

ETSI TS 101 955 V7.2.0 (2001-09)

Technical Specification

**Digital cellular telecommunications system (Phase 2+);
Test specification for SIM API for Java card
(3GPP TS 11.13 version 7.2.0 Release 1998)**

GSM®
GLOBAL SYSTEM FOR
MOBILE COMMUNICATIONS

3GPP

ETSI 



Reference

RTS/TSGT-031113Q7R2

Keywords

GSM

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

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

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, send your comment to:

editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2001.
All rights reserved.

Intellectual Property Rights

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

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

Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under www.etsi.org/key.

Contents

Intellectual Property Rights	2
Foreword.....	2
Foreword.....	7
1 Scope	8
2 References	8
3 Definitions and abbreviations.....	9
3.1 Definitions	9
3.2 Abbreviations	9
4 Test Environment	10
4.1 Applicability.....	10
4.2 Test environment description	10
4.3 Tests format.....	11
4.3.1 Test Area Reference.....	11
4.3.1.1 Conformance requirements	11
4.3.1.2 Test Area files	11
4.3.1.3 Test Procedure.....	12
4.3.1.4 Test Coverage	12
4.4 Initial Conditions.....	12
4.5 Package name	12
4.6 AID Coding	13
4.7 Test Equipment	14
4.7.1 APDU tool	14
4.7.2 Util package	15
4.7.3 Applet installation parameters	15
4.7.3.1 Security parameters	15
4.7.3.2 Loading components	15
4.8 Testing methodology.....	15
4.8.1 Test interfaces and facilities.....	15
5 Test plan	15
6 API Test Plan	15
6.1 Package sim.access:.....	15
6.1.1 Interface SIMView	15
6.1.1.1 Constants.....	15
6.1.1.2 Method select(short fid, byte[] fci, short fciOffset, short fciLength)	16
6.1.1.3 Method select (short fid)	20
6.1.1.4 Method status	23
6.1.1.5 Method readBinary.....	25
6.1.1.6 Method updateBinary.....	27
6.1.1.7 Method readRecord	30
6.1.1.8 Method updateRecord	36
6.1.1.9 Method seek	44
6.1.1.10 Method increase	48
6.1.1.11 Method invalidate	51
6.1.1.12 Method rehabilitate	52
6.1.2 Class SIMSystem.....	54
6.1.2.1 Method getTheSIMView	54
6.1.3 Class SIMViewException	54
6.1.3.1 Method throwIt.....	54
6.1.3.2 Constructor	55
6.2 Package sim.toolkit	57
6.2.1 Interface ToolkitConstants.....	57
6.2.1.1 Constants	57

6.2.2	Interface ToolkitInterface	57
6.2.2.1	Method processToolkit.....	57
6.2.3	Class EditHandler	58
6.2.4	Class EnvelopeHandler	58
6.2.4.1	Method getEnvelopeTag	58
6.2.4.2	Method getItemIdentifier	59
6.2.4.3	Method getSecuredDataLength.....	60
6.2.4.4	Method getSecuredDataOffset	63
6.2.4.5	Method getTheHandler	64
6.2.4.6	Method getTPUDLOffset.....	65
6.2.4.7	Method getLength	67
6.2.4.8	Method copy	68
6.2.4.9	Method findTLV	70
6.2.4.10	Method getValueLength.....	71
6.2.4.11	Method getValueByte	72
6.2.4.12	Method copyValue	73
6.2.4.13	Method compareValue	75
6.2.4.14	Method findAndCopyValue(byte tag, byte[] dstBuffer, short dstOffset).....	78
6.2.4.15	Method findAndCopyValue(byte tag, byte occurrence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength).....	80
6.2.4.16	Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset).....	82
6.2.4.17	Method findAndCompareValue(byte tag, byte occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength).....	85
6.2.5	Class EnvelopeResponseHandler.....	88
6.2.5.1	Method getTheHandler	88
6.2.5.2	Method post.....	89
6.2.5.3	Method postAsBERTLV	90
6.2.5.4	Method getLength	92
6.2.5.5	Method copy	93
6.2.5.6	Method findTLV	94
6.2.5.7	Method getValueLength.....	96
6.2.5.8	Method getValueByte	97
6.2.5.9	Method copyValue	99
6.2.5.10	Method compareValue	101
6.2.5.11	Method findAndCopyValue(byte tag, byte[] dstBuffer, short valueOffset).....	103
6.2.5.12	Method findAndCopyValue(byte tag, byte occurrence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength).....	106
6.2.5.13	Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset).....	109
6.2.5.14	Method findAndCompareValue(byte tag, byte occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength).....	111
6.2.5.15	Method appendArray	115
6.2.5.16	Method appendTLV(byte tag, byte value)	117
6.2.5.17	Method appendTLV(byte tag, byte value1, byte value2).....	118
6.2.5.18	Method appendTLV(byte tag, byte[] value, short valueoffset, short valuelength).....	119
6.2.5.19	Method appendTLV(byte tag, byte value1, byte[] value2, short value2offset, short value2length) ..	122
6.2.5.20	Method clear	124
6.2.6	Class MEProfile.....	125
6.2.6.1	Method check (byte index).....	125
6.2.6.2	Method check (byte [] mask, short offset, short length).....	126
6.2.7	Class ProactiveHandler	128
6.2.7.1	Method getTheHandler	128
6.2.7.2	Method init	129
6.2.7.3	Method initDisplayText	131
6.2.7.4	Method initGetInkey	134
6.2.7.5	Method initGetInput	137
6.2.7.6	Method send	140
6.2.7.7	Method getLength	142
6.2.7.8	Method copy	143
6.2.7.9	Method findTLV	145
6.2.7.10	Method getValueLength.....	146
6.2.7.11	Method getValueByte	148
6.2.7.12	Method copyValue	149

6.2.7.13	Method compareValue	151
6.2.7.14	Method findAndCopyValue(byte tag, byte[] dstBuffer, short valueOffset).....	154
6.2.7.15	Method findAndCopyValue(byte tag, byte occurrence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength).....	157
6.2.7.16	Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset).....	160
6.2.7.17	Method findAndCompareValue(byte tag, byte occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength).....	162
6.2.7.18	Method appendArray	166
6.2.7.19	Method appendTLV(byte tag, byte value)	168
6.2.7.20	Method appendTLV(byte tag, byte value1, byte value2).....	170
6.2.7.21	Method appendTLV(byte tag, byte[] value, short valueoffset, short valuelength).....	171
6.2.7.22	Method appendTLV(byte tag, byte value1, byte[] value2, short value2offset, short value2length) ..	174
6.2.7.23	Method clear	176
6.2.8	Class ProactiveResponseHandler.....	177
6.2.8.1	Method copyAdditionalInformation.....	177
6.2.8.2	Method copyTextString	181
6.2.8.3	Method getAdditionalInformationLength	184
6.2.8.4	Method getGeneralResult.....	186
6.2.8.5	Method getItemIdentifier	188
6.2.8.6	Method getTextStringCodingScheme	190
6.2.8.7	Method GetTextStringLength	192
6.2.8.8	Method getTheHandler	194
6.2.8.9	Method getLength.....	195
6.2.8.10	Method copy	196
6.2.8.11	Method findTLV	198
6.2.8.12	Method getValueLength.....	199
6.2.8.13	Method getValueByte	201
6.2.8.14	Method copyValue.....	203
6.2.8.15	Method compareValue.....	205
6.2.8.16	Method findAndCopyValue(byte tag, byte[] dstBuffer, short valueOffset).....	207
6.2.8.17	Method findAndCopyValue(byte tag, byte occurrence, short valueOffset, byte[] dstBuffer, short dstOffset, short dstLength).....	210
6.2.8.18	Method findAndCompareValue(byte tag, byte[] compareBuffer, short compareOffset).....	213
6.2.8.19	Method findAndCompareValue(byte tag, byte occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength).....	215
6.2.9	Class ToolkitRegistry	219
6.2.9.1	Method allocateTimer	219
6.2.9.2	Method changeMenuEntry.....	221
6.2.9.3	Method clearEvent	228
6.2.9.4	Method disableMenuEntry.....	230
6.2.9.5	Method enableMenuEntry.....	232
6.2.9.6	Method getEntry	233
6.2.9.7	Method getPollInterval.....	234
6.2.9.8	Method initMenuEntry.....	235
6.2.9.9	Method isEventSet	240
6.2.9.10	Method releaseTimer	242
6.2.9.11	Method requestPollInterval.....	243
6.2.9.12	Method setEvent	245
6.2.9.13	Method setEventList	247
6.2.10	Class ViewHandler	251
6.2.11	Class ToolkitException.....	251
6.2.11.1	Exception Constants.....	251
6.2.11.2	Constructor ToolkitException.....	251
6.2.11.3	Method throwIt	252
6.3	SIM Toolkit Framework.....	253

