



**Core Network and Interoperability Testing (INT);
Conformance Test Specifications for the SCC-AS Services;
(3GPP™ Release 16);
Part 3: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)**

Reference

DTS/INT-00182-3

Keywords

ATS, conformance, PIXIT

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Contents

Intellectual Property Rights	4
Foreword.....	4
Modal verbs terminology.....	4
1 Scope	5
2 References	5
2.1 Normative references	5
2.2 Informative references.....	6
3 Definition of terms, symbols and abbreviations.....	6
3.1 Terms.....	6
3.2 Symbols.....	6
3.3 Abbreviations	6
4 Abstract Test Method (ATM).....	7
4.1 Introduction	7
4.2 Test architecture	7
4.2.1 Test method	7
4.2.2 Test configurations	7
4.2.3 SCC-AS Role.....	8
4.2.4 Test Adapter.....	9
5 ATS conventions	9
5.1 Introduction	9
5.2 Testing conventions.....	9
5.2.1 Test cases.....	9
5.3 Naming conventions.....	9
5.3.1 General guidelines	9
5.3.2 Test case grouping	10
5.3.3 Test case identifiers	10
Annex A (normative): SCC-AS Services Partial PIXIT pro forma.....	11
A.1 The right to copy	11
A.2 Identification summary.....	11
A.3 ATS summary	11
A.4 Test laboratory.....	11
A.5 Client identification.....	11
A.6 SUT	12
A.7 Protocol layer information.....	12
A.8 PIXIT items	12
A.8.1 Introduction	12
A.8.2 Port and Address items.....	12
A.8.3 Isc interface items.....	13
A.8.4 LibCommon items.....	13
Annex B (normative): Abstract Test Suite (ATS).....	14
B.1 The TTCN-3 Module.....	14
History	15

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 3 of a multi-part deliverable. Full details of the entire series can be found in part 1 [5].

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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1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) pro forma for the conformance test specification for the SCC-AS Services in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [i.2] and ETSI ETS 300 406 [i.3].

The test notation used in the ATS is TTCN-3 (see ETSI ES 201 873-1 [i.4]).

The following test specification and design considerations can be found in the body of the present document:

- the overall test suite structure;
- the testing architecture;
- the test methods and port definitions;
- the test configurations;
- TTCN styles and conventions;
- the partial PIXIT pro forma;
- the modules containing the TTCN-3 ATS.

Annex A provides the Partial Implementation Extra Information for Testing (PIXIT) pro forma.

Annex B provides the Abstract Test Suite (ATS) part of the ATS.

The current version of the present document contains modifications made based on findings during the validation of the test specification against live and recorded network traffic.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

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

- [1] ETSI TS 124 229: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 Release 16)".
- [2] ETSI TS 124 237: "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) service continuity; Stage 3 (3GPP TS 24.237 Release 16)".
- [3] ETSI TS 124 292: "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia (IM) Core Network (CN) subsystem Centralized Services (ICS); Stage 3 (3GPP TS 24.292 Release 16)".

- [4] ETSI TS 103 833-1: "Core Network and Interoperability Testing (INT); Conformance Test Specifications for the SCC-AS Services; (3GPP™ Release 16); Part 1: 'Protocol Implementation Conformance Statement (PICS)".
- [5] ETSI TS 103 833-2: "Core Network and Interoperability Testing (INT); Conformance Test Specifications for the SCC-AS Services; (3GPP™ Release 16); Part 2: Test Suite Structure (TSS) and Test Purposes (TP)".
- [6] ISO/IEC 9646-6: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 6: Protocol profile test specification".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ISO/IEC 9646-1: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".
- [i.2] ISO/IEC 9646-7: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".
- [i.3] ETSI ETS 300 406: "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [i.4] ETSI ES 201 873-1: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 1: TTCN-3 Core Language".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ISO/IEC 9646-7 [i.2], ETSI TS 124 229 [1], ETSI TS 124 237 [2] and ETSI TS 124 292 [3] apply.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ISO/IEC 9646-1 [i.1], ISO/IEC 9646-6 [6], ISO/IEC 9646-7 [i.2], ETSI TS 124 229 [1], ETSI TS 124 237 [2] and ETSI TS 124 292 [3] apply.

4 Abstract Test Method (ATM)

4.1 Introduction

The following clauses describes the ATM used to test the SIP protocol on the Isc interface at the SCC-AS Services.

4.2 Test architecture

4.2.1 Test method

The test method chosen is the remote test method. Remote test method means that the test tool (the test machine + the executable test suite) shall behave as IMS with UE when the IUT is an SCCAS. As the exchange between the test system and the IUT is at the SIP message level, the lower layers of the test machine shall be totally conformant with the corresponding lower layers specifications to use the remote test method.

