding applet.

6.3.3.3.2 Test Suite Files

none

6.3.3.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.3.4 Test Coverage

CRR Number	Test Case Number

6.3.3.4 EVENT_FORMATTED_SMS_PP_ENV

Test Area Reference: FWK_APT_EFSE

6.3.3.4.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_FORMATTED_SMS_PP_ENV once it has registered to this event and Formatted Envelope DataDownLoad with the corresponding TAR, defined at the applet loading, is received and no proactive session is ongoing

CRRN2: The applet is not triggered by the EVENT_FORMATTED_SMS_PP_ENV once it has deregistered from this event.

6.3.3.4.2 Test Suite Files

Test Script: FWK_APT_EFSE_1.scr

Test Applet: FWK_APT_EFSE_1.java

Load Script: FWK_APT_EFSE_1.ldr

Cleanup Script: FWK_APT_EFSE_1.clr

Parameter File: FWK_APT_EFSE_1.par

6.3.3.4.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.4.4 Test Coverage

CRR Number	Test Case Number

6.3.3.5 EVENT_UNFORMATTED_SMS_PP_ENV

Test Area Reference: FWK_APT_EUSE

6.3.3.5.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_ UNFORMATTED_SMS_PP_ENV once it has registered to this event and an Unformatted Envelope DataDownLoad is received if no proactive session is ongoing

CRRN2: The applet is not triggered by the EVENT_ UNFORMATTED_SMS_PP_ENV once it has deregistered from this event.

6.3.3.5.2 Test Suite Files

Test Script: FWK_APT_EUSE_1.scr

Test Applet: FWK_APT_EUSE_1.java

Load Script: FWK_APT_EUSE_1.ldr

Cleanup Script: FWK_APT_EUSE_1.clr

Parameter File: FWK_APT_EUSE_1.par

6.3.3.5.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.5.4 Test Coverage

CRR Number	Test Case Number

6.3.3.6 EVENT_CALL_CONTROL_BY_SIM

Test Area Reference: FWK_APT_ECCN

6.3.3.6.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_CALL_CONTROL_BY_SIM once it has registered to this event and an Envelope Call Control is received

CRRN2: The applet is not triggered by the EVENT_CALL_CONTROL_BY_SIM once it has deregistered from this event.

6.3.3.6.2 Test Suite Files

Test Script: FWK_APT_ECCN_1.scr

Test Applet: FWK_APT_ECCN_1.java

Load Script: FWK_APT_ECCN_1.ldr

Cleanup Script: FWK_APT_ECCN_1.clr

Parameter File: FWK_APT_ECCN_1.par

6.3.3.6.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.6.4 Test Coverage

CRR Number	Test Case Number

6.3.3.7 EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM

Test Area Reference: FWK_APT_EMCN

6.3.3.7.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM once it has registered to this event and an Envelope MO Short Message Control.

CRRN2: The applet is not triggered by the EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM once it has deregistered from this event.

6.3.3.7.2 Test Suite Files

Test Script: FWK_APT_EMCN_1.scr

Test Applet: FWK_APT_EMCN_1.java

Load Script: FWK_APT_EMCN_1.ldr

Cleanup Script: FWK_APT_EMCN_1.clr

Parameter File: FWK_APT_EMCN_1.par

6.3.3.7.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.7.4 Test Coverage

CRR Number	Test Case Number

6.3.3.8 EVENT_TIMER_EXPIRATION

Test Area Reference: FWK_APT_ETEX

6.3.3.8.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_TIMER_EXPIRATION once it has been registered to this event and an Envelope Timer Expiration with a Timer Identifier of the applet is received if no proactive session is ongoing.

CRRN2: The applet is not triggered by the EVENT_TIMER_EXPIRATION once it has been deregistered from this event.

6.3.3.8.2 Test Suite Files

Test Script: FWK_APT_ETEX_1.scr

Test Applet: FWK_APT_ETEX_1.java

Load Script: FWK_APT_ETEX_1.ldr

Cleanup Script: FWK_APT_ETEX_1.clr

Parameter File: FWK_APT_ETEX_1.par

6.3.3.8.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.8.4 Test Coverage

CRR Number	Test Case Number

6.3.3.9 EVENT_UNFORMATTED_SMS_CB

Test Area Reference: FWK_APT_EUCB

6.3.3.9.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_UNFORMATTED_SMS_CB once it has registered to this event and an Envelope Cell Broadcast DownLoad is received.

CRRN2: The applet is not triggered by the EVENT_UNFORMATTED_SMS_CB once it has deregistered from this event.

6.3.3.9.2 Test Suite Files

Test Script: FWK_APT_EUCB_1.scr

Test Applet: FWK_APT_EUCB_1.java

Load Script: FWK_APT_EUCB_1.ldr

Cleanup Script: FWK_APT_EUCB_1.clr

Parameter File: FWK_APT_EUCB_1.par

6.3.3.9.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.9.4 Test Coverage

CRR Number	Test Case Number

6.3.3.10 EVENT_EVENT_DOWNLOAD_MT_CALL

Test Area Reference: FWK_APT_EDMC

6.3.3.10.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_MT_CALL once it has registered to this event and an Envelope Event DownLoad MT Call is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_MT_CALL once it has deregistered from this event.

6.3.3.10.2 Test Suite Files

Test Script: FWK_APT_EMSE_1.scr

Test Applet: FWK_APT_EMSE_1.java

Load Script: FWK_APT_EMSE_1.ldr

Cleanup Script: FWK_APT_EMSE_1.clr

Parameter File: FWK_APT_EMSE_1.par

6.3.3.10.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.10.4 Test Coverage

CRR Number	Test Case Number

6.3.3.11 EVENT_EVENT_DOWNLOAD_CALL_CONNECTED

Test Area Reference: FWK_APT_EDCC

6.3.3.11.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_CALL_CONNECTED once it has registered to this event and an Envelope Event DownLoad Call Connected is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_CALL_CONNECTED once it has deregistered from this event.

6.3.3.11.2 Test Suite Files

Test Script: FWK_APT_EDCC_1.scr

Test Applet: FWK_APT_EDCC_1.java

Load Script: FWK_APT_EDCC_1.ldr

Clean-up Script: FWK_APT_EDCC_1.clr

6.3.3.11.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.11.4 Test Coverage

CRR Number	Test Case Number

6.3.3.12 EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED

Test Area Reference: FWK_APT_EDCD

6.3.3.12.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED once it has registered to this event and an Envelope Event DownLoad Call Disconnected is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED once it has deregistered from this event.

6.3.3.12.2 Test Suite Files

Test Script: FWK_APT_EDCD_1.scr

Test Applet: FWK_APT_EDCD_1.java

Load Script: FWK_APT_EDCD_1.ldr

Cleanup Script: FWK_APT_EDCD_1.clr

Parameter File: FWK_APT_EDCD_1.par

6.3.3.12.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.12.4 Test Coverage

CRR Number	Test Case Number

6.3.3.13 EVENT_EVENT_DOWNLOAD_LOCATION_STATUS

Test Area Reference: FWK_APT_EDLS

6.3.3.13.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_LOCATION_STATUS once it has registered to this event and an Envelope Event DownLoad Location Status is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_LOCATION_STATUS once it has deregistered from this event.

6.3.3.13.2 Test Suite Files

Test Script: FWK_APT_EDLS_1.scr

Test Applet: FWK_APT_EDLS_1.java

Load Script: FWK_APT_EDLS_1.ldr

Cleanup Script: FWK_APT_EDLS_1.clr

Parameter File: FWK_APT_EDLS_1.par

6.3.3.13.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.13.4 Test Coverage

CRR Number	Test Case Number

6.3.3.14 EVENT_EVENT_DOWNLOAD_USER_ACTIVITY

Test Area Reference: FWK_APT_EDUA

6.3.3.14.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_USER_ACTIVITY once it has registered to this event and an Envelope Event DownLoad User Activity is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_USER_ACTIVITY once it has deregistered from this event.

6.3.3.14.2 Test Suite Files

Test Script: FWK_APT_EDUA_1.scr

Test Applet: FWK_APT_EDUA_1.java

Load Script: FWK_APT_EDUA_1.ldr

Cleanup Script: FWK_APT_EDUA_1.clr

Parameter File: FWK_APT_EDUA_1.par

6.3.3.14.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.14.4 Test Coverage

CRR Number	Test Case Number

6.3.3.15 EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE

Test Area Reference: FWK_APT_EDIS

6.3.3.15.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE once it has registered to this event and an Envelope Event DownLoad Idle Screen Available is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE once it has deregistered from this event.

6.3.3.15.2 Test Suite Files

Test Script: FWK_APT_EDIS_1.scr

Test Applet: FWK_APT_EDIS_1.java

Load Script: FWK_APT_EDIS_1.ldr

Cleanup Script: FWK_APT_EDIS_1.clr

Parameter File: FWK_APT_EDIS_1.par

6.3.3.15.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.15.4 Test Coverage

CRR Number	Test Case Number

6.3.3.16 EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS

Test Area Reference: FWK_APT_EDCR

6.3.3.16.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS once it has registered to this event and Envelope Event DownLoad Card Reader Status is received.

CRRN2: The applet is not triggered by the EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS once it has deregistered from this event.

6.3.3.16.2 Test Suite Files

Test Script: FWK_APT_EDCR_1.scr

Test Applet: FWK_APT_EDCR_1.java

Load Script: FWK_APT_EDCR_1.ldr

Cleanup Script: FWK_APT_EDCR_1.clr

Parameter File: FWK_APT_EDCR_1.par

6.3.3.16.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.16.4 Test Coverage

CRR Number	Test Case Number

6.3.3.17 EVENT_UNRECOGNIZED_ENVELOPE

Test Area Reference: FWK_APT_EUEV

6.3.3.17.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_UNRECOGNIZED_ENVELOPE once it has registered to this event and an Unrecognized Envelope is received.

CRRN2: The applet is not triggered by the EVENT_UNRECOGNIZED_ENVELOPE once it has deregistered from this event.

6.3.3.17.2 Test Suite Files

Test Script: FWK_APT_EUEN_1.scr

Test Applet: FWK_APT_EUEN_1.java

Load Script: FWK_APT_EUEN_1.ldr

Cleanup Script: FWK_APT_EUEN_1.clr

Parameter File: FWK_APT_EUEN_1.par

6.3.3.17.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.17.4 Test Coverage

CRR Number	Test Case Number

6.3.3.18 EVENT_STATUS_COMMAND

Test Area Reference: FWK_APT_ESTC

6.3.3.18.1 Conformance Requirement

Normal Execution

CRRN1: The applet is triggered by the EVENT_STATUS_COMMAND once it has registered to this event and a Status Command is received.

CRRN2: The applet is not triggered by the EVENT_STATUS_COMMAND once it has deregistered from this event.

6.3.3.18.2 Test Suite Files

Test Script: FWK_APT_ESTC_1.scr

Test Applet: FWK_APT_ESTC_1.java

Load Script: FWK_APT_ESTC_1.ldr

Cleanup Script: FWK_APT_ESTC_1.clr

Parameter File: FWK_APT_ESTC_1.par

6.3.3.18.3 Test Procedure

Id	Description	API Expectation	APDU Expectation

6.3.3.18.4 Test Coverage

CR Number	Test Case Number

6.3.4 Proactive Command Sending by the STF

6.3.4.1 System Proactive Commands

Test Area Reference: FWK_PCS_SPCO

6.3.4.1.1 Conformance Requirements

Normal Execution

CRRN1: When a toolkit applet changes a menu entry of its registry object, the SIM Toolkit Framework shall dynamically* update the menu stored in the ME during the current card session

CRRN2: The STF shall use the data of the EFsume file when issuing the SET UP MENU proactive command.

CRRN3: For all EVENT_EVENT_DOWNLOAD_*: When a toolkit applet changes one or more of these requested events of its registry object, the STF shall dynamically* update the event list stored in the ME during the current card session by SET UP EVENT LIST proactive command.