Annex A (normative): Class and Methods AID numbering and acronyms255

A.1	Sim.access	255
A.1.1	SIMView methods.....	255
A.1.2	SIMSystem methods.....	255
A.1.3	SIMViewException methods.....	255

A.2	Sim.toolkit	256
A.2.1	ToolkitConstants	256
A.2.2	ToolkitInterface methods	256
A.2.3	EditHandler methods	256
A.2.4	EnvelopeHandler methods	256
A.2.5	EnvelopeResponseHandler methods	257
A.2.6	MEProfile methods	258
A.2.7	ProactiveHandler methods	258
A.2.8	ProactiveResponseHandler methods	259
A.2.9	ToolkitRegistry methods	260
A.2.10	ViewHandler methods	260
A.2.11	ToolkitException methods	260
Annex B (normative): Script file syntax and format description		261
Annex C (normative): Default Prepersonalisation		262
C.1	General Default Prepersonalisation	262
C.2	Sim.Access.SimView test default prepersonalisation	263
C.2.1	DF _{SIMTEST} (SIM Test)	263
C.2.2	EF _{TNR} (Transparent Never Read)	263
C.2.3	EF _{TNU} (Transparent Never Update)	263
C.2.4	EF _{TARU} (Transparent Always Read and Update)	263
C.2.5	EF _{CNR} (Cyclic Never Read)	264
C.2.6	EF _{CNU} (Cyclic Never Update)	264
C.2.7	EF _{CNIC} (Cyclic Never Increase)	264
C.2.8	EF _{CNIV} (Cyclic Never Invalidate)	265
C.2.9	EF _{CNRH} (Cyclic Never Rehabilitate)	265
C.2.10	EF _{CARU} (Cyclic Always Read and Update)	265
C.2.11	EF _{LNR} (Linear Fixed Never Read)	266
C.2.12	EF _{LNU} (Linear Fixed Never Update)	266
C.2.13	EF _{LARU} (Linear Fixed Always Read and Update)	266
C.2.14	EF _{CINA} (Cyclic Increase Not Allowed)	267
Annex D (normative): sim.test.util package and loading , testing and cleaning script examples		268
Annex E (normative): Test Area files.		269
Annex F (informative): Change history		270
History		271

Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under www.etsi.org/key.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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 suite 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.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [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

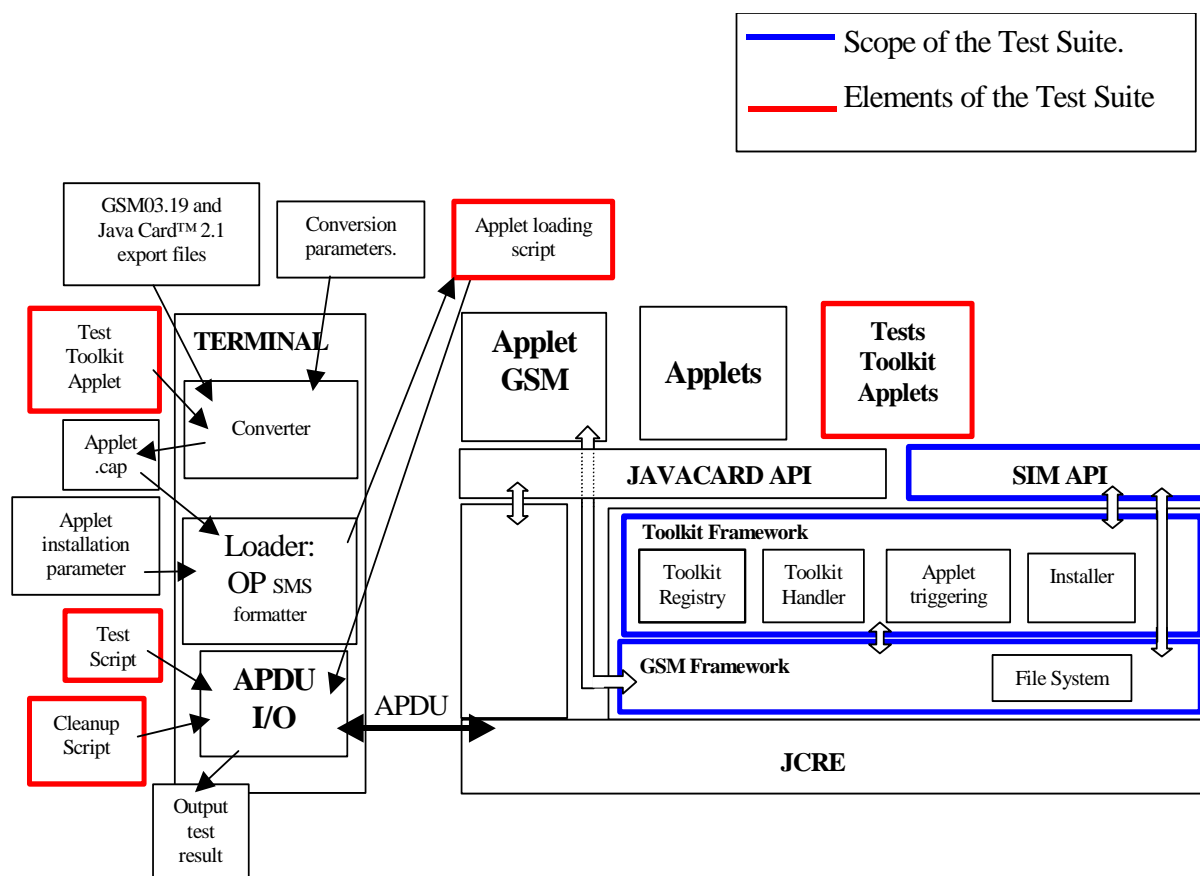
The tests defined in this specification shall be performed taking into account the services supported by the card as specified in the EF_{SST} file.

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 bytecode 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 bytecode 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

[TBD]

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

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).

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 from the API and/or the APDU level as follows:

Test Case			
Id	Description	API Expectation	APDU Expectation
	<i>Test Case detailed description</i>	<i>API expected behavior.</i>	<i>Expected response at APDU level.</i>

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.

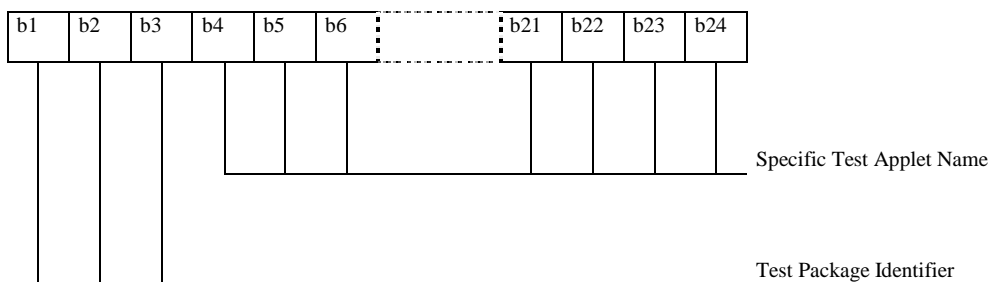
sim.test.toolkit.[Test Area Reference]: Java Card packages containing Test Area References for the GSM 03.19[7] sim.toolkit package.

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 API 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

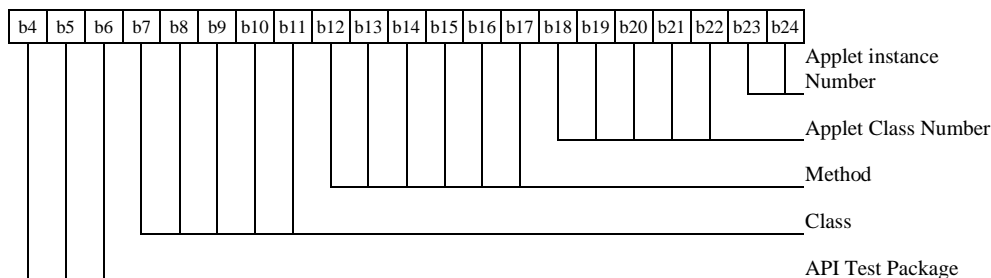
010 Framework

011 Loader

111 sim.test.util

other values are RFU

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 0 for package and class.