4.2.2 Test configurations

The Isc interface is located between IMS with UE and the SCCAS.

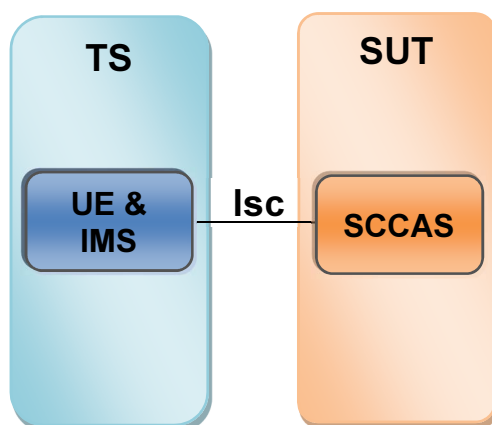


Figure 1: Test configuration CF_SCCAS_01

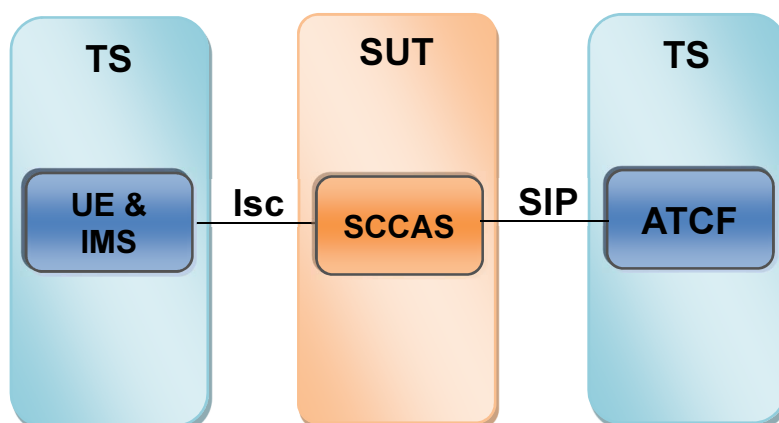


Figure 2: Test configuration CF_SCCAS_02

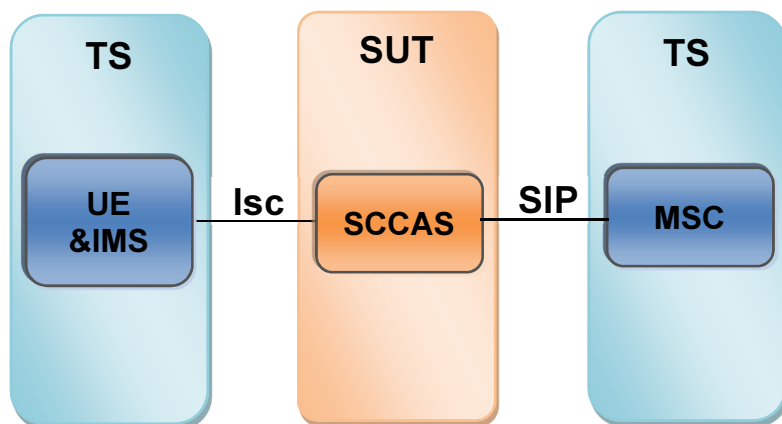


Figure 3: Test configuration CF_SCCAS_03

4.2.3 SCC-AS Role

Figure 4 shows the interconnection of TS and SUT in terms of SIP message flows. SIP messages are transferred over the SIPP port.