*The STF shall send its system proactive command as soon as no proactive session is pending and all the applets registered to the current events have been triggered and have returned from the processToolkit method invocation.

6.3.4.1.2 Test Suite Files

Test Script: FWK_PCS_SPCO_1.scr

Test Applet: FWK_PCS_SPCO_1.java

Load Script: FWK_PCS_SPCO_1.ldr

Cleanup Script: FWK_PCS_SPCO_1.clr

Parameter File: FWK_PCS_SPCO_1.par

6.3.4.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Install/install Applet** `Constructor: ToolkitRegistry.setEvent`		setEventList proactive command [Event list]= '19020003'
2	**TEST is triggered by ENVELOPE (MENU SELECTION) command** `ToolkitRegistry.clearEvent`		1. DISPLAY TEXT Proactive command 2. SET UP EVENT LIST

Id	Description	API Expectation	APDU Expectation
			Proactive command [CommandQualifier]= 00h

6.3.4.1.4 Test Coverage

CRR number	Test case number
N1	see: chapter 6.2.9.2, CRRN1, chapter 6.2.9.4, CRRN3, chapter 6.2.9.5 CRRN4, chapter 6.2.9.8 CRRN1
N2	see: chapter 6.2.9.2 CRRN1, chapter 6.2.9.8 CRRN1
N3	1,2

6.3.4.2 Interaction with GSM commands

Test Area Reference: FWK_PCS_IGCO

6.3.4.2.1 Conformance Requirements

Normal Execution

CRRN1: The STF shall process a GSM command even when a proactive command is pending (before and after the FETCH command until the terminal response). The STF shall answer with the SW1 and SW2 described in [3] and [4].

6.3.4.2.2 Test Suite Files

Test Script: FWK_PCS_IGCO_1.scr

Test Applet: FWK_PCS_IGCO_1.java

Load Script: FWK_PCS_IGCO_1.ldr

Cleanup Script: FWK_PCS_IGCO_1.clr

Parameter File: FWK_PCS_IGCO_1.par

6.3.4.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Interaction with GSM Commands after TERMINAL PROFILE in connection with FETCH and TERMINAL RESPONSE** Applet calls initMenuEntry ATR TERMINAL PROFILE (Profile : supports all facilities except: SET UP EVENT LIST, POLL INTERVAL and POLLING OFF) 1- System issues a proactive command SETUP_MENU 2- SELECT MF 3- GET RESPONSE (6 Bytes) 4- Failed SELECT File 5- FETCH		1- 91xx 2- 9Fxx 3- 91xx 4- 9404

Id	Description	API Expectation	APDU Expectation
	6- SELECT MF 7- GET RESPONSE (6 Bytes) 8- TERMINAL RESPONSE		5- Proactive Command: SETUP MENU 6- 9Fxx 7- 9000 8- 9000
2	**Interaction with GSM Commands after ENVELOPE (MENU SELECTION) in connection with FETCH and TERMINAL RESPONSE** Menu Entry ID = 0x01 1- SELECT MF 2- GET RESPONSE (6 Bytes) 3- Failed SELECT File 4- FETCH 5- SELECT MF 6- GET RESPONSE (6 Bytes) 7- TERMINAL RESPONSE		1- 9FXX 2- 91XX 3- 9404 4- Proactive Command: DISPLAY TEXT 5- 9FXX 6- 9000 7- 9000
3	**Interaction with GSM Commands after TERMINAL RESPONSE in proactive command session in connection with FETCH and TERMINAL RESPONSE** Menu Entry ID = 0x02 1- SELECT MF 2- GET RESPONSE (6 Bytes) 3- FETCH 4- SELECT MF 5- GET RESPONSE (6 Bytes) 6- Failed SELECT File 7- TERMINAL RESPONSE 8- SELECT MF 9- GET RESPONSE (6 Bytes) 10-Failed SELECT File 11-FETCH 12-SELECT MF 13-GET RESPONSE (6 Bytes) 14-TERMINAL RESPONSE		1- 9FXX 2- 91XX 3- Proactive Command: DISPLAY TEXT 4- 9FXX 5- 9000 6- 9404 7- 9000 8- 9FXX 9- 91XX 10-9404 11-Proactive Command: DISPLAY TEXT 12-9FXX 13-9000 14-9000

6.3.4.2.4 Test Coverage

CRR number	Test case number
N1	1,2,3

6.3.5 Exception Handling

6.3.5.1 Hide Exceptions from the ME

Test Area Reference: FWK_EXH_HEME

6.3.5.1.1 Conformance Requirements

Normal Execution

CRRN1 : A toolkit applet may throw an exception, but this error will not be sent to the ME.

* Because the behaviour of the SIM is not exactly defined for the above CRRN, there are no tests defined here yet.

6.3.5.2 Interaction with Multiple Triggering

Test Area Reference: FWK_EXH_IMTG

6.3.5.2.1 Conformance Requirements

Normal Execution:

CRRN1 : An exception thrown by a toolkit applet, will not influence toolkit applets registered to the same event

6.3.5.2.2 Test Suite Files

Test Script: FWK_EXH_IMTR _1.scr

Test Applet: : FWK_EXH_IMTR _1.java

Load Script: : FWK_EXH_IMTR_1.ldr

Cleanup Script: FWK_EXH_IMTR_1.clr

Parameter File: FWK_EXH_IMTR_1.par

6.3.5.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**Load/install 2 toolkit applets registered to EVENT_STATUS_COMMAND, EVENT_PROFILE_DOWNLOAD, EVENT_UNRECOGNISED_ENVELOPE, EVENT_EVENT_DOWNLOAD_MT_CALL, EVENT_UNFORMATTED_SMS_PP_ENV, EVENT_UNFORMATTED_SMS_PP_UPD, EVENT_UNFORMATTED_SMS_CB** applet1: Priority= 0x01, applet2: Priority= 0x02, (i.e. applet1 is triggered before applet2)		
1	**STATUS_COMMAND is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	
2	**PROFILE_DOWNLOAD is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	

Id	Description	API Expectation	APDU Expectation
3	**UNRECOGNISED_ENVELOPE is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	
4	**EVENT_DOWNLOAD_MT_CALL is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	
5	**UNFORMATTED_SMS_PP_ENV is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	
6	**UNFORMATTED_SMS_PP_UPD is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	
7	**UNFORMATTED_SMS_CB is sent** Applet 1 is triggered Applet 2 is triggered	Applet1: NullPointerException is thrown	

6.3.5.2.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1,2,3,4,5,6,7

6.3.6 Framework Security Management

Security Parameters

The table that follows contains the security parameters that shall be used when the 03.48 security is required in the test cases developed in the current section.

Parameter	Value in hexadecimal
KIC	11
KID	11
CNTR	00 00 00 00 01
Key for ciphering	01 41 42 7F DA E8 91 A7
Key for RC/CC/DS	01 23 45 67 89 AB CD EF

If a parameter is not listed explicitly in the above table, the default values of section 4.7.3.1 apply.

6.3.6.1 Input Data

Test Area Reference: FWK_FWS_INDA

6.3.6.1.1 Conformance Requirements

Normal Execution

CRRN1: If the SIM receives an envelope APDU containing an SMS_DATADOWNLOAD BER TLV formatted according to GSM03.48, the SIM Toolkit Framework shall verify the GSM03.48 security of the SMS TPDU.

CRRN2: The toolkit applet will only be triggered if the TAR is known and the security verified.

6.3.6.1.2 Test Area Files

Test Script: FWK_FWS_INDA_1.scr

Test Applet: FWK_FWS_INDA_1.java

FWK_FWS_INDA_2.java

Load Script: FWK_FWS_INDA_1.ldr

Cleanup Script: FWK_FWS_INDA_1.clr

Parameter File: FWK_FWS_INDA_1.par

6.3.6.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Load and install applet 1**		
	Envelope(SMS-PP) 03.48 formatted Ciphering; Cryptographic checksum; No proof of receipt; Data = 01	The applet is triggered.	
2	**Load and install applet 2**		
	Envelope(SMS-PP) 03.48 formatted Ciphering; Cryptographic checksum; No proof of receipt; TAR of Applet 1 Data = 02	This Envelope(SMS-PP) triggers Applet 1	The SIM answers to the Envelope with status words 9000
	Envelope(SMS-PP) 03.48 formatted No ciphering; No cryptographic checksum; No proof of receipt; TAR of Applet 2 Data = 03	This Envelope(SMS-PP) triggers Applet 2	The SIM answers to the Envelope with status words 9000
3	**Envelope(SMS-PP) 03.48 formatted** No ciphering; Wrong Cryptographic checksum; No proof of receipt; TAR of Applet 1 Data = 04	No applet is triggered	The SIM answers to the Envelope with status words 9000

6.3.6.1.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1,2,3
CRRN2	3

6.3.6.2 Output Data

Test Area Reference: FWK_FWS_OUDA

6.3.6.2.1 Conformance Requirements

Normal Execution

CRRN1: The SIM Toolkit Framework shall secure and send the response packet.

6.3.6.2.2 Test Area Files

Test Script: FWK_FWS_OUDA_1.scr

Test Applet: FWK_FWS_OUDA_1.java

FWK_FWS_OUDA_2.java

Load Script: FWK_FWS_OUDA_1.ldr

Cleanup Script: FWK_FWS_OUDA_1.clr

Parameter File: FWK_FWS_OUDA_1.par

6.3.6.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Envelope(SMS-PP) 03.48 formatted** Ciphering; Cryptographic checksum; proof of receipt response shall be sent using SMS-Deliver-Report; no security applied to proof of receipt Data in plain text = “APPLET1”	The applet is triggered and sends a “Display Text” proactive command with the data received in the Envelope.	The SIM answers to the Envelope with status words 9Fxx and a PoR is retrieved with a GetResponse command. The PoR has no application data. The SIM answers to the Get Response command with status words 91xx to issue a Display Text “APPLET1”.
2	**Envelope(SMS-PP) 03.48 formatted** Ciphering; Cryptographic checksum; proof of receipt response shall be sent using SMS-Deliver-Report; no security applied to proof of receipt	The applet posts application data. It does not call the ProactiveHandler.send() method	The SIM answers to the Envelope with status words 9Fxx and a PoR is retrieved with a GetResponse command. The PoR has the application data posted by the application. The SIM answers to the Get Response command with status words 9000.
3	**Envelope(SMS-PP) 03.48 formatted** Ciphering; Cryptographic checksum; proof of receipt response shall be sent using SMS-Deliver-Report; no security applied to proof of receipt Data in plain text = “TEST”	The applet posts application data and calls the ProactiveHandler.send() method to send a “Display Text” proactive command with the data received in the Envelope.	The SIM answers to the Envelope with status words 9Fxx and a PoR is retrieved with a GetResponse command. The PoR has the application data posted by the application. The SIM answers to the Get

Id	Description	API Expectation	APDU Expectation
			Response command with status words 91xx to issue the Display Text “TEST”.
4	**Envelope(SMS-PP) 03.48 formatted** Ciphering; Cryptographic checksum; proof of receipt response shall be sent using SMS-Deliver-Report; proof of receipt shall be ciphered Data in plain text = “TEST”	The applet posts application data and calls the ProactiveHandler.send() method to send a “Display Text” proactive command with the data received in the Envelope.	The SIM answers to the Envelope with status words 9Fxx and a PoR is retrieved with a GetResponse command. The PoR has the application data posted by the application. The SIM answers to the Get Response command with status words 91xx to issue the Display Text “TEST”.
5	**Envelope(SMS-PP) 03.48 formatted** No ciphering; Wrong Cryptographic checksum; proof of receipt response shall be sent using SMS-Deliver-Report; no security applied to proof of receiptData in plain text = “TEST”	No applet is triggered	The SIM answers to the Envelope with status words 9Exx and a PoR is retrieved with a GetResponse command. The Response Status Code Octet shall be ‘01’.