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'

4.7 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 EF_{ICCID} 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
	<pre>fid = SIMView.FID_EF_FDN fciOffset = 20 fciLength = 15 select()</pre>	java.lang.ArrayIndexOutOfBoundsException.	
12	<p style="text-align: center;">fciOffset >= fci.length</p> <pre>fid = SIMView.FID_EF_FDN fciOffset = 34 fciLength = 1 select()</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException	
13	<p style="text-align: center;">Selection possibilities</p> <pre>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() -</pre>	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	<p style="text-align: center;">EF not selected after MF/DF selection</p> <pre>1 - fid = SIMView.FID_MF select() fid = SIMView.FID_EF_ICCID select() 2 - fid = SIMView.FID_MF select() readBinary()</pre>	1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	
15	<p style="text-align: center;">No selection of non-reachable file</p> <pre>1 - fid = SIMView.FID_MF select() 2 - fid = SIMView.FID_EF_ACM select()</pre>	1 – No exception shall be thrown. 2 – Shall throw sim.access.SIMViewException with reason code FILE_NOT_FOUND.	
16	<p style="text-align: center;">No record is selected after selecting linear fixed EF</p> <pre>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()</pre>	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	<p style="text-align: center;">Record pointer in selected cyclic EF</p> <pre>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</pre>	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 CRRN6, 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:	<code>API_1_SVW_SLCTS_1.scr</code>
Test Applet:	<code>API_1_SVW_SLCTS_1.java</code>
Load Script:	<code>API_1_SVW_SLCTS_1.ldr</code>
Cleanup Script:	<code>API_1_SVW_SLCTS_1.clr</code>

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 and 34. 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) <pre>1 - fid = SIMView.FID_EF_ICCID select() 2 - fileOffset = 0 byte[] resp = new byte[20] resp[0:19] = '55' respOffset = 10 respLength = 10 readBinary()</pre>	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 <pre>resp[0:19] = '55' fileOffset = 5 respOffset = 10 respLength = 5 readBinary()</pre>	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 <pre>fileOffset = -1 respOffset = 0 respLength = 10 readBinary()</pre>	Shall throw sim.access.SIMViewException with reason code OUT_OF_FILE_BOUNDARIES.	
4	fileOffset + respLength > EF length <pre>fileOffset = 9 respOffset = 0 respLength = 2 readBinary()</pre>	Shall throw sim.access.SIMViewException with reason code OUT_OF_FILE_BOUNDARIES.	
5	resp is null <pre>byte[] nullBuffer = null fileOffset = 0 respOffset = 0 respLength = 10 readBinary()</pre>	Shall throw java.lang.NullPointerException.	
6	respOffset < 0 <pre>fileOffset = 0 respOffset = -1 respLength = 10 readBinary()</pre>	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
7	respLength < 0 <pre>fileOffset = 0 respOffset = 0 respLength = -1 readBinary()</pre>	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 = DFSIMTEST 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_CONTR ADDITION. 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_CONTR ADICTION. 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 <pre>recNumber = 1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 byte[] resp = new byte[20] respOffset = 0 respLength = 10 readRecord()</pre>	Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	

Id	Description	API Expectation	APDU Expectation
2	<p>Read Absolute and Current from Linear Fixed EF</p> <pre> 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() </pre>	<p>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'</p>	
3	<p>Read Next from Linear Fixed EF</p> <pre> recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 4 readRecord() </pre>	<p>No exception shall be thrown. resp shall be: resp[0] = 'AA' resp[1] = 'AA' resp[2] = 'AA' resp[3] = 'AA'</p>	
4	<p>Read Next from Linear Fixed EF</p> <pre> recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 respOffset = 0 respLength = 4 readRecord() </pre>	<p>Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.</p>	
5	<p>Read Previous from Linear Fixed EF</p> <pre> recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 respOffset = 0 respLength = 4 readRecord() </pre>	<p>No exception shall be thrown. resp shall be: resp[0] = '55' resp[1] = '55' resp[2] = '55' resp[3] = '55'</p>	
6	<p>Read Previous from Linear Fixed EF</p> <pre> recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 respOffset = 0 respLength = 4 readRecord() </pre>	<p>Shall throw sim.access.SIMViewException with reason code RECORD_NUMBER_NOT_AVAILABLE.</p>	

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 exceptions shall 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_BOUNDARIE S.	
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_BOUNDARIE S.	
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_CONTR ADICTION. 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 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 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 `DFSIMTEST` are identical to those defined in the default pre-personalisation and the current record pointers have not been altered.

Test Script:	<code>API_1_SVW_UPDRSBS_BSS_1.scr</code>
Test Applet:	<code>API_1_SVW_UPDRSBS_BSS_1.java</code>
Load Script:	<code>API_1_SVW_UPDRSBS_BSS_1.ldr</code>
Cleanup Script:	<code>API_1_SVW_UPDRSBS_BSS_1.clr</code>

6.1.1.8.3 Test Procedure

Id	Description	API Expectation	APDU Expectation
0	SIM Initialisation	Responses ignored.	
1	No EF selected <pre> recNumber = 1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 byte[] data = new byte[20] dataOffset = 0 dataLength = 10 updateRecord() </pre>	Shall throw sim.access.SIMViewException with reason code NO_EF_SELECTED.	
2	Update Absolute and Current from Linear Fixed EF <pre> 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() </pre>	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 <pre> 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() </pre>	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 <pre> 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() </pre>	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 <pre> 1 - recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 data[0:3] = '44' </pre>	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	<p>Update Next from Linear Fixed EF, no more records</p> <pre> recNumber = 0 mode = REC_ACC_MODE_NEXT recOffset = 0 data[0:3] = '55' dataOffset = 0 dataLength = 4 updateRecord() </pre>	<p>Shall throw <code>sim.access.SIMViewException</code> with reason code <code>RECORD_NUMBER_NOT_AVAILABLE</code>.</p>	
7	<p>Update Previous from Linear Fixed EF, no record pointer set</p> <pre> 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() </pre>	<p>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'</p>	
8	<p>Update Previous from Linear Fixed EF, record pointer set</p> <pre> 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 </pre>	<p>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'</p>	
9	<p>Update Previous from Linear Fixed EF, no more records</p> <pre> recNumber = 0 mode = REC_ACC_MODE_PREVIOUS recOffset = 0 data[0:3] = '88' dataOffset = respOffset = 0 dataLength = respLength = 4 updateRecord() </pre>	<p>Shall throw <code>sim.access.SIMViewException</code> with reason code <code>RECORD_NUMBER_NOT_AVAILABLE</code>.</p>	
10	<p>Update Previous from Cyclic EF</p> <pre> 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() </pre>	<p>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]</p>	
11	<p>Update Absolute from Linear Fixed EF beyond Records</p> <pre> 1 - fid = EFLARU select() 2 - recNumber = -1 mode = REC_ACC_MODE_ABSOLUTE_CURRENT recOffset = 0 dataOffset = 0 dataLength = 4 </pre>	<p>1 - No exception shall be thrown. 2 - Shall throw <code>sim.access.SIMViewException</code> with reason code <code>RECORD_NUMBER_NOT_AVAILABLE</code>. 3 - Shall throw <code>sim.access.SIMViewException</code> with</p>	

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

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_CONTR ADICTION. 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_SEEK_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_SEEK_BSS_1.scr