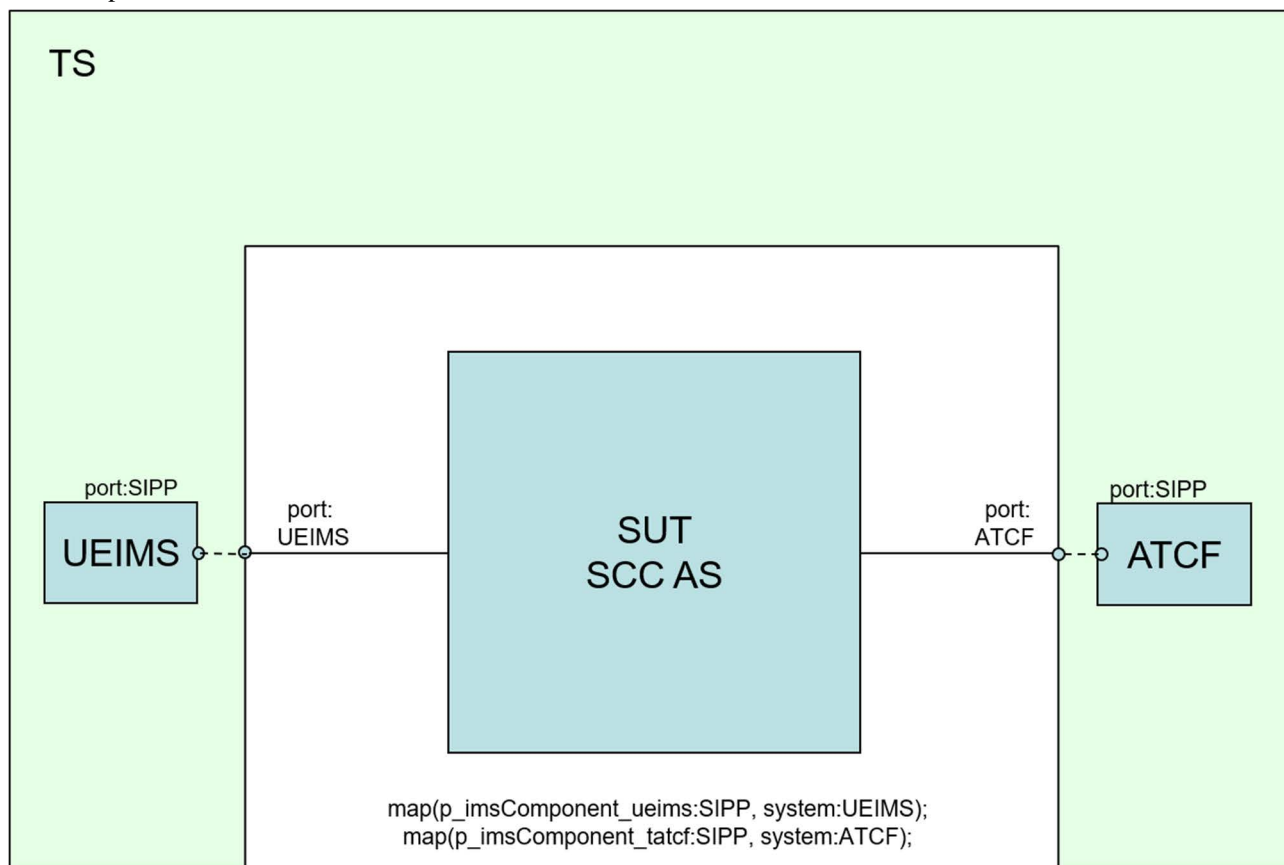


Figure 4: Interconnection for SCC-AS role

4.2.4 Test Adapter

For execution of the tests the Test Adapter (TA) shall be developed. To communicate over the TA, the ATS provides the SIP messages.

5 ATS conventions

5.1 Introduction

The ATS conventions are intended to give a better understanding of the ATS but they also describe the conventions made for the development of the ATS. These conventions shall be considered during any later maintenance or further development of the ATS.

The ATS conventions contain two clauses, the testing conventions and the naming conventions. The naming conventions describe the structure of the naming of all ATS elements.

To define the ATS, the guidelines of ETSI ETS 300 406 [i.3] were considered.

5.2 Testing conventions

5.2.1 Test cases

As described in the test method clause the test tool shall behave as an IMS with UE when the IUT is an SCC-AS. For that reason the test cases are named as follows:

- IUT is an Isc/SCC-AS (example TC_ISC_SCCAS_RSC_REG_01)

5.3 Naming conventions

5.3.1 General guidelines

The naming conventions are based on the following underlying principles:

- In most cases, identifiers should be prefixed with a short alphabetic string (specified in table 1) indicating the type of TTCN-3 element it represents.
- Suffixes should not be used except in those specific cases identified in table 1.
- Prefixes and suffixes should be separated from the body of the identifier with an underscore ("_"):

EXAMPLE 1: `c_sixteen`, `t_wait_max`.

- Only module names, data type names and module parameters should begin with an upper-case letter. All other names (i.e. the part of the identifier following the prefix) should begin with a lower-case letter.
- The start of second and subsequent words in an identifier should be indicated by capitalizing the first character. Underscores should not be used for this purpose.

EXAMPLE 2: `f_authenticateUser`.

Table 1 specifies the naming guidelines for each element of the TTCN-3 language indicating the recommended prefix, suffixes (if any) and capitalization.