6.3.6.2.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1,2,3,4,5

6.3.7 Envelope Response Posting

6.3.7.1 EVENT_CALL_CONTROL_BY_SIM

Test Area Reference: FWK_ERP_ECCN

6.3.7.1.1 Conformance Requirements

Normal Execution

CRRN1: The SIM Toolkit Framework can’t reply busy when an Envelope(Call Control) is sent to the SIM.

6.3.7.1.1 Test Area Files

Test Script: FWK_ERP_ECCN_1.scr

Test Applet: FWK_ERP_ECCN_1.java

FWK_ERP_ECCN_2.java

FWK_ERP_ECCN_3.java

Load Script: FWK_ERP_ECCN_1.ldr

Cleanup Script: FWK_ERP_ECCN_1.clr

Parameter File: FWK_ERP_ECCN_1.par

6.3.7.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Applet 1 is registered on the EVENT_CALL_CONTROL_BY_SIM.** It calls the method EnvelopeResponseHandler.postASBERTLV() to change any incoming dialling number into +11 22 33 44.		
	Applet 2 is registered and triggered on the EVENT_MENU_SELECTION. It is suspended (the method send() has been called and no fetch has been performed)		
	Envelope(Call Control) is sent to the SIM	The Applet 1 is triggered.	The SIM answer 9Fxx to the Envelope(Call Control) The dialling number is retrieved with a GetResponse command.
	A Fetch command is sent to the SIM.	The Applet 2's execution shall continue.	The SIM answers to the Get Response command with status words 91xx.
2	**Applet 3 is registered on both the events EVENT_CALL_CONTROL_BY_SIM and EVENT_MENU_SELECTION.** It calls the method EnvelopeResponseHandler.postASBERTLV() to change any incoming dialling number into +11 22 33 44.		
	Applet 3 is triggered on the EVENT_MENU_SELECTION and is suspended on the send() method.		
	Envelope(Call Control) is sent to the SIM	The applet is triggered on the EVENT_CALL_CONTROL_BY_SIM.	The SIM answer 9Fxx to the Envelope(Call Control) The dialling number is retrieved with a GetResponse command. The SIM answers to the Get Response command with status words 91xx.
	A Fetch command is sent to the SIM.	The applet's execution shall continue.	

6.3.7.1.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1,2

6.3.7.2 EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM

Test Area Reference: FWK_ERP_EMCN

6.3.7.2.1 Conformance Requirements

Normal Execution

CRRN1: The SIM Toolkit Framework can't reply busy when an Envelope(MO-Short Message Control) is sent to the SIM.

6.3.7.2.2 Test Area Files

Test Script: FWK_ERP_EMCN_1.scr

Test Applet: FWK_ERP_EMCN_1.java

FWK_ERP_EMCN_2.java

FWK_ERP_EMCN_3.java

Load Script: FWK_ERP_EMCN_1.ldr

Cleanup Script: FWK_ERP_EMCN_1.clr

Parameter File: FWK_ERP_EMCN_1.par

6.3.7.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Applet 1 is registered on the EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM.** It calls the method EnvelopeResponseHandler.postASBERTLV() to change any incoming TP_Destination_Address into +11 22 33 44.		
	Applet 2 is registered and triggered on the EVENT_MENU_SELECTION. It is suspended (the method send() has been called and no fetch has been performed)		
	An Envelope(MO-Short Message Control) is sent to the SIM	The applet 1 is triggered.	The SIM answers 9Fxx to the Envelope(MO-Short Message Control) The TP_Destination_Address is retrieved with a GetResponse command. The SIM answers to the Get Response command with status words 91xx.
	A Fetch command is sent to the SIM.	The applet's execution shall continue.	
2	**Applet 3 is registered on both the events EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM and EVENT_MENU_SELECTION.** It calls the method EnvelopeResponseHandler.postASBERTLV() to change any incoming TP_Destination_Address into +11 22 33 44.		

Id	Description	API Expectation	APDU Expectation
	Applet 3 is triggered on the EVENT_MENU_SELECTION and is suspended on the send() method.		
	An Envelope(MO-Short Message Control) is sent to the SIM	The applet is triggered on the EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM.	The SIM answers 9Fxx to the Envelope(MO-Short Message Control) The TP_Destination_Address is retrieved with a GetResponse command. The SIM answers to the Get Response command with status words 91xx.
	A Fetch command is sent to the SIM.	The applet's execution shall continue.	

6.3.7.2.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1,2

6.3.7.3 EVENT_UNRECOGNIZED_ENVELOPE

Test Area Reference: FWK_ERP_EUEN

6.3.7.3.1 Conformance Requirements

Normal Execution

CRRN1: The EnvelopeResponseHandler is available for the EVENT_UNRECOGNIZED_ENVELOPE.

6.3.7.3.2 Test Area Files

Test Script: FWK_ERP_EUEN_1.scr

Test Applet: FWK_ERP_EUEN_1.java

Load Script: FWK_ERP_EUEN_1.ldr

Cleanup Script: FWK_ERP_EUEN_1.clr

Parameter File: FWK_ERP_EUEN_1.par

6.3.7.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**An applet triggered on the EVENT_UNRECOGNIZED_ENVELOPE calls the EnvelopeResponseHandler.post() method**	The post() method returns no exception	The SIM answers to the Envelope with status words 9Fxx. The data retrieved with the GetResponse command are the ones posted by the applet.

6.3.7.3.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1

6.3.8 Toolkit Installation

6.3.8.1 Timers Allocation

Test Area Reference: FWK_TIN_TMAL

6.3.8.1.1 Conformance Requirements

Normal execution

CRRN1: One toolkit applet can register to several timers, but a timer can only be allocated to one toolkit applet.

Context errors

CRRC1 : Allocated timers shall not exceed the maximum number of timers allowed for this applet instance defined during installation.

CRRC2 : The total number of timers allocated for all the applets shall not exceed 8.

6.3.8.1.2 Test suite files

Test Script: FWK_TIN_TMAL_1.scr

Test Applet: 1. FWK_TIN_TMAL_1.java

2. FWK_TIN_TMAL_2.java

3. FWK_TIN_TMAL_3.java

6.3.8.2 Maximum Text Length for a menu entry

Test Area Reference: FWK_TIN_MLME

6.3.8.2.1 Conformance Requirements

Normal execution

CRRN1: The maximum length of item text string is defined at the installation of the toolkit applet.

Parameters errors

CRRP1: If initMenuEntry length parameter is greater than the allocated space (Maximum Text Length for a menu entry), then a ToolkitException ALLOWED_LENGTH_EXCEEDED is thrown.

CRRP2: If changeMenuEntry length parameter is greater than the allocated space (Maximum Text Length for a menu entry), then a ToolkitException ALLOWED_LENGTH_EXCEEDED is thrown.

6.3.8.2.2 Test suite files

Test Script: FWK_TIN_MLME_1.scr

Test Applet: FWK_TIN_MLME_1.java

Load Script: FWK_TIN_MLME_1.ldr

Cleanup Script: FWK_TIN_MLME_1.clr

Parameter File: FWK_TIN_MLME_1.par

6.3.8.2.1 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**Installation of applet with 2 menus not exceeding the maximum text length** Install one applet with 2 menu entries allowed and max. text length equal to 10. initMenuEntry defined at the install (install) command MenuEntry = "Toolkitap1" Offset = 0 Length = 10 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0		
1	**initMenuEntry with a too large length** initMenuEntry with length equal to 11 MenuEntry = "Toolkitap02" Offset = 0 Length = 11 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0	ToolkitException ALLOWED_LENGTH_EXCEEDED is thrown	
2	**initMenuEntry with a right length** initMenuEntry with length parameter equal to 10 MenuEntry = "Toolkitap2" Offset = 0 Length = 10 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0		a SET UP MENU (2 items) is issued with TLV item length equal to 11 (Identifier + Text string of item)
3	**changeMenuEntry with a too large length** Applet 1 is triggered by a EVENT_MENU_SELECTION. ChangeMenuEntry of menu 1, with length parameter equal to 11 Id = '02' MenuEntry = " Toolkitap04" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 Return from processToolkit	ToolkitException ALLOWED_LENGTH_EXCEEDED is thrown	Shall not receive a SET UP MENU different from the previous one
4	**changeMenuEntry with a right length** Applet 1 is triggered by a EVENT_MENU_SELECTION. changeMenuEntry of menu 1, with length parameter equal to 10 Id = '01' MenuEntry = " Toolkitap3" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 Return from processToolkit		a SET UP MENU (2 items) is issued with TLV item length equal to 11 (Identifier + Text string of item)

6.3.8.2.3 Test Coverage

CRR number	Test case number
CRRN1	2, 4
CRRP1	1
CRRP2	3

6.3.8.3 Maximum number of menu entries

Test Area Reference: FWK_TIN_NBME

6.3.8.3.1 Conformance Requirements

Normal execution

CRRN1: The maximum number of menu entries is defined at the installation of the toolkit applet and can be the maximum number of invocations of the method initMenuEntry .

Parameters errors

CRRP1: If the menu entry cannot be initialised (e.g. no more item data in applet loading parameter), a ToolkitException with the REGISTRY_ERROR reason code is thrown.

6.3.8.3.2 Test suite files

Test Script: FWK_TIN_NBME_1.scr

FWK_TIN_NBME_2.scr

Test Applet: FWK_TIN_NBME_1.java

FWK_TIN_NBME_2.java

Load Script: FWK_TIN_NBME_1.ldr

FWK_TIN_NBME_2.ldr

Cleanup Script: FWK_TIN_NBME_1.clr

FWK_TIN_NBME_2.clr

Parameter File: FWK_TIN_NBME_1.par

FWK_TIN_NBME_2.par

6.3.8.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Installation of applet with 3 menus** Install (install) applet with max. number of menu entry is ‘3’, defined at the install (install) command. initMenuEntry for each menu entry allowed (3 times) MenuEntry = "menu1", "menu2", "menu3" Offset = 0 Length = 5 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0	No Exception is thrown	

Id	Description	API Expectation	APDU Expectation
2	**init of a 4th menu** initMenuEntry one more time MenuEntry = "menu4" Offset = 0 Length = 5 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0	ToolkitException REGISTRY_ERROR is thrown	SET UP MENU (3 items) is issued with TLV item length equal to 6 (Identifier + Text string of item)
3	**Installation of 2nd applet with 0 menu** Install (install) another instance of the same applet, with max. number of menu entry is '0', defined at the install (install) command. initMenuEntry once MenuEntry = "menu1" Offset = 0 Length = 5 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0	ToolkitException REGISTRY_ERROR is thrown	Shall not receive a SET UP MENU different from the previous one

6.3.8.3.4 Test Coverage

CRR number	Test case number
CRRN1	1
CRRP1	2, 3

6.3.8.4 Access Domain

Test Area Reference: FWK_TIN_ACDO

6.3.8.4.1 Conformance Requirements

Normal execution

CRRN1: The Access Domain parameter indicates the mechanism used to control the applet instance access to the GSM file System ('00' means full access to the GSM File System, 'FF' means no access to the GSM File System).

Parameters errors

CRRP1: If the Access Domain Parameter requested is not supported, the card shall return the Status Word '6A80', incorrect parameters in data field, to the Install(Install) command.

CRRP2: If an applet with Access Domain Parameter 'FF' (i.e. No Access to the GSM File System) tries to access a GSM file (e.g. invoke the updateBinary(..) method) the framework shall throw a SIMViewException with a AC_NOT_FULFILLED reason.