Test Applet: API_1_SVW_SEEK_BSS_1.java

Load Script: API_1_SVW_SEEK_BSS_1.ldr

Cleanup Script: API_1_SVW_SEEK_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
	<pre>recOffset = 0 respOffset = 0 respLength = 0 readRecord()</pre>		
4	<p>incr is null</p> <pre>byte[] nullBuffer = null incrOffset = 0 respOffset = 0 increase()</pre>	Shall throw java.lang.NullPointerException.	
5	<p>incrOffset < 0</p> <pre>incrOffset = -1 respOffset = 0 increase()</pre>	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
6	<p>incrOffset + 3 > incr.length</p> <pre>incrOffset = 2 respOffset = 0 increase()</pre>	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
7	<p>Reach Maximum Value</p> <pre>incr[0] = incr[1] = incr[2] = 'FF' incrOffset = 0 respOffset = 0 increase()</pre>	Shall throw sim.access.SIMViewException with reason code MAX_VALUE_REACHED.	
8	<p>resp is null</p> <pre>incr[0] = incr[1] = 0x00' incr[2] = '02' incrOffset = 0 byte[] respNull = null respOffset = 0 increase()</pre>	Shall throw java.lang.NullPointerException.	
9	<p>respOffset < 0</p> <pre>incrOffset = 0 respOffset = -1 increase()</pre>	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
10	<p>respOffset + recordLength > resp.length</p> <pre>incrOffset = 0 respOffset = 2 increase()</pre>	Shall throw java.lang. ArrayIndexOutOfBoundsException.	
11	<p>EF is not Cyclic</p> <pre>1 - fid = EFTARU select() 2 - incrOffset = 0 respOffset = 0 increase() 3 - fid = EFLARU select() 4 - incrOffset = 0 respOffset = 0 increase()</pre>	<p>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.</p>	
12	<p>Access condition not fulfilled</p> <pre>1 - fid = EFCNIC select() 2 - incrOffset = 0 respOffset = 0 increase()</pre>	<p>1 - No exception shall be thrown. 2 - Shall throw sim.access.SIMViewException with reason code AC_NOT_FULFILLED.</p>	
13	<p>EF is invalidated</p> <pre>1 - fid = EFCARU select() 2 - invalidate() 3 - incrOffset = 0 respOffset = 0 increase() 4 - rehabilitate()</pre>	<p>1 - No exception shall be thrown. 2 - No exception shall be thrown. 3 - Shall throw sim.access.SIMViewException with reason code INVALIDATION_STATUS_CONTR ADICTION. 4 - No exception shall be thrown.</p>	
14	<p>Check increase not allowed from FCI</p> <pre>1 - fciOffset = 0 fciLength = 8 select (FID_EF_CINA, fci...) Verify FCI byte 8 (fci[7]) 2 - incrOffset = 0 respOffset = 0 increase()</pre>	<p>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</p>	

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.

CRR2: 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.

CRR3: If the currently selected EF is not invalidated, an instance of SIMViewException shall be thrown. The reason code shall be SIMViewException.INVALIDATION_STATUS_CONTRADICTION.

CRR4: 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.

CRR5: 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
UNFORMATTED 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

CRR1: The method shall throw 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_BOUNDS 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		
	<code>copyValue()</code> with a null <code>dstBuffer</code>	<code>NullPointerException</code> is thrown	
2	Search TLV 0Bh		
	<code>dstOffset ≥ dstBuffer.length</code> <code>dstBuffer.length = 5</code> <code>dstOffset = 5</code> <code>dstLength = 1</code>	<code>ArrayIndexOutOfBoundsException</code> is thrown	
3	<code>dstOffset < 0</code> <code>dstBuffer.length = 5</code> <code>dstOffset = -1</code> <code>dstLength = 1</code>	<code>ArrayIndexOutOfBoundsException</code> is thrown	
4	<code>dstLength > dstBuffer.length</code> <code>dstBuffer.length = 5</code> <code>dstOffset = 0</code> <code>dstLength = 6</code>	<code>ArrayIndexOutOfBoundsException</code> is thrown	
5	<code>dstOffset + dstLength > dstBuffer.length</code> <code>dstBuffer.length = 5</code> <code>dstOffset = 3</code> <code>dstLength = 3</code>	<code>ArrayIndexOutOfBoundsException</code> is thrown	
6	<code>dstLength < 0</code> <code>dstBuffer.length = 5</code> <code>dstOffset = 0</code> <code>dstLength = -1</code>	<code>ArrayIndexOutOfBoundsException</code> is thrown	
7	Search TLV 06h		
	<code>valueOffset ≥ TLV Length</code> <code>valueOffset = 6</code> <code>dstBuffer.length = 15</code> <code>dstOffset = 0</code> <code>dstLength = 1</code>	<code>ToolkitException.OUT_OF_TLV_BOUNDARIES</code> is thrown	
8	<code>valueOffset < 0</code> <code>valueOffset = -1</code> <code>dstBuffer.length = 15</code> <code>dstOffset = 0</code>	<code>ToolkitException.OUT_OF_TLV_BOUNDARIES</code> 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 compareValue()	Result is TLV_NOT_FOUND 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 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.

6.2.4.15.3 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 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.

6.2.4.17.3 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		
	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		
	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		
	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		
	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 throw 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

CRR1: 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 <code>getLength()</code>	Result of <code>getLength()</code> is 0	
2	appendTLV with length of 7 <code>getLength()</code>	Result of <code>getLength()</code> is 9	
3	Clear the handler and appendTLV with Length of 250 <code>getLength()</code>	Result of <code>getLength()</code> is 253	
4	Build a 7Fh Envelope response handler <code>getLength()</code>	Result of <code>getLength()</code> is 81h	
5	Build a 80h Envelope response handler <code>getLength()</code>	Result of <code>getLength()</code> 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 EnvelopeResponseHandl er
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	Result is 00h	
	valueOffset = 0 compareOffset = 0 compareLength = 17		
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	Result is 00h	
	valueOffset = 2 compareOffset = 3 compareLength = 12		
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	Result of compareValue() is 0	
	compareBuffer.length = 15 compareOffset = 15 compareLength = 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 EnvelopeResponseHandl er
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 EnvelopeResponseHandl er

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 \geq 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 ... 0F		
	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 EnvelopeResponseHandl er

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_APTLBBB_1.java
- Load Script: API_2_ERH_APTLBBB_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 EnvelopeResponseHandl er
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 EnvelopeResponseHandl er
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 = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F 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 = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 17	ArrayIndexOutOfBoundsException is thrown	
4	Offset < 0 mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = -1	ArrayIndexOutOfBoundsException is thrown	
5	Length > mask.length mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 0 Length = 18	ArrayIndexOutOfBoundsException is thrown	
6	Offset + length > mask.length Mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 9 Length = 9	ArrayIndexOutOfBoundsException is thrown	
7	length = 0 mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F Offset = 0 Length = 0	true is returned	
8	Check all the Terminal Profile mask = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F 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 = 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF7F 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

CRR1: 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	<p>Call the init() method</p> <p>type = 01h qualifier = 02h dstDevice = 03h</p> <p>Copy ProactiveHandler in a byte array (source)</p> <p>Compare the byte array</p> <p>reference = 81h 03h xxh 01h 02h 82h 02h 81h 03h</p>	source and reference are identical	
2	Verify the command number value	01h-FEh	
3	<p>Call the init() method</p> <p>type = FFh qualifier = FEh destination = FDh</p> <p>Copy ProactiveHandler in a byte array (source)</p> <p>Compare the byte array</p> <p>reference = 81h 03h xxh FFh FEh 82h 02h 81h FDh</p>	source and reference are identical	
4	<p>Select the 1st TLV in the handler</p> <p>Call the init() method with any value</p> <p>Call the getValueLength() method</p>	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	Successful 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	Successful 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	Successful 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	Successful 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	Successful 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	<p>Successful call, DCS=8 (UCS2) Send the command</p> <p>qualifier = 0 dcs = 8 buffer = "TextG" offset = 0 length = 5</p>		<p>DISPLAY TEXT Proactive command</p> <p>qualifier = 00h dcs = 8 Text = "TextG"</p>
15	<p>Call the initDisplayText() method with any value Then build and send a DISPLAY TEXT command</p> <p>qualifier = 0 dcs = 4 buffer = "TextHTextH" offset = 0 length = 10</p>		<p>DISPLAY TEXT Proactive command</p> <p>qualifier = 00h dcs = 4 Text = "TextHTextH"</p>
16	<p>Successful call, text length is null Send the command</p> <p>qualifier = 0 dcs = 4 buffer = "" (not null buffer) offset = 0 length = 0</p>		<p>DISPLAY TEXT Proactive command</p> <p>qualifier = 00h Text String TLV = 8D 00</p>
17	<p>Select a TLV in the ProactiveHandler Call the initDisplayText() method Call the getValueLength() method</p>	<p>UNAVAILABLE_ELEMENT ToolkitException is thrown by getValueLength()</p>	
18	<p>Successful call, buffer length = 7Eh</p> <p>qualifier = 0 dcs = 4 buffer = "UUU..." offset = 0 length = 7Eh</p>		<p>DISPLAY TEXT Proactive command</p> <p>Text String TLV = 8D 7F 04 55 55...</p>
19	<p>Successful call, buffer length = 7Fh</p> <p>qualifier = 0 dcs = 4 buffer = "UUU..." offset = 0 length = 7Fh</p>		<p>DISPLAY TEXT Proactive command</p> <p>Text String TLV = 8D 81 80 04 55 55...</p>
20	<p>Successful call, buffer length = 240</p> <p>Qualifier = 0 dcs = 4 buffer = "UUU..." offset = 0 length = 240</p>		<p>DISPLAY TEXT Proactive command</p> <p>Text String TLV = 8D 81 F1 04 55 55...</p>
21	<p>Call the initDisplayText() method with a too long buffer</p> <p>qualifier = 0 dcs = 4 buffer = "XXXX..." offset = 0 length = 241</p>	<p>HANDLER_OVERFLOW ToolkitException is thrown</p>	
22	<p>Call the initDisplayText() without sending the command</p>		<p>No proactive command shall be sent expected status is '9000'</p>

