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Application Programming Interface (API) for Java Card™
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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
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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Contents

Foreword

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

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.

In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document covers the minimum characteristics considered necessary in order to provide compliance to TS 31.130 [2].

The present document describes the technical characteristics and methods of test for testing the (U)SIM API for Java Card™ (TS 31.130 [2]) implemented in the (U)SIM. 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] ETSI TS 101 220: "Integrated Circuit Cards (ICC); ETSI numbering system for telecommunication; Application providers (AID)".

[2] 3GPP TS 31 130 Release 6: "(U)SIM API for Java Card™"

[3] Void.

[4] 3GPP TS 31.102: "Characteristics of the USIM Application".

[5] 3GPP TS 51.011 Release 4: "Specification of the Subscriber Identity Module- Mobile Equipment (SIM – ME) interface".

[6] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[7] Void.

[8] 3GPP TS 31.111: "USIM Application Toolkit (USAT)".

[9] Void.

[10] 3GPP TS 31.115: "Secured packet structure for the (U)SIM Toolkit applications".

[11] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[12] Sun Microsystems Java Card™ Specification: "Java Card™ 2.2.1 Application Programming Interface".

[13] Sun Microsystems Java Card™ Specification: "Java Card™ 2.2.1 Runtime Environment (JCRE) Specification".

[14] Sun Microsystems Java Card™ Specification: "Java Card™ 2.2.1 Virtual Machine Specification".

SUN Java Card™ Specifications can be downloaded at http://java.sun.com/products/javacard

[15] ETSI TS 102 268 V6.1.0: "Test specification for UICC Application Programming Interface for Java Card (TM) ".

[16] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [16] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [16].

applet installation parameters: values for applet installation parameters

Conformance Requirement Reference (CRR): description of the expected card behaviour according to TS 31.130 [2]

expected state: state in which the (U)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, CAT RE behaviour, etc) of the TS 31.130 [2].

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

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

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

test toolkit applet: applet designed to test a specific functionality of the USIM API (TS 31.130 [2])

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [16] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [16].

AID	Application IDentifier
APDU	Application Protocol Data Unit
API	Application Programming Interface
CAT RE	Card Application Toolkit Runtime Environment
CRR	Conformance requirements Reference
CRRC	Conformance requirement Reference Context Error
CRRN	Conformance requirement Reference Normal
CRRP	Conformance requirement Reference Parameter Error
FFS	For Further Study