6.3.8.4.2 Test suite files

Test Script: FWK_TIN_ACDO_1.scr

Test Applet: FWK_TIN_ACDO_1.java

Load Script: FWK_TIN_ACDO_1.ldr

Cleanup Script: FWK_TIN_ACDO_1.clr

Parameter File: FWK_TIN_ACDO_1.par

6.3.8.4.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	Install (install) applet with: - Length of Access Domain field value is '1' - Access Domain Parameter value is '00' (full access to the GSM File System)		
1	**readBinary/readRecord method with full Access Domain Parameter** 1- Select EFTARU file whose Read access condition is ALWAYS Perform the readBinary method: fileOffset = 0 resp = baRead[] respOffset = 0 respLength = 3 2- Select EFSMS file whose Read access condition is CHV1 Perform the readRecord method: fileOffset = 0 resp = baRead[] respOffset = 0 respLength = 3 3- Select EFTRAC file whose Read access condition is CHV2 Perform the readBinary method: fileOffset = 0 resp = baRead[] respOffset = 0 respLength = 3 4- Select EFSUME file Read access condition is ADM0 Perform the readBinary method: fileOffset = 0 resp = baRead[] respOffset = 0 respLength = 3 5- Select EFTNR file whose Read access condition is NEVER Perform the readBinary method: fileOffset = 0 resp = baRead[] respOffset = 0 respLength = 3	1 to 4- no exception is thrown 5- SIMViewException AC_NOT_FULFILLED is thrown	
2	**updateBinary/updateRecord method with full Access Domain Parameter** 1- Select EFTNR file whose Update access condition is ALWAYS Perform the updateBinary method: fileOffset = 0 resp = baUpdate[FFFFFF] respOffset = 0 respLength = 3 2- Select EFSMS file whose Update access condition is CHV1 Perform the updateRecord method: fileOffset = 0 resp = baUpdate[] respOffset = 0 respLength = 3 3- Select EFFDN file whose Update access condition is CHV2 Perform the updateBinary method:	1 to 4- no exception is thrown 5- SIMViewException AC_NOT_FULFILLED is thrown	

Id	Description	API Expectation	APDU Expectation
	fileOffset = 0 resp = baUpdate[] respOffset = 0 respLength = 3 4- Select EFSUME file Update access condition is ADM0 Perform the updateBinary method: fileOffset = 0 resp = baUpdate[] respOffset = 0 respLength = 3 5- Select EFTNU file whose Update access condition is NEVER Perform the updateBinary method: fileOffset = 0 resp = baUpdate[] respOffset = 0 respLength = 3		
3	**invalidate method with full Access Domain Parameter** 1- Select EFTNR file whose Invalidate access condition is ALWAYS Perform the invalidate method 2- Select EFTIAC file whose Invalidate access condition is CHV1 Perform the invalidate method 3- Select EFADN file whose Invalidate access condition is CHV2 Perform the invalidate method 4- Select EFSUME file Invalidate access condition is ADM0 Perform the invalidate method 5- Select EFTNU file whose Invalidate access condition is NEVER Perform the invalidate method	1 to 4- no exception is thrown 5- SIMViewException AC_NOT_FULFILLED is thrown	
4	**rehabilitate method with full Access Domain Parameter** 1- Select EFTNR file whose Rehabilitate access condition is ALWAYS Perform the rehabilitate method 2- Select EFIMSI file whose Rehabilitate access condition is CHV1 Perform the rehabilitate method 3- Select EFADN file whose Rehabilitate access condition is CHV2 Perform the rehabilitate method 4- Select EFSUME file Rehabilitate access condition is ADM0 Perform the rehabilitate method 5- Select EFTNU file whose Rehabilitate access condition is NEVER Perform the rehabilitate method	1 to 4- no exception is thrown 5- SIMViewException AC_NOT_FULFILLED is thrown	
5	**increase method with full Access Domain Parameter** 1- Select EFCNU file whose Increase access condition is ALWAYS Perform the increase method	1 to 4- no exception is thrown 5- SIMViewException AC_NOT_FULFILLED is thrown	

Id	Description	API Expectation	APDU Expectation
	2- Select EFACM file whose Increase access condition is CHV1 Perform the increase method 3- Select EFCIAC file whose Increase access condition is CHV2 Perform the increase method 4- Select EFCIAA file Increase access condition is ADM0 Perform the increase method 5- Select EFCNR file whose Increase access condition is NEVER Perform the increase method Delete instance of applet		
6	**readBinary method with no Access to the GSM File System as Access Domain Parameter** Install (install) with: - Length of Access Domain field value is '1' - Access Domain Parameter value is 'FF' (No access to the GSM File System) Select EFTARU file whose Read access condition is ALWAYS Perform the readBinary method: fileOffset = 0 resp = baRead[] respOffset = 0 respLength = 3 Delete instance of applet	SIMViewException AC_NOT_FULFILLED is thrown	

6.3.8.4.4 Test Coverage

CRR number	Test case number
CRRN1	1, 2, 3, 4, 5
CRRP1	Not tested
CRRP2	6

6.3.8.5 Priority Level

Test Area Reference: FWK_TIN_PRLV

6.3.8.5.1 Conformance Requirements

Normal execution

CRRN1: The priority specifies the order of activation of an applet compared to the other applet registered to the same event ('01' : Highest priority level, 'FF' : Lowest priority level)

CRRN2: If two or more applets are registered to the same event and have the same priority level, the applets are activated according to their installation date (i.e. the most recent applet is activated first)

6.3.8.5.2 Test suite files

Test Script: FWK_TIN_PRLV_1.scr

Test Applet: FWK_TIN_PRLV_1.java

Load Script: FWK_TIN_PRLV_1.ldr

Cleanup Script: FWK_TIN_PRLV_1.clr

Parameter File: FWK_TIN_PRLV_1.par

6.3.8.5.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	All applets are registered on an EVENT_UNFORMATTED_SMS_PP_ENV event		
1	**Trigger 2 applets with 2 different maximum Priority Levels** Install (install) applet 1 with priority level '2' and applet 2 with priority level '1', from package P. Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 2 is triggered before applet 1. A static variable is used to validate triggering order. Delete applets instances		
2	**Trigger 2 applets with 2 different maximum Priority Levels** Install (install) applet 1 with priority level '1' and applet 2 with priority level '2', from package P. Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 1 is triggered before applet 2. A static variable is used to validate triggering order. Delete applets instances		
3	**Trigger 2 applets with 2 different 'key' Priority Levels** Install (install) applet 1 with priority level '80' and applet 2 with priority level '7F', from package P. Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 2 is triggered before applet 1 A static variable is used to validate triggering order. Delete applets instances		

4	**Trigger 3 applets with the same Priority Level** Install (install) applet 1, 2, 3 in this order with same priority level from package P. Send an Envelope that triggers the 3 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 3 is triggered before applet 2 Check that applet 2 is triggered before applet 1. A static variable is used to validate triggering order. Delete applets instances.		
5	**Trigger 2 applets from 2 classes, with 2 different Priority Level** Install (install) applet 1 from class C with priority level '2' Install (install) applet 2 from class D with priority level '1' A static variable is used to validate triggering order Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 2 is activated before applet 1 Delete applets instances		
6	**Trigger 2 applets from 2 classes, with the same Priority Level** Install (install) applet 1 from class C with priority level '1' Install (install) applet 2 from class D with priority level '1' A static variable is used to validate triggering order Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 2 is activated before applet 1 Delete applets instances		
7	**Trigger 2 applets from 2 packages, with 2 different Priority Level** Install (install) applet 1 from package P with priority level '2' Install (install) applet 2 from package Q with priority level '1' A static variable is used to validate triggering order Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 2 is activated before applet 1 Delete applets instances		
8	**Trigger 2 applets from 2 packages, with the same Priority Level** Install (install) applets 1 and 2 in this order, with same priority level Send an Envelope that triggers the 2 applets with the		

	EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 10 is triggered before applet 9 Delete applets instances		
9	**Trigger 4 applets from 2 packages** Install (install) 2 applets 1 then 2 with priority levels 1 and 2. Send an Envelope that triggers the 2 applets with the EVENT_UNFORMATTED_SMS_PP_ENV event. Check that applet 1 is triggered before applet 2 Install (install) 2 applets 3 then 4 with priority levels 1 and 2. Send an Envelope that triggers the 4 applets. Check that applet 3 is triggered before applet 1, 4, then 2. Delete applets instances		

6.3.8.5.4 Test Coverage

CRR number	Test case number
CRRN1	1, 2, 3, 5, 7, 9
CRRN2	4, 6, 8

6.3.9 File System Context

6.3.9.1 Initial Context

Test Area Reference: FWK_FSC_INIT

6.3.9.1.1 Conformance Requirements

Normal Execution

CRRN1: At the invocation of the processToolkit method of a toolkit applet, the current file is the MF.

6.3.9.1.2 Test Suite Files

Test Script: FWK_FSC_INIT_1.scr

Test Applet: FWK_FSC_INIT_1.java

FWK_FSC_INIT_2.java

Load Script: FWK_FSC_INIT_1.ldr

Cleanup Script: FWK_FSC_INIT_1.clr

FWK_FSC_INIT_2.clr

Parameter File: FWK_FSC_INIT_1.par

6.3.9.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**MF is the selected DF in processToolkit()** An ENVELOPE APDU containing a formatted SMS PP for Applet 1 is issued to the SIM	No exception shall be thrown. Shall return 7.	

Id	Description	API Expectation	APDU Expectation
	byte[] fci = new byte[10] fciOffset = 0 fciLength = 7 status()	fci shall contain the following part of the FCI structure: < XX XX XX XX 3F 00 01 >	
2	**No EF is selected** rehabilitate ()	SIMView exception shall be thrown with reason NO_EF_SELECTED	
3	**MF is selected even when an applet triggered before selected any other file...** Applets 1 and 2 register to EVENT_DOWNLOAD_USER_ACTIVITY. Applet 1 has higher priority than Applet 2. An ENVELOPE “EVENT - USER ACTIVITY” is sent to the SIM 1 - Applet 1: - is triggered by event_event_download_user_activity - selects DF_GSM and EF_IMSI 2 - Applet 2: - is triggered by event_event_download_user_activity fciOffset = 0 fciLength = 7 status() 3 - rehabilitate ()	1 - No exception shall be thrown. 2 - No exception shall be thrown. Shall return 7. fci shall contain the following part of the FCI structure: < XX XX XX XX 3F 00 01 > 3 - SIMView exception shall be thrown with reason NO_EF_SELECTED	

6.3.9.1.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1, 2, 3

6.3.9.2 Context Preservation (current file)

Test Area Reference: FWK_FSC_CUFI

6.3.9.2.1 Conformance Requirements

Normal execution

CRRN1: When calling the method select (), the current files (file context) of any other applets shall not be changed (see GSM 03.19 [] - §5.2).

CRRN2: The select() methods select a file without changing the current file of any other applet or of the subscriber session.

CRRN3: After invocation of ProactiveHandler.send() method: the current file context of the toolkit applet is unchanged (see GSM 03.19 [] - §5.2.).