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 too 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	Successful 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	Successful 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	Successful 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	Successful call, qualifier = 81h qualifier = 81h dcs = 4 buffer = "TextE" offset = 0 length = 5		GET INKEY Proactive command qualifier = 81h dcs = 4 Text = "TextE"
13	Successful 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	Successful call, DCS=8 (UCS2) qualifier = 0		GET INKEY Proactive command

	<pre> dcs = 8 buffer = "TextG" offset = 0 length = 5 </pre>		<pre> command qualifier = 00h dcs = 8 Text = "TextG" </pre>
15	<p>Call the initGetInkey() method with any value Then build and send a GET INKEY command</p> <pre> qualifier = 0 dcs = 4 buffer = "TextHTextH" offset = 0 length = 10 </pre>		<pre> GET INKEY Proactive command qualifier = 00h dcs = 4 Text = "TextHTextH" </pre>
16	<p>Successful call, text length is null Send the command</p> <pre> qualifier = 0 dcs = 4 buffer = "" offset = 0 length = 0 </pre>		<pre> GET INKEY Proactive command qualifier = 00h Text String TLV = 8D 00 </pre>
17	<p>Select a TLV in the ProactiveHandler Call the initGetInkey() method Call the getValueLength() method</p>	UNAVAILABLE_ELEMENT ToolkitException is thrown by getValueLength()	
18	<p>Successful call, buffer length = 7Eh</p> <pre> qualifier = 0 dcs = 4 buffer = "UUU..." offset = 0 length = 7Eh </pre>		<pre> GET INKEY Proactive command Text String TLV = 8D 7F 04 55 55... </pre>
19	<p>Successful call, buffer length = 7Fh</p> <pre> qualifier = 0 dcs = 4 buffer = "UUU..." offset = 0 length = 7Fh </pre>		<pre> GET INKEY Proactive command Text String TLV = 8D 81 80 04 55 55... </pre>
20	<p>Successful call, buffer length = 240</p> <pre> Qualifier = 0 dcs = 4 buffer = "UUU..." offset = 0 length = 240 </pre>		<pre> GET INKEY Proactive command Text String TLV = 8D 81 F1 04 55 55... </pre>
21	<p>Call the initGetInkey() method with a too long buffer</p> <pre> qualifier = 0 dcs = 4 buffer = "XXXX..." offset = 0 length = 241 </pre>	HANDLER_OVERFLOW ToolkitException is thrown	
22	<p>Call the initGetInkey() without sending the command</p>		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 too small to put the requested data.

6.2.7.5.2 Test Suite files

Test Script:	<code>API_2_PAH_INGPBB_BSSSS_1.scr</code>
Test Applet:	<code>API_2_PAH_INGPBB_BSSSS_1.java</code>
Load Script:	<code>API_2_PAH_INGPBB_BSSSS_1.ldr</code>
Cleanup Script:	<code>API_2_PAH_INGPBB_BSSSS_1.clr</code>

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	Successful 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	Successful 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	Successful 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	Successful 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	Successfull 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	Successfull 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	

	<pre> qualifier = 0 dcs = 4 buffer = "XXXX..." offset = 0 length = 237 minRespLength = 00h maxRespLength = 10h </pre>		
22	Call the <code>initGetInput()</code> 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 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

CRR1: 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 occurrence, 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 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.

6.2.7.15.2 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 occurrence, 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 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.

6.2.7.17.2 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	

	<pre>tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17</pre>		
14	<p style="text-align: center;">Verify current TLV</p> <pre>getValueLength()</pre>	Result is 17	
15	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 04 00 01 ... 10</pre>		
	Compare buffers with same parameters	Result is -1	
16	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 03 00 01 ... 0F</pre>		
	Compare buffers with same parameters	Result is +1	
17	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55</pre>		
	<p style="text-align: center;">Compare buffers</p> <pre>valueOffset = 2 compareOffset = 3 compareLength = 12</pre>	Result is 00h	
18	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 55 55 55 02 01 03 04 05 06 07 08 09 0A 0B 0C 55 55 55 55 55</pre>		
	Compare buffers with same parameters	Result is -1	
19	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 55 55 55 01 02 03 04 05 06 07 08 09 0A 0A 0D 55 55 55 55 55</pre>		
	Compare buffers with same parameters	Result is +1	
20	<p style="text-align: center;">append a Text String TLV</p> <pre>tag = 0Dh buffer = 00 11 22 33 44 55</pre>		
	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 04 00 01 ... 0F</pre>		
	<p style="text-align: center;">findAndCompareValue()</p> <pre>tag = 0Dh, occurrence = 1 valueOffset = 0 compareOffset = 0 compareLength = 17</pre>	Result is 00h	
21	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 00 11 22 33 44 55</pre>		
	<p style="text-align: center;">findAndCompareValue()</p> <pre>tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0 compareLength = 6</pre>	Result is 00h	
22	<p style="text-align: center;">Initialise compareBuffer</p> <pre>compareBuffer = 00 11 22 33 44 66</pre>		
	<p style="text-align: center;">findAndCompareValue()</p> <pre>tag = 0Dh, occurrence = 2 valueOffset = 0 compareOffset = 0</pre>	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.arrayCo mpare() 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.arrayCo mpare() 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.arrayCo mpare() 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.arrayCo mpare() 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.arrayCo mpare() 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.arrayCo mpare() 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

CRR1: 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.	

	<pre>src = {00, 01, 02, 03, 04...} srcOffset = 00 dest = dstBuffer destOffset = 0 length = F2h</pre>		
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	OUT_OF_TLV_BOUNDARIES ToolkitException is thrown	
	dstBuffer.length = 6 dstOffset = 0 dstLength = 6		
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()	result of arrayCompare() is 00h	
	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		
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()	result of copyAdditionalInformation() is 05h.	
	dstBuffer.length = 5 dstOffset = 0 dstLength = 5		
22	Compare dstBuffer using arrayCompare()	result of arrayCompare() is 00h.	
	src = {01, 23, 45, 67, 89} srcOffset = 00 dest = dstBuffer destOffset = 0 length = 5		
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		

	<code>dstBuffer = {00h, 00h ... 00h}</code>		
	Call the copyTextString() method <code>dstBuffer.length = FFh</code> <code>dstOffset = 00h</code>	Result of copyTextString() is EFh	
18	Compare dstBuffer using arrayCompare() <code>src = {01h, ...EFh, 00h ... 00h }</code> <code>srcOffset = 00h</code> <code>dest = dstBuffer</code> <code>destOffset = 00h</code> <code>length = FFh</code>	Result of arrayCompare() is 00h	
19	Build and send a GET INPUT command		GET INPUT Proactive command
	Terminal Response with two Text String TLV <code>1st Text String TLV = 0D 03 04 42 43</code> <code>2nd Text String TLV = 0D 02 04 44</code>		
	Initialise dstBuffer <code>dstBuffer = {00h, 01h, 02h, 03h}</code>		
	Call the copyTextString() method <code>dstBuffer.length = 04h</code> <code>dstOffset = 02h</code>	Result of copyTextString() is 04h	
20	Compare dstBuffer using arrayCompare() <code>src = {00h, 01h, 42h, 43h}</code> <code>srcOffset = 00h</code> <code>dest = dstBuffer</code> <code>destOffset = 00h</code> <code>length = 04h</code>	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 <code>getAdditionalInformationLength()</code> method		
10	Call the <code>getValueLength()</code> 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 <code>getAdditionalInformationLength()</code> method	Result is F2h	
12	Call the <code>getValueLength()</code> 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 <code>getAdditionalInformationLength()</code> method	Result is 02h	
14	Call the <code>getValueLength()</code> 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 <code>getAdditionalInformationLength()</code> method	ToolkitException.UNAVAILABLE_ELEMENT is thrown by <code>getAdditionalInformationLength ()</code>	

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	Result is 01h	
	valueOffset = 00h		
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	Result is 05h	
	valueOffset = 00h		
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	Result is FFh	
	valueOffset = 00h		
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 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.