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

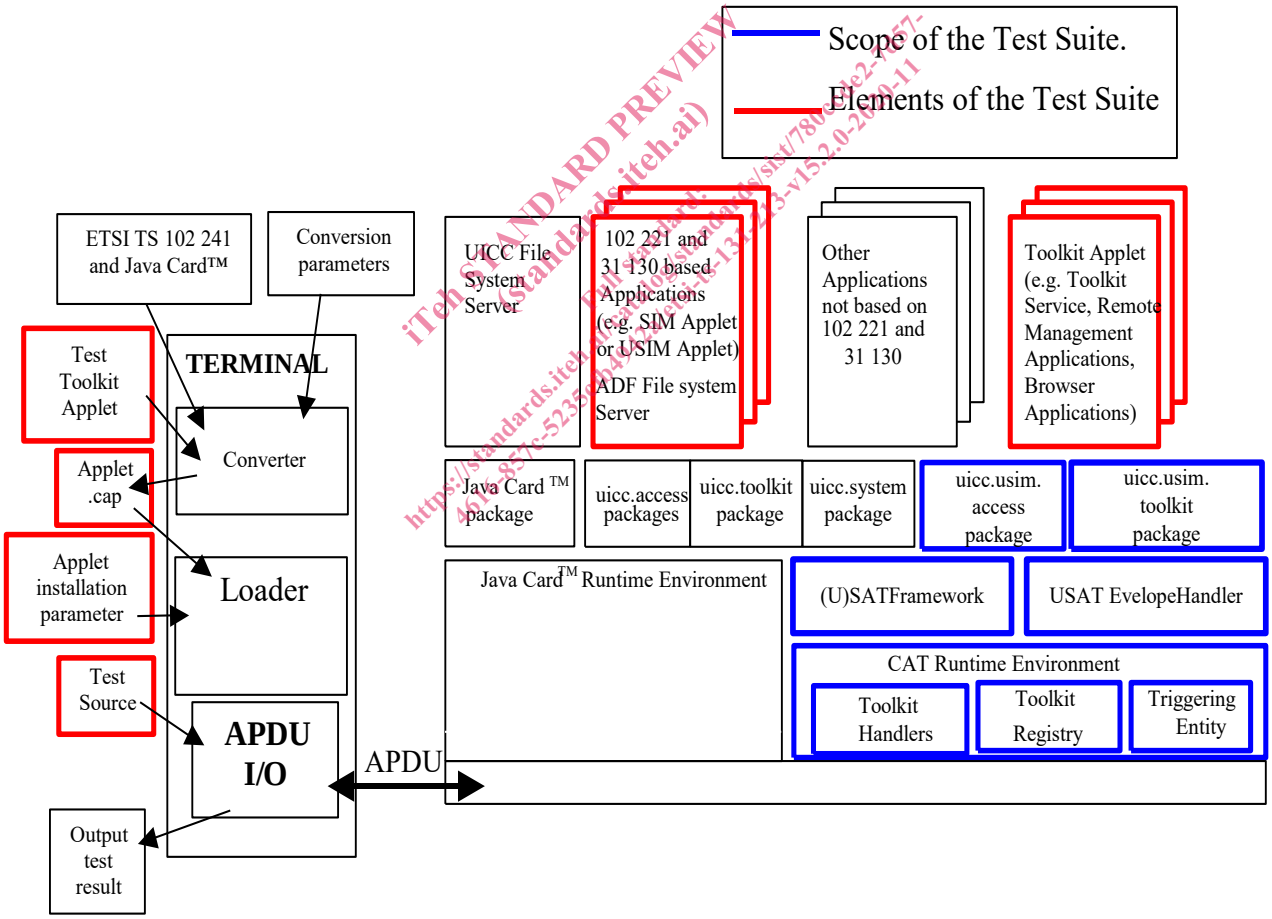
The tests defined in the present document shall be performed taking into account the services supported by the card as specified in the EF_{SST} file.

The test defined in the present document are applicable to cards implementing TS 31.130 [2] unless otherwise stated.

The tests defined in the present document require that the card support the concatenation process with 2 concatenated SMS.

4.2 Test environment description

The general architecture for the test environment is:



4.3 Tests format

4.3.1 Test area reference

Each test area is referenced as follows:

For API testing:

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

package name:

uicc.usim.access package: '1'

uicc.usim.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.

For Framework testing:

FWK: framework testing

Chapter name:

xxx: 3 letters for each chapter

See annex F for full chapter acronyms list

Subchapter name

yyyy: : 4 letters for each subchapter

See annex F for full subchapter acronyms list

4.3.1.1 Conformance requirements

The conformance requirements are expressed in the following way:

- Method prototype as listed in TS 31.130 [2].
- 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 Source: Test_[Test Area Reference].java
- Test Applet: [Test Area Reference]_[Test applet number].java
- Cap File: [Test Area Reference].cap

The applet numbers start from '1'.

The test source shall use common interfaces defined in Annex D.

The Cap File format is described in Java Card™ Virtual Machine Specification [4].

Test files can be run in any order.

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

4.3.1.3 Test procedure

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

Test Case			
Id	**Description**	**API/(U)SAT Framework Expectation**	**APDU Expectation**
	Test Case detailed description	*API and/or (U)SAT Framework expected behaviour.*	*Expected response at APDU level.*

4.3.1.4 Test coverage

The table above 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 (U)SIM prior to the execution of testing. For each test procedure described in the present document, the following rules apply to the Initial Conditions:

- unless otherwise stated, the file system and the files' content shall fulfil the requirements described in annex B;
- 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:

uicc.usim.test.access.[Test Area Reference]: Java Card packages containing Test Area References for the TS 31.130 [2] uicc.access package.

uicc.usim.test.toolkit.[Test Area Reference]: Java Card packages containing Test Area References for the TS 31.130 [2] uicc.toolkit package.

uicc.usim.test.usatframework.[Test Area Reference]: Java Card packages containing Test Area References for the TS 31.130 [2] USAT Framework.

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