6.3.9.2.2 Test Suite Files

Test Script: FWK_FSC_CUFI_1.scr

Test Applet: FWK_FSC_CUFI_1.java

FWK_FSC_CUFI_2.java

Load Script: FWK_FSC_CUFI_1.ldr

Cleanup Script: FWK_FSC_CUFI_1.clr

FWK_FSC_CUFI_2.clr

Parameter File: FWK_FSC_CUFI_1.par

6.3.9.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**No change to file context by another applet** Applet1 registers to EVENT_FORMATTED_SMS_PP_ENV. Applet2 registers to EVENT_CALL_CONTROL_BY_SIM 1 - Applet 1: - is triggered by a formatted SMS - selects DF_SIMTEST and EF_TARU - fileOffset = 0; dataLength = 2; dataOffset = 0; - buffer = {0xCA, 0xFE } - updateBinary (): first 2 bytes of EF_TARU are written as 'CA FE'. - issues a proactive command "Get Inkey". 2 - An ENVELOPE APDU containing a CALL CONTROL BY SIM is issued to the SIM Applet 2: - is triggered by a CALL CONTROL BY SIM - selects DF_TELECOM and EF_ADN. 3 - The terminal response for Get Inkey reactivates Applet 1: - fileOffset = 0; respLength = 2; respOffset = 0; - readBinary () info buffer2	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown. The value of buffer2 is { 0xCA, 0xFE }	A GET INKEY proactive command is fetched from the SIM
2	**No change to file context by subscriber session** 1 - Applet 1 - issues a proactive command "Get Inkey". 2 - Subscriber session selects DF_TELECOM and EF_ADN. 3 - The terminal response for Get Inkey reactivates Applet 1: - fileOffset = 0; respLength = 2; respOffset = 0; - readBinary () info buffer2	1 - No exception shall be thrown. 3 - No exception shall be thrown. The value of buffer2 is { 0xCA, 0xFE }	1 - A GET INKEY proactive command is fetched from the SIM
3	**No change by applet of subscriber session context** 1 - Applet 1: - selects DF_SIMTEST and EF_TNU - issues a proactive command "Get Inkey". 2 - subscriber session reads record 1 of current file (shall be EF_ADN) 3 - The terminal response for Get Inkey reactivates Applet 1, which terminates execution	1 - No exception shall be thrown. 3 - No exception shall be thrown.	1 - A GET INKEY proactive command is fetched from the SIM 2 - READ RECORD absolute number 1 shall read "FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF" (from EF_{ADN})

6.3.9.2.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1
CRRN2	1,2,3
CRRN3	1,2

6.3.9.3 Context Preservation (current record pointer)

Test Area Reference: FWK_FSC_CURE

6.3.9.3.1 Conformance Requirements

Normal execution

CRRN1: When the seek method is called by one applet, the record pointer of any other applet is not changed.

CRRN2: *updateRecord*: the current record pointer of other applets / subscriber shall not be changed in case of linear fixed EF

CRRN3: *updateRecord*: the record pointer of a cyclic EF shall be changed for all other applets / subscriber to the record number 1.

CRRN4: *readRecord:* read data bytes of the linear fixed or cyclic EF currently selected by the applet without changing the current record pointer of any other applet / subscriber.

CRRN5: *increase*: the last updated record of the cyclic EF currently selected becomes record number 1 for every other applet and subscriber session.

6.3.9.3.2 Test Suite Files

Test Script: FWK_FSC_CURE_1.scr

Test Applet: FWK_FSC_CURE_1.java

FWK_FSC_CURE_2.java

Load Script: FWK_FSC_CURE_1.ldr

Cleanup Script: FWK_FSC_CURE_1.clr

FWK_FSC_CURE_2.clr

Parameter File: FWK_FSC_CURE_1.par

6.3.9.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	**SIM Initialisation**	Responses ignored.	
1	**Seek without affecting another record pointer** aApplet1 registers to EVENT_FORMATTED_SMS_PP_ENV Applet 2 registers to EVENT_CALL_CONTROL_BY_SIM 1 - Applet 1: - is triggered by a formatted SMS event - selects DF_SIMTEST and EF_LARU - reads record 2 using NEXT so that the current record pointer is set to record 2 - issues a proactive command, e.g. Get Inkey. 2 - An ENVELOPE APDU containing a CALL CONTROL BY SIM is issued to the SIM Applet 2: - is triggered by a CALL CONTROL event - selects DF_SIMTEST and EF_LARU - performs a seek of pattern {0x55} from beginning forward, which finds record 1. - returns from processToolkit 3 - The terminal response for Get Inkey reactivates Applet 1: - call readRecord() using CURRENT	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown.	1 - A GET INKEY proactive command is fetched from the SIM

Id	Description	API Expectation	APDU Expectation
	- the record read should still be record 2 of EF_LARU, containing {0xAA, 0xAA, 0xAA, 0xAA}		
2	**updateRecord in linear fixed EF without affecting current pointer of others** 1 - Applet 1: - is triggered by a formatted SMS event - selects DF_SIMTEST and EF_LARU - reads record 2 using NEXT so that the current record pointer is set to record 2 - issues a proactive command, e.g. Get Inkey. 2 - An ENVELOPE APDU containing a CALL CONTROL BY SIM is issued to the SIM Applet 2: - is triggered by a CALL CONTROL BY SIM event - selects DF_SIMTEST and EF_LARU - updates record 1, by using mode “NEXT”. - returns from processToolkit 3 - The terminal response for Get Inkey reactivates Applet 1: - call readRecord() using CURRENT - the record read should still be record 2 of EF_LARU, containing {0xAA, 0xAA, 0xAA, 0xAA}	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown.	1 - A GET INKEY proactive command is fetched from the SIM
3	**readRecord in linear fixed EF without affecting current pointer of others** 1 - Applet 1: - is triggered by a formatted SMS event - selects DF_SIMTEST and EF_LARU - reads record 2 using NEXT so that the current record pointer is set to record 2 - issues a proactive command, e.g. Get Inkey. 2 - An ENVELOPE APDU containing a CALL CONTROL BY SIM is issued to the SIM Applet 2: - is triggered by a CALL CONTROL BY SIM event - selects DF_SIMTEST and EF_LARU - reads record 1, by using mode “NEXT”. - returns from processToolkit 3 - The terminal response for Get Inkey reactivates Applet 1: - call readRecord() using CURRENT - the record read should still be record 2 of EF_LARU, containing {0xAA, 0xAA, 0xAA, 0xAA}	1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - No exception shall be thrown.	1 - A GET INKEY proactive command is fetched from the SIM
4	**updateRecord cyclic EF: record pointer changed to record number 1** 1 – The subscriber session selects DF_SIMTEST and EF_CARU - reads record, by using mode “NEXT”. 2 – Applet 1: - is triggered by a formatted SMS event - selects DF_SIMTEST and EF_CARU - readRecord(), by using mode “NEXT”. - issues a proactive command, e.g. Get Inkey. 3 – An ENVELOPE APDU containing a CALL CONTROL BY SIM is issued to the SIM Applet 2: - is triggered by a CALL CONTROL BY SIM event - selects DF_SIMTEST and EF_CARU - updates record using “PREVIOUS” to ’11	2 - No exception shall be thrown. 3 - No exception shall be thrown. 5 - No exception shall be thrown. Value “11 11 11” is read.	1 - The value “AA AA AA” is obtained as a response to READ RECORD. 2 - A GET INKEY proactive command is fetched from the SIM 4 - The value “11 11 11” is obtained as a response to READ RECORD.

Id	Description	API Expectation	APDU Expectation
	11 11' - returns from processToolkit 4 – The subscriber session - reads record, by using mode "CURRENT". 5 – The terminal response for Get Inkey reactivates Applet 1: - readRecord() using mode "CURRENT"		
5	**increase cyclic EF: last increased record becomes number 1** 1 – The subscriber session selects DF_SIMTEST and EF_CARU - reads record, by using mode "NEXT". 2 – Applet 1: - is triggered by a formatted SMS event - selects DF_SIMTEST and EF_CARU - readRecord(), by using mode "NEXT". - issues a proactive command, e.g. Get Inkey. 3 – An ENVELOPE APDU containing a CALL CONTROL BY SIM is issued to the SIM Applet 2: - is triggered by a CALL CONTROL BY SIM event - selects DF_SIMTEST and EF_CARU - increase() with an increment of '11 11 11' - returns from processToolkit 4 – The subscriber session - reads record, by using mode "CURRENT". 5 – The terminal response for Get Inkey reactivates Applet 1: - readRecord() using mode "CURRENT"	2 - No exception shall be thrown. 3 - No exception shall be thrown. 5 - No exception shall be thrown. Value "22 22 22" is read.	1 - The value "55 55 55" is obtained as a response to READ RECORD. 2 - A GET INKEY proactive command is fetched from the SIM 4 - The value "22 22 22" is obtained as a response to READ RECORD.

6.3.9.3.4 Test Coverage

CRR Number	Test Case Number
CRRN1	1
CRRN2	2
CRRN3	4
CRRN4	3
CRRN5	5

6.3.10 Other parts transferred to framework from API

6.3.10.1 A handler is a temporary JCRE Entry Point object

Test Area Reference: FWK_API_HEPO

6.3.10.1.1 Conformance Requirement:

Normal execution

CRRN1: The EnvelopeHandler is a Temporary JCRE Entry Point Object (see Javacard 2.1 Runtime Environment (JCRE) Specification [12]).

CRRN2: The EnvelopeResponseHandler is a Temporary JCRE Entry Point Object (see Javacard 2.1 Runtime Environment (JCRE) Specification [12]).

CRRN3: The ProactiveHandler is a Temporary JCRE Entry Point Object (see Javacard 2.1 Runtime Environment (JCRE) Specification [12]).

CRRN4: The ProactiveResponseHandler is a Temporary JCRE Entry Point Object (see Javacard 2.1 Runtime Environment (JCRE) Specification [12]).

6.3.10.1.2 Test suite files

Test Script: FWK_API_HEPO_1.scr

Test Applet: FWK_API_HEPO_1.java

Load Script: FWK_API_HEPO_1.ldr

Cleanup Script: FWK_API_HEPO_1.clr

Parameter File: FWK_API_HEPO_1.par

6.3.10.1.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**EnvelopeHandler.getTheHandler and store it in a static field of the toolkit applet**	SecurityException is thrown	
2	**EnvelopeHandler.getTheHandler and store it in a field of the toolkit applet**	SecurityException is thrown	
3	**EnvelopeResponseHandler.getTheHandler and store it in a static field of the toolkit applet**	SecurityException is thrown	
4	**EnvelopeResponseHandler.getTheHandler and store it in a field of the toolkit applet**	SecurityException is thrown	
5	**ProactiveHandler.getTheHandler and store it in a static field of the toolkit applet**	SecurityException is thrown	
6	**ProactiveHandler.getTheHandler and store it in a field of the toolkit applet**	SecurityException is thrown	
7	**Build and send a DISPLAY TEXT command to be able to get the reference of the ProactiveReponseHandler** **ProactiveResponseHandler.getTheHandler and store it in a static field of the toolkit applet**	 SecurityException is thrown	Proactive command fetched and terminal response is issued
8	**ProactiveResponseHandler.getTheHandler and store it in a field of the toolkit applet**	SecurityException is thrown	

6.3.10.1.4 Test Coverage

CRR number	Test case number
N1	1, 2
N2	3, 4
N3	5, 6
N4	7, 8

6.3.10.2 Transaction

Test Area Reference: FWK_API_TRAN

6.3.10.2.1 Conformance Requirement:

Normal execution

CRRN1: A pending toolkit applet transaction at the ProactiveHandler.send() method invocation is aborted..

6.3.10.2.2 Test suite files

Test Script: FWK_API_TRAN_1.scr

Test Applet: FWK_API_TRAN_1.java

Load Script: FWK_API_TRAN_1.ldr

Cleanup Script: FWK_API_TRAN_1.clr

Parameter File: FWK_API_TRAN_1.par

6.3.10.2.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**Verify that transaction is aborted when a proactive command is sent** Initialise a byte field with 0x05 Build a display text proactive command. beginTransaction() Update the byte with 0x02 send the proactive command Verify that the byte value is 0x05 JCSystem.getTransactionDepth()	 Shall return 0	 Proactive command fetched and terminal response is issued

6.3.10.2.4 Test Coverage

CRR number	Test case number
N1	1

6.3.10.3 Timer Id between Applets

Test Area Reference: FWK_API_TMID

6.3.10.3.1 Conformance Requirement:

Context errors

CRRC1: The method ToolkitRegistry.releaseTimer() shall throw a ToolkitException with INVALID_TIMER_ID reason if the timer is valid but isn't allocated to this applet.