6.2.8.10.2 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 occurrence, 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 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.

6.2.8.17.2 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 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 occurrence, 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 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.

6.2.8.19.2 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 automatically 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	<p>Applet changes the entry's title by menuEntry buffer, with a greater length than the initial length</p> <p>1- ChangeMenuEntry()with parameters: Id = '02' MenuEntry = "UseAllBuffer" Offset = 0 Length = menuEntry.length NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0.</p> <p>2- isEventSet(EVENT_MENU_SELECTION).</p> <p>3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).</p>	<p>1- No exception shall be thrown.</p> <p>2- shall return true.</p> <p>3- shall return false.</p>	<p>The SIM shall issue a SETUP MENU proactive command which contains the new text for entry ID '02'.</p>
2	<p>Changing the title with part of menuEntry buffer</p> <p>1- changeMenuEntry()with parameters: Id = '01' MenuEntry = "UsePartOfBuffer" Offset = 3 Length = 12 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0.</p> <p>2- isEventSet(EVENT_MENU_SELECTION).</p> <p>3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).</p>	<p>1- No exception shall be thrown.</p> <p>2- Shall return true.</p> <p>3- Shall return false.</p>	<p>The SIM shall issue a SETUP MENU proactive command which contains the new text for entry ID '01'.</p>
3	<p>Length = 0</p> <p>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.</p> <p>2- isEventSet(EVENT_MENU_SELECTION).</p> <p>3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST).</p>	<p>1- No exception shall be thrown.</p> <p>2- Shall return true.</p> <p>3- shall return false.</p>	<p>The SIM shall issue a SETUP MENU proactive command which contains for entry '01'and entry '02', no text part.</p>
4	<p>Setting a next action indicator != 0</p> <p>1- changeMenuEntry()with parameters: Id = '02' MenuEntry = "NextActionIndic" Offset = 0 Length = menuEntry.length NextAction = '10' (SETUP CALL) HelpSupported = false</p>	<p>1- No exception shall be thrown.</p> <p>2- Shall return true.</p> <p>3- Shall return false.</p>	<p>The SIM shall issue a SETUP MENU proactive command which contains an Items Next Action Indicator list and which contains a command qualifier '80'.</p>

	<pre> IconQualifier = 0 IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION). 3- isEventSet(EVENT_MENU_SELECTION_HELP_R EQUEST). 4- changeMenuEntry()with parameters: Id = '02' MenuEntry = "NextActionIndic" Offset = 0 Length = menuEntry.length NextAction = '10' (SETUP CALL) HelpSupported = true IconQualifier = 0 IconIdentifier = 0 </pre>		
5	<p>Checking applet is triggered by a MENU_SELECTION_HELP_REQUEST</p> <pre> Send ENVELOPE(MENU_SELECTION_HELP_REQUEST) with Item Identifier = '02' </pre>	Applet is triggered by a MENU_SELECTION_HELP_REQUEST and the Item Identifier is 02	
6	<p>help supported=true</p> <pre> 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_R EQUEST). </pre>	<pre> 1- No exception shall be thrown. 2- Shall return true. 3- Shall return true. </pre>	The SIM shall issue a SETUP MENU proactive command which contains a command qualifier '80'.
7	<p>Checking applet is triggered by a MENU_SELECTION_HELP_REQUEST</p> <pre> Send ENVELOPE(MENU_SELECTION_HELP_REQUEST) with Item Identifier = '01' </pre>	Applet is triggered by a MENU_SELECTION_HELP_REQUEST and the Item Identifier is 01	
8	<p>Setting icons, help supported = false</p> <pre> 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_R EQUEST). </pre>	<pre> 1- No exception shall be thrown. 2- Shall return true. 3- Shall return false. </pre>	The SIM shall issue a SETUP MENU proactive command which contains an Icon Identifier List.
9	<p>MenuEntry is disabled</p> <pre> 1- disableMenuEntry('01'). 2- changeMenuEntry()with parameters: </pre>	<pre> 1- No exception shall be thrown. 2- No exception shall be thrown. 3- Shall return true. </pre>	The SIM shall issue a SETUP MENU proactive command which contains the entry. Without Icon identifier List Simple TLV

	<pre> 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_R EQUEST).</pre>	4- Shall return false.	
10	<p style="text-align: center;">MenuEntry is null</p> <pre> changeMenuEntry()with: MenuEntry = NULL</pre>	Shall throw java.lang.NullPointerException.	
11	<p style="text-align: center;">Offset causes access outside array bounds</p> <pre> Id = '01' MenuEntry = "Violation" Offset = menuEntry.length + 1 Length = 0 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
12	<p style="text-align: center;">Big Offset causes access outside array bounds</p> <pre> Id = '01' MenuEntry = "Violation" Offset = 255 Length = 1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
13	<p style="text-align: center;">Offset < 0 causes access outside array bounds</p> <pre> Id = '01' MenuEntry = "Violation" Offset = -1 Length = 1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
14	<p style="text-align: center;">Length causes access outside array bounds</p> <pre> Id = '01' MenuEntry = "Violation" Offset = 0 Length = MenuEntry.length + 1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0.</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
15	<p style="text-align: center;">Length < 0 causes access outside array bounds</p> <pre> Id = '01' MenuEntry = "Violation" Offset = 0 Length = -1 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0.</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException.	

16	<p>Both offset and length causes access outside array bounds</p> <pre> Id = '01' MenuEntry = "Violation" Offset ∈ [1, MenuEntry.length] Length = MenuEntry.length NextAction = 1 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 </pre>	<p>Shall throw <code>java.lang.ArrayIndexOutOfBoundsException</code>.</p>	
17	<p>Invalid ID used</p> <pre> Id = '00' MenuEntry = contains text, != null Offset = 0 Length = menuEntry.length < 16 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 </pre>	<p>Shall throw a <code>ToolkitException</code> with reason code: <code>MENU_ENTRY_NOT_FOUND</code>.</p>	
18	<p>ID isn't allocated to a menu entry of this applet instance</p> <pre> Id = '0A' MenuEntry = contains text, != null Offset = 0 Length = menuEntry.length < 16 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 </pre>	<p>Shall throw a <code>ToolkitException</code> with reason code: <code>MENU_ENTRY_NOT_FOUND</code>.</p>	
19	<p>The text is bigger than the allocated space</p> <pre> Id = '02' MenuEntry = contains text, != null Offset = 0 Length = menuEntry.length > 15 NextAction = 0 HelpSupported = false IconQualifier = 0 IconIdentifier = 0 </pre>	<p>Shall throw a <code>ToolkitException</code> with reason code: <code>ALLOWED_LENGTH_EXCEEDED</code>.</p>	
20	<p>With a smaller text length than the initial length</p> <pre> 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) </pre>	<ol style="list-style-type: none"> 1. No exception shall be thrown. 2. Shall return true. 3. Shall return false. 	<p>The SIM shall issue a <code>SETUP MENU</code> proactive command which contains the new text for entry ID '02'.</p>