6.3.10.3.2 Test suite files

Test Script: FWK_API_TMID_1.scr

Test Applet: FWK_API_TMID_1.java

Load Script: FWK_API_TMID_1.ldr

Cleanup Script: FWK_API_TMID_1.clr

Parameter File: FWK_API_TMID_1.par

6.3.10.3.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
1	**During installation :** **First instance allocate a timer and store the returned value in a static field.** **Second instance allocate a timer.** **Trig second instance and try to releaseTimer() with the static field value.**	**releaseTimer() shall throw a ToolkitException with INVALID_TIMER_ID reason**	

6.3.10.3.4 Test Coverage

CRR number	Test case number
N1	1

Annex A (normative): Class and Methods AID numbering and acronyms

A.1 Sim.access

Class Name	Acronyms	Numbering on 5 bits
SIMView	SVW	00001
SIMSystem	SSY	00010
SIMViewException	SVE	00011

A.1.1 SIMView methods

Method Name	Acronyms	Numbering on 6 bits
static final Constants		000001
short increase(byte[] incr, short incrOffset, byte[] resp, short respOffset)	INCR_BS_BS	000010
void invalidate()	INVL	000011
void readBinary(short fileOffset, byte[] resp, short respOffset, short respLength)	REDBS_BSS	000100
short readRecord(short recNumber, byte mode, short recOffset, byte[] resp, short respOffset, short respLength)	REDRSBS_BSS	000101
void rehabilitate()	REHA	000110
short seek(byte mode, byte[] patt, short pattOffset, short pattLength)	SEEKB_BSS	000111
void select(short fid)	SLCTS	001000
short select(short fid, byte[] fci, short fciOffset, short fciLength)	SLCTS_BSS	001001
short status(byte[] fci, short fciOffset, short fciLength)	STAT_BSS	001010
short updateBinary(short fileOffset, byte[] data, short dataOffset, short dataLength)	UPDBS_BSS	001011
void updateRecord(short recNumber, byte mode, short recOffset, byte[] data, short dataOffset, short dataLength)	UPDRSBS_BSS	001100

A.1.2 SIMSystem methods

Method Name	Acronyms	Numbering on 6 bits
static SIMView getTheSIMView()	GETS	000001

A.1.3 SIMViewException methods

Method Name	Acronyms	Numbering on 6 bits
static void throwIt(short reason)	THITS	000001
SIMViewException(short reason)	COORS	000010
Constants	CONS	000011

A.2 Sim.toolkit

Class Name	Acronyms	Numbering on 5 bits
ToolkitConstants	TKC	00001
ToolkitInterface	TKI	00010
EditHandler	EDH	00011
EnvelopeHandler	ENH	00100
EnvelopeResponseHandler	ERH	00101
MEProfile	MEP	00110
ProactiveHandler	PAH	00111
ProactiveResponseHandler	PRH	01000
ToolkitRegistry	TKR	01001
ViewHandler	VWH	01010
ToolkitException	TKE	01011

A.2.1 ToolkitConstants

Method Name	Acronyms	Numbering on 6 bits
Constants	CONS	000001

A.2.2 ToolkitInterface methods

Method Name	Acronyms	Numbering on 6 bits
void processToolkit (byte event)	PRTKB	000001

A.2.3 EditHandler methods

The numbering of the EditHandler methods it will be done in the classes inherit it: EnvelopeResponseHandler, ProactiveHandler, because the methods provided by this class as it is declared 'abstract'.

A.2.4 EnvelopeHandler methods

Method Name	Acronyms	Numbering on 6 bits
byte getEnvelopeTag()	GENT	000001
byte getItemIdentifier()	GIID	000010
short getSecuredDataLength()	GSDL	000011
short getSecuredDataOffset()	GSDO	000100
EnvelopeHandler getTheHandler()	GTHD	000101
short getTPUDLOffset()	GTPO	000110
Inherited Method Name: ViewHandler		
Byte compareValue(short valueOffset,byte[] compareBuffer, short compareOffset, short compareLength)	CPRVS_BSS	000111
Short copy(byte[] dstBuffer,short dstOffset,short dstLength)	COPY_BSS	001000
Short copyValue(short valueOffset, byte[] dstBuffer,short dstOffset,short dstLength)	CPYVS_BSS	001001
Byte findAndCompareValue(byte tag,byte[] compareBuffer,short compareOffset)	FACRB_BS	001010
Byte findAndCompareValue(byte tag,byte occurence, short valueOffset,byte[] compareBuffer,short compareOffset,short compareLength)	FACRBBS_BSS	001011
Short FindAndCopyValue(byte tag,byte occurence,short value	FACYBBS_BSS	001100

Offset, byte[] dstBuffer, short dstOffset, short dstLength)		
Short findAndCopyValue(byte tag,byte[] dstBuffer,short dstOffset)	FACYB_BS	001101
Byte FindTLV(byte tag,byte occurrence)	FINDBB	001110
Short GetLength()	GLEN	001111
Byte GetValueByte(short valueOffset)	GVBYS	010000
Short GetValueLength()	GVLE	010001

A.2.5 EnvelopeResponseHandler methods

Method Name	Acronym	Numbering on 6 bits
EnvelopeResponseHandler getTheHandler()	GTHD	000001
Void post(byte statusType)	POSTB	000010
Void postAsBERTLV(byte statusType, byte tag)	POSTBB	000011
Inherited Method Name: EditHandler		
Void appendArray(byte[] buffer, short offset, short length, short dstLength)	APDA	000100
Void appendTLV(byte tag, byte value)	APTLBB	000101
Void appendTLV(byte tag, byte[] value, short valueOffset, short valueLength)	APTLB_BSS	000110
Void appendTLV(byte tag, byte value1, byte value2)	APTLBBB	000111
Void appendTLV(byte tag, byte value1, byte[] value2, short value2Offset, short value2Length)	APTLBB_BSS	001000
Void clear()	CLER	001001
Inherited Method Name: ViewHandler		
Byte compareValue(short valueOffset,byte[] compareBuffer, short compareOffset, short compareLength)	CPRVS_BSS	001010
Short Copy(byte[] dstBuffer,short dstOffset,short dstLength)	COPY_BSS	001011
Short CopyValue(short valueOffset, byte[] dstBuffer,short dstOffset,short dstLength)	CPYVS_BSS	001100
Byte FindAndCompareValue(byte tag,byte[] compareBuffer,short compareOffset)	FACRB_BS	001101
Byte findAndCompareValue(byte tag,byte occurence, short valueOffset,byte[] compareBuffer,short compareOffset,short compareLength)	FACRBBS_BSS	001110
Short FindAndCopyValue(byte tag,byte occurence,short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)	FACYBBS_BSS	001111
Short findAndCopyValue(byte tag,byte[] dstBuffer,short dstOffset)	FACYB_BS	010000
Byte FindTLV(byte tag,byte occurrence)	FINDBB	010001
Short GetLength()	GLEN	010010
Byte GetValueByte(short valueOffset)	GVBYS	010011
Short GetValueLength()	GVLE	010100

A.2.6 MEProfile methods

Method Name	Acronym	Numbering on 6 bits
Static boolean check(byte index)	CHECB	000001
Static boolean check(byte[] mask, short offset, short length)	CHECBSS	000010

A.2.7 ProactiveHandler methods

Method Name	Acronyms	Numbering on 6 bits
GetTheHandler()	GTHD	000001
Init(byte type, byte qualifier, byte dstDevice)	INITBBB	000010
InitDisplayText(byte qualifier, byte dcs, byte[] buffer, short offset, short length)	INDTBB_BSS	000011
InitGetInkey(byte qualifier, byte dcs, byte[] buffer, short offset, short length)	INGKBB_BSS	000100
InitGetInput(byte qualifier, byte dcs, byte[] buffer, short offset, short length, short minRespLength, short maxRespLength)	INGPBB_BSSSS	000101
Byte send()	SEND	000110
Inherited Method Name: EditHandler		
Void appendArray(byte[] buffer, short offset, short length, short dstLength)	APDA	000111
Void appendTLV(byte tag, byte value)	APTLBB	001000
Void appendTLV(byte tag, byte[] value, short valueOffset, short valueLength)	APTLB_BSS	001001
Void appendTLV(byte tag, byte value1, byte value2)	APTLBBB	001010
Void appendTLV(byte tag, byte value1, byte[] value2, short value2Offset, short value2Length)	APTLBB_BSS	001011
Void clear()	CLER	001100
Inherited Method Name: ViewHandler		
Byte CompareValue(short valueOffset,byte[] compareBuffer,short compareOffset, short compareLength)	CPRVS_BSS	001101
Short Copy(byte[] dstBuffer,short dstOffset,short dstLength)	COPY_BSS	001110
Short CopyValue(short valueOffset, byte[] dstBuffer,short dstOffset,short dstLength)	CPYVS_BSS	001111
Byte FindAndCompareValue(byte tag,byte[] compareBuffer,short compareOffset)	FACRB_BS	010000
Byte findAndCompareValue(byte tag,byte occurence, short valueOffset,byte[] compareBuffer,short compareOffset,short compareLength)	FACRBBS_BSS	010001
Short FindAndCopyValue(byte tag,byte occurence,short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)	FACYBBS_BSS	010010
Short findAndCopyValue(byte tag,byte[] dstBuffer,short dstOffset)	FACYB_BS	010011
Byte FindTLV(byte tag,byte occurrence)	FINDBB	010100
Short GetLength()	GLEN	010101
Byte GetValueByte(short valueOffset)	GVBYS	010110
Short GetValueLength()	GVLE	010111

A.2.8 ProactiveResponseHandler methods

Method Name	Acronyms	Numbering on 6 bits
Short CopyAdditionalInformation(byte[] dstBuffer, short dstOffset, short dstLength)	CPAI_BSS	000001
Short copyTextString(byte[] dstBuffer, short dstOffset)	CPTS_BS	000010
Short getAdditionalInformationLength()	GTIL	000011
Byte getGeneralResult()	GTGR	000100
Byte getItemIdentifier()	GTII	000101
Byte getTextStringCodingScheme()	GTCS	000110
Short getTextStringLength()	GTTL	000111
GetTheHandler()	GTHD	001000
Inherited Method Name: ViewHandler		
Byte CompareValue(short valueOffset,byte[] compareBuffer,short compareOffset, short compareLength)	CPRVS_BSS	001001
Short Copy(byte[] dstBuffer,short dstOffset,short dstLength)	COPY_BSS	001010
Short CopyValue(short valueOffset, byte[] dstBuffer,short dstOffset,short dstLength)	CPYVS_BSS	001011
Byte FindAndCompareValue(byte tag,byte[] compareBuffer,short compareOffset)	FACRB_BS	001100
Byte findAndCompareValue(byte tag,byte occurence, short valueOffset,byte[] compareBuffer,short compareOffset,short compareLength)	FACRBBS_BSS	001101
Short FindAndCopyValue(byte tag,byte occurence,short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength)	FACYBBS_BSS	001110
Short findAndCopyValue(byte tag,byte[] dstBuffer,short dstOffset)	FACYB_BS	001111
Byte FindTLV(byte tag,byte occurrence)	FINDBB	010000
Short GetLength()	GLEN	010001
Byte GetValueByte(short valueOffset)	GVBYS	010010
Short GetValueLength()	GVLE	010011

A.2.9 ToolkitRegistry methods

Method Name	Acronyms	Numbering on 6 bits
AllocateTimer()	ATIM	000001
changeMenuEntry(byte id, byte[] menuEntry, short offset, short length, byte nextAction, boolean helpSupported, byte iconQualifier, short iconIdentifier)	CMETB_BSSBZBS	000010
clearEvent(byte event)	CEVTB	000011
disableMenuEntry(byte id)	DMETB	000100
enableMenuEntry(byte id)	EMETB	000101
getEntry()	GETY	000110
getPollInterval()	GPOL	000111
initMenuEntry(byte[] menuEntry, short offset, short length, byte nextAction, boolean helpSupported, byte iconQualifier, short iconIdentifier)	IMET_BSSBZBS	001000
isEventSet(byte event)	IEVSB	001001
releaseTimer(byte timerIdentifier)	RTIM	001010
requestPollInterval(short duration)	RPOL	001011
setEvent(byte event)	SEVTB	001100
setEventList(byte[] eventList, short offset, short length)	SEVL_BSS	001101

A.2.10 ViewHandler methods

The numbering of the ViewHandler methods it will be done in the classes inherit it: EditHandler, EnvelopeHandler, ProactiveResponseHandler, ProactiveHandler, because the methods provided by this class as it is declared 'abstract'.

A.2.11 ToolkitException methods

Method Name	Acronyms	Numbering on 6 bits
Static void throwIt(short reason)	THITS	000001
ToolkitException(short reason)	COORS	000010
Constants	CONS	000011

Annex B (normative): Script file syntax and format description

B.1 Syntax description

Following is a syntax description in BNF.

<statement list> ::= [<statement> **\n**] +

<statement> ::= <simple> | <switch> | <*blank line*>

<simple> ::= <reset> | <init> | <command> | <remark>

<reset> ::= **RST**

<init> ::= **INI** <*hexdata*>

<command> ::= **CMD** <*hexdata*> [<response>] (<status>)

<response> ::= **[** <*hexdata*> **]**

<status> ::= **(** <*hexdata*> **)**

<remark> ::= **REM** <*text line*>

<switch> ::= **SWI {** [<labelled list>] + **}**

<labelled list> ::= <label> **: \n** <statement list>

Description of syntax metalanguage :

\n represents a linebreak

[x] means x can appear optionally

[x] + means 1 or more appearances of x

x | y means x or y

[]{}: (bold) these are characters that appear literally in the script files

<*text line*> any character until the end of the line

<*blank line*> a line containing no text is acceptable

<*hexdata*> data written in hexadecimal, each byte separated from the following by a whitespace

Each simple statement beginning with 3 characters different than the ones defined indicates another tool command, and shall be ignored by the parser if not recognised.

`' ', '\t'` : Can be used as separator
A long statement can be broken into several lines by using the character '****' at the end of each line which is not the last one in the statement.

For more details refer to the examples in B.3.

B.2 Semantics

Following is the meaning of each of the statements :

CMD : Sends an APDU Command to the card, including (optionally) the expected response data and also (optionally) the expected status words SW1, SW2.
RST : Resets and powers on the card
INI : Performs the terminal profile with the following data. Afterwards, it shall perform all the fetch and terminal response commands until there is no proactive session in progress.
REM : Used for comments
SWI : Activates a switch condition. Every labelled list represents a list of statements to be executed, if the label matches the SW resulting from the previously executed command.

Evaluation of expected response and status in the case of a CMD:
<response> data within **[**…**]** has to be checked, it needs to be present for an outgoing command. Bytes written as XX shall not be checked by the APDU tool.
<status> status contained within **(**…**)** has to be checked; when several status are valid they shall be separated by commas. Bytes written as XX shall not be checked by the APDU tool.

B.3 Example

```
REM this is an example

RST
INI FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
REM Case 1 example
CMD A0 C2 00 00 00 (91 33 , 69 XX)

REM Case 2 example
CMD A0 B6 00 00 07 \
    [XX XX XX 55 55 XX 55] \
    (91 33 , 67 XX)


CMD A0 B6 00 00 07 \
    (91 33 , 67 XX)

CMD A0 C0 00 00 1F \
    [10 A0 00 00 00 09 00 02 FF FF FF FF 89 28 A4 05 \
    02 0D CC CC CC CC CC CC CC CC CC CC CC CC ] \
    (90 00)

REM Case 3 example
CMD A0 C2 00 00 33 \
    D1 31 82 02 83 81 06 05 80 11 22 33 44 8B 24 40 \
    08 00 24 23 85 18 41 04 51 10 10 00 00 00 00 13 \
    02 70 00 00 0E 0D 00 00 00 00 28 A4 05 00 00 00 \
    00 00 00 \
    (90 00)

REM Case 4 example with switch statement
CMD 00 A4 04 00 10 \
    A0 00 00 00 09 00 02 FF FF FF FF 89 41 04 44 02 \
    (61 XX, 6A 82)

SWI {
61 XX:
CMD 00 C0 00 00 14 \
    [10 A0 00 00 00 09 00 02 FF FF FF FF 89 41 04 44 \
    02 02 CC CC] \
    (90 00)

CMD A0 A4 00 00 02 \
    3F 00

6A 82:
RST

}
```

B.4 Style and formatting

In order to show a common appearance all the scripts shall follow those format rules:

- start always with a 'RST' followed by an 'INI' command.
- The command, data to be checked and status to be checked shall be presented in the following order:

  CMD *COMMAND* [*EXPECTED DATA*] (*EXPECTED STATUS*)
- APDU shall be presented with command (CLA INS P1 P2 P3) in one line and data (if present) in next line grouped 16 bytes per line (see example above).
- The expected data (if present) shall be presented in 16 bytes groups per line (see example above).

Annex C (normative): Default Prepersonalisation

C.1 General Default Prepersonalisation

This table shows the default prepersonalisation, the file system and the files' content, that the test SIM cards shall contain unless otherwise stated.

Name	Identifier	Default Value	Special Features
EF_{ICCID}	2FE2	0F FF FF FF FF FF FF FF FF FF	This value is not compliant with GSM 11.11
EF_{IMSI}	6F07	FF FF FF FF FF FF FF FF FF	This value is not compliant with GSM 11.11
EF_{LP}	6F05	01 FF FF FF	
EF_{Kc}	6F20	FF FF FF FF FF FF FF FF 07	
$EF_{PLMNsel}$	6F30	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
EF_{HPLMN}	6F31	05	
EF_{ACMmax}	6F37	00 00 00	Access condition UPDATE: CHV1
EF_{SST}	6F38	FF 3F C3 03 0C 00 FF 0F 00 33	
EF_{ACM}	6F39	00 00 00	Access condition UPDATE: CHV1
EF_{PUCT}	6F41	FF FF FF 00 00	Access condition UPDATE: CHV1
EF_{BCCH}	6F74	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
EF_{ACC}	6F78	00 00	
EF_{FPLMN}	6F7B	FF FF FF FF FF FF FF FF FF FF FF FF	
EF_{LOCI}	6F7E	FF FF FF FF 00 F0 00 00 00 FF 01	
EF_{AD}	6FAD	00 FF FF	
EF_{Phase}	6FAE	03	
EF_{FDN}	6F3B	Default value in all the records: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	Records: 5
EF_{SMSP}	6F42	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	Records: 1
EF_{LND}	6F44	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	Records: 1
EF_{SMSS}	6F43	FF FF	
EF_{SMS}	6F3C	1st record: 00 FF … FF(length 176) 2nd record:00 FF … FF(length 176) 3rd record: 00 FF … FF(length 176)	Records: 3
EF_{ADN}	6F3A	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	Records: 1
EF_{CCP}	6F3D	FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
EF_{MSISDN}	6F40	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	Records: 1
EF_{SDN}	6F41	FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	Records: 1
EF_{SUME}	6F54	85 0C 54 4F 4F 4C 4B 49 54 20 54 45 53 54 FF FF FF FF	
EF_{CBMI}	6F45	FF FF	
EF_{IM}	4F20	FF FF FF FF FF FF FF FF FF FF FF FF	

The default value for the CHV1 shall be "0x31 0x31 0x31 0x31 0xFF 0xFF 0xFF 0xFF" and its state shall be 'disabled' during test applets execution.

C.2 Sim.Access.SimView test default prepersonalisation

C.2.1 $DF_{SIMTEST}$ (SIM Test)

Identifier: '0319'

C.2.2 EF_{TNR} (Transparent Never Read)

Identifier: '6F01'		Structure: transparent		Mandatory
File size: 3 bytes		Update activity: low		
Access Conditions: READ NEVER UPDATE ALWAYS INVALIDATE ALWAYS REHABILITATE ALWAYS				
Bytes	Description	Default Value	M/O	Length
1 – 3	Test Data	AA AA AA	M	3 bytes

C.2.3 EF_{TNU} (Transparent Never Update)

Identifier: '6F02'		Structure: transparent		Mandatory
File size: 3 bytes		Update activity: low		
Access Conditions: READ ALWAYS UPDATE NEVER INVALIDATE ALWAYS REHABILITATE ALWAYS				
Bytes	Description	Default Value	M/O	Length
1 - 3	Test Data	55 55 55	M	3 bytes

C.2.4 EF_{TARU} (Transparent Always Read and Update)

Identifier: '6F03'		Structure: transparent		Mandatory
File size: 260 bytes		Update activity: low		
Access Conditions: READ ALWAYS UPDATE ALWAYS INVALIDATE ALWAYS REHABILITATE ALWAYS				
Bytes	Description	Default Value	M/O	Length
1 - 260	Test Data	FF ... FF	M	260 bytes

C.2.5 EF_{CNR} (Cyclic Never Read)

Identifier: '6F04'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	NEVER
UPDATE	ALWAYS
INCREASE	ALWAYS
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

C.2.6 EF_{CNU} (Cyclic Never Update)

Identifier: '6F05'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	ALWAYS
UPDATE	NEVER
INCREASE	NEVER
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
3	Test Data	00 00 00	M	3 bytes

C.2.7 EF_{CNIC} (Cyclic Never Increase)

Identifier: '6F06	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	NEVER
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

C.2.8 EF_{CNIV} (Cyclic Never Invalidate)

Identifier: '6F07	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	ALWAYS
INVALIDATE	NEVER
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

C.2.9 EF_{CNRH} (Cyclic Never Rehabilitate)

Identifier: '6F08'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	ALWAYS
INVALIDATE	ALWAYS
REHABILITATE	NEVER

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

C.2.10 EF_{CARU} (Cyclic Always Read and Update)

Identifier: '6F09'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	ALWAYS
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	55 55 55	M	3 bytes
2	Test Data	AA AA AA	M	3 bytes

C.2.11 EF_{LNR} (Linear Fixed Never Read)

Identifier: '6F0A'	Structure: linear fixed	Mandatory
Record length: 4 bytes	Update activity: low	

Access Conditions:

READ	NEVER
UPDATE	ALWAYS
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data - Record 1	FF FF FF FF	M	4 bytes
2	Test Data - Record 2	FF FF FF FF	M	4 bytes

C.2.12 EF_{LNU} (Linear Fixed Never Update)

Identifier: '6F0B'	Structure: linear fixed	Mandatory
Record length: 4 bytes	Update activity: low	

Access Conditions:

READ	ALWAYS
UPDATE	NEVER
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data - Record 1	FF FF FF FF	M	4 bytes
2	Test Data - Record 2	FF FF FF FF	M	4 bytes

C.2.13 EF_{LARU} (Linear Fixed Always Read and Update)

Identifier: '6F0C'	Structure: linear fixed	Mandatory
Record length: 4 bytes	Update activity: low	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data - Record 1	55 55 55 55	M	4 bytes
2	Test Data - Record 2	AA AA AA AA	M	4 bytes

C.2.14 EF_{CINA} (Cyclic Increase Not Allowed)

Identifier: '6F0D'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: high	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	ALWAYS (see note 1)
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

Note 1: This file will be personalised in a way such that increase is not allowed, as indicated by the FCI byte 8, bit 7 (GSM 11.11: FCI structure of an EF returned by the SELECT command)

C.2.15 EF_{TRAC} (Transparent Read Access Condition CHV2)

Identifier: '6F0E'	Structure: transparent	Mandatory
Record length: 3 bytes	Update activity: low	

Access Conditions:

READ	CHV2
UPDATE	ALWAYS
INCREASE	ALWAYS
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes

C.2.16 EF_{TIAC} (Transparent Invalidate Access Condition CHV1)

Identifier: '6F0F'	Structure: transparent	Mandatory
Record length: 3 bytes	Update activity: low	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	ALWAYS
INVALIDATE	CHV1
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes

C.2.17 EF_{CIAC} (Cyclic Increase Access Condition CHV2)

Identifier: '6F10'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: low	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	CHV2
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

C.2.18 EF_{CIAA} (Cyclic Increase Access Condition ADM0)

Identifier: '6F11'	Structure: cyclic	Mandatory
Record length: 3 bytes	Update activity: low	

Access Conditions:

READ	ALWAYS
UPDATE	ALWAYS
INCREASE	ADM0
INVALIDATE	ALWAYS
REHABILITATE	ALWAYS

Logical Record Number	Description	Default Value	M/O	Length
1	Test Data	00 00 00	M	3 bytes
2	Test Data	00 00 00	M	3 bytes

Annex D (normative): sim.test.util package and loading , testing and cleaning script examples.