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	<p>Clear ALLOWED unregistered events</p> <p>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:</p> <p>1- clearEvent() method</p> <p>2- isEventSet() method</p>	<p>1- No exception is thrown each time.</p> <p>2- Shall return false each time.</p>	
2	<p>Clear registered events</p> <p>1- For each ALLOWED and SUPPORTED events, the applet calls setEvent() method.</p> <p>2- For events ranging from 1 to 127 excepted those that aren't allowed, the applet calls:</p> <p>2.1- clearEvent() method</p> <p>2.2- isEventSet() method</p>	<p>1- No exception shall be thrown.</p> <p>2.1- No exception shall be thrown.</p> <p>2.2- Shall return false.</p>	
3	<p>Clearing NOT ALLOWED events</p> <p>For each event among: EVENT_MENU_SELECTION, EVENT_MENU_SELECTION_HELP_REQUEST, EVENT_TIMER_EXPIRATION, EVENT_STATUS_COMMAND</p> <p>1- The applet calls clearEvent(event) method.</p>	<p>1- Each time, clearEvent shall throw a Toolkit Exception with reason EVENT_NOT_ALLOWED.</p>	
4	<p>Checking applet isn't triggered by an ENVELOPE(SMS-PP DOWNLOAD) command</p> <p>1 - reset and initialise the card</p> <p>2 - An ENVELOPE(SMS-PP DOWNLOAD) is sent with a TAR referencing applet.</p>	<p>Applet is not triggered by an ENVELOPE(SMS-PP DOWNLOAD) command</p>	

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 should 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	<p>Check the menu state before disabling a previously enabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- reset and initialise the card 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	<p>1- Shall return true 2- Shall return false</p>	<p>1- The SIM shall issue a SET UP MENU proactive command with entry '01' and '02'.</p>
2	<p>Check the menu state after disabling a previously enabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- disableMenuEntry('01') 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	<p>1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.</p>	<p>3- The SIM shall issue a SET UP MENU proactive command with entry '02' only.</p>
3	<p>Check the menu before disabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- change Menu Entry '02' to indicate help supported 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	<p>2- Shall return true 3- Shall return true</p>	<p>3- The SIM shall issue a SET UP MENU proactive command with entry '02', indicating help supported.</p>
4	<p>Check the menu after disabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- disableMenuEntry('02') 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	<p>1- No exception shall be thrown. 2- Shall return true. 3- Shall return true.</p>	<p>3- The SIM shall issue a SET UP MENU proactive command with 1st Item TLV with a length of 0.</p>
5	<p>Disabling invalid entries</p> <p>For ID ranging from '00' to 'FF' except '01' and '02', the applet calls disableMenuEntry(ID) method.</p>	<p>Each time a Toolkit Exception with MENU_ENTRY_NOT_FOUND reason code shall be thrown.</p>	

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 should 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	<p>Check menu state before enabling a previously disabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- isEventSet(EVENT_MENU_SELECTION) 2- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST) 3- disableMenuEntry('01')</p>	<p>1- Shall return true 2- Shall return false 3- No exception shall be thrown.</p>	<p>3- The SIM shall issue a SET UP MENU proactive command with entry '02' only.</p>
2	<p>Check menu state after enabling a previously disabled entry not registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- enableMenuEntry('01') 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	<p>1- No exception shall be thrown. 2- Shall return true. 3- Shall return false.</p>	<p>3- The SIM shall issue a SET UP MENU proactive command with entry '01' and '02'.</p>
3	<p>Check menu state before enabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- change Menu Entry '02' to indicate help supported 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST) 4- disableMenuEntry('02')</p>	<p>2- Shall return true 3- Shall return true 4- No exception shall be thrown</p>	<p>4- The SIM shall issue a SET UP MENU proactive command with entry '01'. The help information available flag is not verified</p>
4	<p>Check menu state after enabling a previously enabled entry registered to EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>1- enableMenuEntry('02'). 2- isEventSet(EVENT_MENU_SELECTION) 3- isEventSet(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	<p>1- No exception shall be thrown. 2- Shall return true. 3- Shall return true.</p>	<p>3- The SIM shall issue a SET UP MENU proactive command with entries '01' and '02' indicating help supported.</p>
5	<p>Enabling invalid entries</p> <p>For ID ranging from '00' to 'FF' except '01' and '02', the applet calls enableMenuEntry(ID) method.</p>	<p>Each time a Toolkit Exception with MENU_ENTRY_NOT_FOUND reason code shall be thrown.</p>	

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	Installation 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	<p>Offset + length > menuEntry.length</p> <pre>MenuEntry = "ToolkitTest" Offset = 11 Length = 1</pre>	Shall throw java.lang.ArrayIndexOutOfBoundsException.	
8	<p>MenuEntry.length > size allocated at loading for each menu entry</p> <pre>MenuEntry = "ToolkitTest impossible" Offset = 0 Length = 16</pre>	ALLOWED_LENGTH_EXCEEDED ToolkitException is thrown.	
9	<p>Successful call, menuEntry is the whole buffer</p> <pre>1- initMenuEntry() MenuEntry = "TOOLKIT TEST 1" Offset = 0 Length = 14 NextAction = '00' HelpSupported = false IconQualifier = '00' IconIdentifier = 0 2- isEventSet(EVENT_MENU_SELECTION)</pre>	<p>1- No exception shall be thrown, Shall return ID '01'.</p> <p>2- Shall return true.</p>	
10	<p>Successful call, menuEntry part of a buffer</p> <pre>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)</pre>	<p>1- No exception shall be thrown, Shall return ID '02'.</p> <p>2- Shall return false.</p>	
11	<p>Successful call, menuEntry with help supported</p> <pre>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)</pre>	<p>1- No exception shall be thrown, Shall return ID '03'</p> <p>2- Shall return true.</p>	
12	<p>Successful call, menuEntry with an Icon</p> <pre>MenuEntry = "TOOLKIT TEST 4" Offset = 0 Length = 14 NextAction = '00' HelpSupported = false IconQualifier = '01' [icon not self explanatory] IconIdentifier = 1</pre>	<p>1- No exception shall be thrown.</p> <p>2- Shall return ID '04'</p>	
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]=0600000002400
17	Check Applet is triggered by ENVELOPE(MENU_SELECTION) command Menu Entry ID = '01'	Applet is triggered 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 triggered 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 triggered 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 triggered 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 triggered 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 triggered 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 triggered 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 triggered 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_RPOLLS_1.scr

Test Applet: API_2_TKR_RPOLLS_1.java

Load Script: API_2_TKR_RPOLLS_1.ldr

Cleanup script: API_2_TKR_RPOLLS_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_COMMAND) 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 triggered by a STATUS command	
3	Requesting POLL SYSTEM DURATION 1- isEventSet(EVENT_STATUS_COMMAND). 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 triggered 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_COMMAND) 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	<p>Check Applet isn't triggered by an STATUS command.</p> <p>1- reset and card initialisation 2- Send STATUS command</p>	2- Applet is not triggered 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	<p>Applet 1 is triggered by ENVELOPE(SMS_PP_FORMATTED) command.</p> <p>Send ENVELOPE(SMS_PP_FORMATTED)</p>	Applet 1 shall be triggered	
2	<p>Setting ALLOWED and SUPPORTED events</p> <p>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</p> <p>1.1- clearEvent(event) 1.2- isEventSet(event) 1.3- setEvent(event) 1.4- isEventSet(event) 1.5- clearEvent(event)</p>	<p>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.</p>	
3	<p>Event 0</p> <p>Call setEvent(0)</p>	Shall throw a ToolkitException with EVENT_NOT_SUPPORTED reason code.	
4	<p>Setting EVENT_MENU_SELECTION</p> <p>Call setEvent(EVENT_MENU_SELECTION)</p>	Shall throw a ToolkitException with EVENT_NOT_ALLOWED reason code.	
5	<p>Setting EVENT_MENU_SELECTION_HELP_REQUEST</p> <p>Call setEvent(EVENT_MENU_SELECTION_HELP_REQUEST)</p>	Shall throw a ToolkitException with EVENT_NOT_ALLOWED reason code.	
6	<p>Setting EVENT_TIMER_EXPIRATION</p> <p>Call setEvent(EVENT_TIMER_EXPIRATION)</p>	Shall throw a ToolkitException with EVENT_NOT_ALLOWED reason code.	
7	<p>Setting EVENT_STATUS_COMMAND</p>	Shall throw a ToolkitException with	

	Call <code>setEvent(EVENT_STATUS_COMMAND)</code>	EVENT_NOT_ALLOWED reason code.	
8	Setting EVENT_CALL_CONTROL_BY_SIM Call <code>setEvent(EVENT_CALL_CONTROL_BY_SIM)</code>	No Exception shall be thrown	
9	Setting EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM Call <code>setEvent(EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM)</code>	No Exception shall be thrown	
10	Check applet is triggered by an ENVELOPE(CALL_CONTROL_BY_SIM) Trigger the applet	Applet is triggered 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 triggered 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 triggered by an ENVELOPE(SMS_PP_DOWNLOAD) command	
13	Applet 2 registers to CALL_CONTROL_BY_SIM but it is already assigned <code>setEvent(EVENT_CALL_CONTROL_BY_SIM)</code>	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 <code>setEvent(EVENT_MO_SHORT_MESSAGE_CONTROL_BY_SIM)</code>	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.	