See attached files:

- Annex_D_SimTestUtil.zip
- Annex_D_Examples.zip

Annex E (normative): Test Area files.

See attached file:

- Annex_E_SourceCode.zip

Annex F (Normative): AID numbering and acronyms for Framework tests

F.1 Toolkit Installation Parameters (TIN)

Test Area within the chapter	Acronyms	Numbering on 6 bits
Timer allocation	TMAL	000001
Item identifier	ITID	000010
Item position	ITPO	000011
Access conditions	ACCO	000100
Priority level	PRLV	000101
Maximum length for each menu entry	MLME	000110
Number of menu entries	NBME	000111
Memory space	MESP	001000

F.2 Minimum Handler Availability (MHA)

Test Area within the chapter	Acronyms	Numbering on 6 bits
ProactiveHandler	PAHD	000001
ProactiveResponseHandler	PRHD	000010
EnvelopeHandler	ENHD	000011
EnvelopeResponseHandler	ERHD	000100

F.3 Handler Integrity (HIN)

Test Area within the chapter	Acronyms	Numbering on 6 bits
ProactiveHandler	PAHD	000001
ProactiveResponseHandler	PRHD	000010
EnvelopeHandler	ENHD	000011
EnvelopeResponseHandler	ERHD	000100

F.4 Applet Triggering (APT)

Test Area within the chapter	Acronyms	Numbering on 6 bits
EVENT_PROFILE_DOWNLOAD	EPDW	000001
EVENT_MENU_SELECTION	EMSE	000010
EVENT_MENU_SELECTION_HELP_REQUEST	EMSH	000011
EVENT_FORMATTED_SMS_PP_ENV	EFSE	000100
EVENT_UNFORMATTED_SMS_PP_ENV	EUSE	000101
EVENT_CALL_CONTROL_BY_SIM	ECCN	000110
EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM	EMCN	000111
EVENT_TIMER_EXPIRATION	ETEX	001000
EVENT_UNFORMATTED_SMS_CB	EUCB	001001
EVENT_EVENT_DOWNLOAD_MT_CALL	EDMC	001010
EVENT_EVENT_DOWNLOAD_CALL_CONNECTED	EDCC	001011
EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED	EDCD	001100
EVENT_EVENT_DOWNLOAD_LOCATION_STATUS	EDLS	001101
EVENT_EVENT_DOWNLOAD_USER_ACTIVITY	EDUA	001110
EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE	EDIS	001111
EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS	EDCR	010000
EVENT_UNRECOGNIZED_ENVELOPE	EUEN	010001
EVENT_STATUS_COMMAND	ESTC	010010

F.5 Proactive Command Sending (PCS)

Test Area within the chapter	Acronyms	Numbering on 6 bits
System Proactive commands	SPCO	000001
Interaction with GSM commands	IGCO	000010
Errors during proactive command sending	EPCS	000011

F.6 Envelope Response Posting (ERP)

Test Area within the chapter	Acronyms	Numbering on 6 bits
EVENT_CALL_CONTROL_BY_SIM	ECCN	000001
EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM	EMCN	000010
EVENT_UNRECOGNIZED_ENVELOPE	EUEN	000011

F.7 Framework Security (FWS)

Test Area within the chapter	Acronyms	Numbering on 6 bits
Input data	INDA	000001
Output data	OUDA	000010

F.8 File System Context (FSC)

Test Area within the chapter	Acronyms	Numbering on 6 bits
Initial Context	INIT	000001
Context Preservation for Current File	CUFI	000010
Context Preservation for Current Record	CURE	000011

F.9 Exception Handling (EXH)

Test Area within the chapter	Acronyms	Numbering on 6 bits
Hide exception to the mobile	HEME	000001
Interaction with multi-triggering	IMTG	000010

F.10 Other parts transferred to framework from API (API)

Test Area within the chapter	Acronyms	Numbering on 6 bits
A handler is a temporary JCRE Entry Point object	HEPO	000001
Transaction	TRAN	000010
Timer Id between Applets	TMID	000011

Annex G (Normative): Configuration Parameters File

This file describes all the mandatory and optional parameters that are used in order to create the loading script(s) for one test area. The configuration parameters file contains the values for the parameters needed in order to generate the loading and cleanup scripts.

The name of the parameters file will be **<*test area reference*>_<*n*>.par**.

The number <n> is associated with the loading/cleanup script number, i.e. API_2_TKR_ SEVL_BSS_1.par is used to generate API_2_TKR_ SEVL_BSS_1.ldr etc.

G.1 Syntax

The general syntax for this file will be:

```
<file> ::= <section>+

<section> ::= <section heading> <line break> <section body>
<section heading> ::= '[' <name> ']'
<section body> ::= <parameter assignment>+
<parameter assignment> ::= <name> '=' <value> <line break>
```

Where '+' indicates one or more repetitions of the previous syntax element.

Any text included between the symbol ';' and the end of line is considered a comment and ignored by parsing tools.

Empty values are considered valid. They are used to indicate that an optional value is not present.

Names of sections, names of parameters and values are case-sensitive.

Blank spaces and Tabs between tokens are allowed and will be ignored by the parser.

When values represent a sequence of bytes, they are expressed in hexadecimal format, where every 2 digits represent one byte. Blank space between bytes is optional.

Example:

```
; comment


[Section1]

Parameter11 = 00 11 22 33

Parameter12 = 0101   ; another comment


[Section2]

Parameter21 = vvwwxxyyzz
```

G.2 File Contents and Organisation

Parameters in this file are organised in the following sections:

[CONVERT]	Conversion parameters used during conversion (i.e. CAP file generation)
[INSTALL(load)]	Parameters used by the Install for Load command
[LOAD]	Parameters used by the Load command
[INSTALL(install)]	Parameters used by the Install for Install command

All sections may appear only once in the file, except for the "INSTALL(install)" section. If that section appears more than once, it will apply to different applet instances, in sequence.

G.2.1 Default values, order and processing

The ordering of the parameters and the sections is relevant, since parameter names may be repeated and apply to different applets.

When one single parameter is repeated within one section, it refers to different applets. The value of the n^{th} appearance of the parameter applies to applet *n*.

When one section is repeated (INSTALL(install)), then the n^{th} appearance of the section applies to applet *n*. Parameter/value pairs which are found in one appearance of the section are valid for the subsequent applets as long as they are not overriden. For example, first INSTALL(install) may contain all values for parameters, whereas the subsequent INSTALL(install) sections may only contain parameters whose values change.

If one required parameter is missing from one section, the last defined value of this parameter in a previous section of the same file will be used.

G.2.2 CONVERT Section

These parameters allow configuration of the conversion process of the Java class file(s) into one CAP file.

Parameter	Description
PackageAID	AID of the package
PackageName	Fully qualified name of the package
PackageVersion	Version of the package
AppletClassAID	AID of the applet
AppletClassName	Name of the applet

G.2.3 INSTALL(load) Section

Here are the parameters to be included in the Install(Load) command (as specified in GSM 03.48 [8]).

Parameter	Description
PackageAID	AID of the package
PackageNonVolatileMemSize	Non Volatile memory space (in bytes) required for package loading
InstallationNonVolatileMemSize	Non volatile memory required for installation, in bytes
InstallationVolatileMemSize	Volatile memory required for installation, in bytes

G.2.4 LOAD Section

Here are the parameters to be included in the Load command (as specified in GSM 03.48 [8]).

Parameter	Description
MaxLoadCommandDataLength	Maximum length of the data provided in the load command (P3 parameter of the LOAD APDU embedded in the command packet)

G.2.5 INSTALL(install) Section

Here are the parameters to be included in the Install(Install) command (as specified in GSM 03.48 [8]

Parameter	Description
PackageAID	AID of the package
AppletClassAID	AID of the applet
InstanceAID	AID of the instance of the applet
InstallationNonVolatileMemSize	Non volatile memory required for installation, in bytes
InstallationVolatileMemSize	Volatile memory required for installation, in bytes
AccessDomain	Specify the SIM files that may be accessed by the applet and the operations allowed on these files. This parameter includes the Access Domain Parameter (ADP) and Access Domain Data (ADD)
PriorityLevel	Priority level of the Toolkit applet instance
MaxNumberOfTimers	Maximum number of timers allowed for this applet instance
MaxMenuEntryTextLength	Maximum text length for a menu entry
MaxNumberOfMenuEntries	Maximum number of menu entries allowed for this applet instance
MenuEntriesPositionIdentifier	For each menu entry: Position and identifier of that menu entry
AppletSpecificParameters	Parameters specific to the applet

The applet shall be installed with install(install and make selectable) command.

G.3 Full example

```
[CONVERT]

PackageAID = A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 00

PackageName = sim.test.access.api_1_svw_updrbs

PackageVersion = 1.0

AppletClassAID = A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 01

AppletClassName = API_1_SVW_UPDRBS_1

AppletClassAID = A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 02

AppletClassName = API_1_SVW_UPDRBS_2


[INSTALL(load)]

PackageNonVolatileMemSize = 0D27

;InstallationNonVolatileMemSize = 0400

;InstallationVolatileMemSize = 0000


[LOAD]

MaxLoadCommandDataLength = 6C ; max value


[INSTALL(install)]

AppletClassAID = A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 01

InstanceAID =    A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 01

InstallationNonVolatileMemSize = 0400

InstallationVolatileMemSize = 0000

AccessDomain = 00

PriorityLevel = FF

MaxNumberOfTimers = 00

MaxMenuEntryTextLength = 10
```

```
MaxNumberOfMenuEntries = 01

MenuEntriesPositionIdentifier = 0001

AppletSpecificParameters =


[INSTALL(install)]

AppletClassAID = A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 02

InstanceAID =    A0 00 00 00 30 00 02 FF FF FF FF 89 00 00 01 02

InstallationNonVolatileMemSize = 0200

InstallationVolatileMemSize = 0000

MenuEntriesPositionIdentifier = 0002
```

```
; rest of INSTALL(install) parameters are taken from previous INSTALL(install)...
```

Annex H (informative): Change history

The table below indicates all changes that have been made to the present document since drafting work began.

Change history								
Date	**TSG #**	**TSG Doc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**Old**	**New**
2000-10	-	-				Draft presented at T3 #16		0.2.0
2000-12	TP-10	TP-000208				Presented to TSG-T #10 for information	0.2.0	1.0.0
2001-01	-	-				Input to T3 #17 resulting from T3 ad hoc #24	1.0.0	1.1.0
2001-03	-	-				Document presented for approval at T3 #18	1.1.0	1.2.0
2001-03	TP-11	TP-010041				Doument presented for approval to TSG-T #11 (identical in technical content to v1.2.0)	1.2.0	2.0.0
2001-03						As approved at TSG-T #11 (identical in technical content to v2.0.0)	2.0.0	7.0.0
2001-05						Correction to date on cover page / headers	7.0.0	7.0.1
2001-06	TP-12	TP-010105	A001		F	Corrections to the API Test plan, addition of the test area files and modification of the util package	7.0.1	7.1.0
2001-09	TP-13	TP-010206	A002		F	Update API Test plan and Test Area Files	7.1.0	7.2.0
2001-11	TP-14	TP-010241	A003		F	Specification for framework part	7.2.0	7.3.0
		TP-010241	A004		F	API part		

History

Document history		
V7.0.1	May 2001	Publication
V7.1.0	June 2001	Publication
V7.2.0	September 2001	Publication
V7.3.0	December 2001	Publication