	<p>GSM 0319:</p> <p>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</p> <p>1- For each event in EventList clearEvent(event)</p> <p>2- setEventList(eventList)</p> <p>Offset = 0 Length = eventList.length</p> <p>3- For all events in eventList isEventSet(event)</p> <p>4- For each event in EventList clearEvent(event)</p>	<p>3- Each time shall return true.</p> <p>4- No exception shall be thrown.</p>	
2	<p>Registering part of eventList buffer</p> <p>EventList = all allowed events defined in GSM 0319 (see test case 1).</p> <p>1- For each event in EventList clearEvent(event)</p> <p>2- setEventList(eventList, offset, length)</p> <p>Offset > 0 Length = eventList.length - offset</p> <p>3- For all events in eventList: isEventSet(event)</p> <p>4- For each event in EventList: clearEvent(event)</p>	<p>1- No exception shall be thrown.</p> <p>2- No exception shall be thrown.</p> <p>3- Each time shall return true for events ranging from offset to offset+length else shall return false.</p> <p>4- No exception shall be thrown.</p>	
3	<p>Null buffer</p> <p>EventList = null</p>	<p>Shall throw a java.lang.NullPointerException</p>	
4	<p>Out of bounds offset</p> <p>Offset = eventList.length Length = 1</p>	<p>Shall throw a java.lang.ArrayIndexOutOfBoundsException</p>	
5	<p>Out of bounds and big offset</p> <p>Offset = 255 Length = 1</p>	<p>Shall throw a java.lang.ArrayIndexOutOfBoundsException</p>	
6	<p>Offset < 0</p> <p>Offset = -1 Length = 1</p>	<p>Shall throw a java.lang.ArrayIndexOutOfBoundsException</p>	
7	<p>Out of bounds length</p> <p>Offset = 0 Length = eventList.length + 1</p>	<p>Shall throw a java.lang.ArrayIndexOutOfBoundsException</p>	

8	Out of bounds and big length Offset = 0 Length = 255	Shall throw a java.lang.ArrayIndexOutOfBoundsException	
9	Length < 0 Offset = 0 Length = -1	Shall throw a java.lang.ArrayIndexOutOfBoundsException	
10	Out of bounds offset + Length Offset + length > eventList.length + 1	Shall throw a java.lang.ArrayIndexOutOfBoundsException	
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 triggered 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 triggered 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 headers shall 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

Test Cases for the API and Framework have no interactions and are designed to be independant. The API Test Cases in the present specification shall be considered as completed although no framework tests have been agreed at the present time.

System Handlers management

- minimum handler availability / status / content (+ response handling)

Applet Triggering:

- for each event test separately:
 - Registration / de registration, and dynamic registration
 - triggering
 - multiple applet triggering
 - limitations
 - busy state
- Exception hiding to the mobile.

- Events combination.

Proactive commands sending

Envelope response sending

Toolkit applets installation

Access control

File system state

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 occurrence, short valueOffset,byte[] compareBuffer,short compare Offset,short compareLength)	FACRBBS_BSS	001011
Short FindAndCopyValue(byte tag,byte occurrence,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 occurrence, short valueOffset,byte[] compareBuffer,short compareOffset,short compareLength)	FACRBBS_BSS	001110
Short FindAndCopyValue(byte tag,byte occurrence,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 occurrence, short valueOffset, byte[] compareBuffer, short compareOffset, short compareLength)	FACRBBS_BSS	010001
Short FindAndCopyValue(byte tag, byte occurrence, 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 occurrence,short valueOffset,byte[] compareBuffer,short compareOffset,short compareLength)	FACRBBS_BSS	001101
Short FindAndCopyValue(byte tag,byte occurrence,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

CMD : Command to follow
 RST : Resets and powers on the card
 OFF : Powers off 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
 '\n' : Empty lines are accepted
 ' ', '\t' : Can be used as separator
 '\' : Continues on next line
 XXX : each line beginning with 3 characters indicates other tool command.

[...] data to be checked, need to be present for an outgoing command. Bytes written as XX shall not be checked by the APDU tool.

(...) status 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.

REM this is an example

```

RST
INI 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 C2 00 00 B0 \
  [XX XX XX 55 55 XX 55](91 33 , 69 XX)
CMD A0 C2 00 00 B0 [] (91 33 , 69 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)

OFF
  
```

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	
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	
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	Records: 5
EF _{SMSP}	6F42	FF FF	Records: 1
EF _{LND}	6F44	FF FF	Records: 1
EF _{SMSS}	6F43	FF FF	
EF _{SMS}	6F3C	1 st record: 00 FF ... FF(length 176) 2 nd record: 00 FF ... FF(length 176) 3 rd record: 00 FF ... FF(length 176)	Records: 3
EF _{ADN}	6F3A	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	Records: 1
EF _{SDN}	6F41	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	

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												
<p style="text-align: center;">Access Conditions:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">READ</td> <td style="width: 50%;">NEVER</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INCREASE</td> <td>ALWAYS</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	NEVER	UPDATE	ALWAYS	INCREASE	ALWAYS	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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												
<p style="text-align: center;">Access Conditions:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">READ</td> <td style="width: 50%;">ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>NEVER</td> </tr> <tr> <td>INCREASE</td> <td>NEVER</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	ALWAYS	UPDATE	NEVER	INCREASE	NEVER	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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												
<p style="text-align: center;">Access Conditions:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">READ</td> <td style="width: 50%;">ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INCREASE</td> <td>NEVER</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	ALWAYS	UPDATE	ALWAYS	INCREASE	NEVER	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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												
<p style="text-align: center;">Access Conditions:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">READ</td> <td style="width: 50%;">ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INCREASE</td> <td>ALWAYS</td> </tr> <tr> <td>INVALIDATE</td> <td>NEVER</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	ALWAYS	UPDATE	ALWAYS	INCREASE	ALWAYS	INVALIDATE	NEVER	REHABILITATE	ALWAYS
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												
<p style="text-align: center;">Access Conditions:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">READ</td> <td style="width: 50%;">ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INCREASE</td> <td>ALWAYS</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>NEVER</td> </tr> </table>						READ	ALWAYS	UPDATE	ALWAYS	INCREASE	ALWAYS	INVALIDATE	ALWAYS	REHABILITATE	NEVER
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												
<p style="text-align: center;">Access Conditions:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">READ</td> <td style="width: 50%;">ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INCREASE</td> <td>ALWAYS</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	ALWAYS	UPDATE	ALWAYS	INCREASE	ALWAYS	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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										
<p style="text-align: center;">Access Conditions:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>READ</td> <td>NEVER</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	NEVER	UPDATE	ALWAYS	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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										
<p style="text-align: center;">Access Conditions:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>READ</td> <td>ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>NEVER</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	ALWAYS	UPDATE	NEVER	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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										
<p style="text-align: center;">Access Conditions:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>READ</td> <td>ALWAYS</td> </tr> <tr> <td>UPDATE</td> <td>ALWAYS</td> </tr> <tr> <td>INVALIDATE</td> <td>ALWAYS</td> </tr> <tr> <td>REHABILITATE</td> <td>ALWAYS</td> </tr> </table>						READ	ALWAYS	UPDATE	ALWAYS	INVALIDATE	ALWAYS	REHABILITATE	ALWAYS
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.2.14EF_{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)					

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 (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				Document 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

History

Document history		
V7.0.0	May 2001	Publication
V7.1.0	June 2001	Publication
V7.2.0	September 2001	Publication