Table 1: TTCN-3 naming convention

Language element	Naming convention	Prefix	Suffix	Example	Notes
Module	Use upper-case initial letter	AtsSccas_	<i>none</i>	AtsSccas_Steps	
TSS grouping	Use all upper-case letters	<i>none</i>	<i>none</i>	TP_ISC_SCCAS_	
Message template	Use lower-case initial letter	m_	<i>none</i>	m_authApplicationId	
Message template with wildcard or matching expression	Use lower-case initial letters	mw_	<i>none</i>	mw_subscriptionId	
Port instance	Use upper-case initial letter	<i>none</i>	<i>none</i>	SIPPort	
Constant	Use lower-case initial letter	c_	<i>none</i>	c_maxRetransmission	
Function	Use lower-case initial letter	f_	<i>none</i>	f_authentication()	
Altstep	Use lower-case initial letter	a_	<i>none</i>	a_receive()	
Variable	Use lower-case initial letter	v_	<i>none</i>	v_basicId	
PICS values	Use all upper case letters	PICS_	<i>none</i>	PICS_SCCAS_GM	Note
PIXIT values	Use all upper case letters	PX_	<i>none</i>	PX_SCCAS_URI	Note
Parameterization	Use lower-case initial letter	p_	<i>none</i>	p_macId	
Enumerated Value	Use lower-case initial letter	e_	<i>none</i>	e_synCpk	

NOTE: In this case it is acceptable to use underscore as a word delimiter.

5.3.2 Test case grouping

The ATS structure is based on the Test Purposes for the SIP protocol on the Isc interface as defined in ETSI TS 103 833-2 [5].

5.3.3 Test case identifiers

The test cases have been divided according to the functionalities into several groups.

The test case names are built up according to the following scheme.

Table 2: TC identifier naming convention scheme

Identifier: <TP>_<interface>_<iut>_<scope>_<method>_<nn>	
<tp>	= Test Purpose: fixed to "TP"
<interface>	= Interface: ISC
<iut>	= type of IUT: SCCAS
<scope>	= group
	RSC Registration in the IM CN subsystem for service continuity
	GEN General Capabilities
	ORI Call origination for service continuity
	TER Call termination for service continuity
	CPT CS-PS access transfer
	PCT PS-CS access transfer
	PPT PS-PS access transfer
	CON PS-PS access transfer in conjunction with PS-CS access transfer
	SRA PS-CS access transfer, Single Radio
	MED Media adding/deleting for access transfer
<method>	= subgroup
	REG Register
	INV Invite
	RIN ReInvite
	REF Refer
	INF Info
	UPD Update
	BYE Bye
	CAN Cancel
	RES Response
<nn>	= sequential number (01 to 99)

NOTE: This naming scheme results into a one-to-one correspondence between the test purpose identifiers as defined in ETSI TS 103 833-2 [5] and the test case identifiers.
The TP identifier of the test case TC_XXX_01 is TP_XXX_01.

Annex A (normative): SCC-AS Services Partial PIXIT pro forma

A.1 The right to copy

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the Partial PIXIT pro forma in this annex so that it can be used for its intended purposes and may further publish the completed Partial PIXIT.

The PIXIT pro forma is based on ISO/IEC 9646-6. Any additional information which may be needed can be found in this international standard document.

A.2 Identification summary

Table A.1

PIXIT Number:	
Test Laboratory Name:	
Date of Issue:	
Issued to:	

A.3 ATS summary

Table A.2

Protocol Specification:	This interoperability test specification covers several protocol specifications for the SIP and DIAMETER protocols. In the below tables, references are given to the protocol specifications in force per interface.
Protocol to be tested:	
ATS Specification:	ETSI TS 103 833-3, annex B
Abstract Test Method:	ETSI TS 103 833-3, clause 4

A.4 Test laboratory

Table A.3

Test Laboratory Identification:	
Test Laboratory Manager:	
Means of Testing:	
SAP Address:	

A.5 Client identification

Table A.4

Client Identification:	
Client Test manager:	
Test Facilities required:	

A.6 SUT

Table A.5

Name:	
Version:	
SCS Number:	
Machine configuration:	
Operating System Identification:	
IUT Identification:	
PICS Reference for IUT:	
Limitations of the SUT:	
Environmental Conditions:	

A.7 Protocol layer information

The protocol identification is presented in the clauses below per interface.

The PICS reference for all interfaces is: ETSI TS 103 833-1.

A.8 PIXIT items

A.8.1 Introduction

Tables in this clause need to be filled by the IUT Manufacturer to specify how the IUT needs to be configured with IUT specific values or describe IUT specific procedures required for complete testing of the IUT.

Each PIXIT item corresponds to a Module Parameter of the ATS.

A.8.2 Port and Address items

Table A.6: Test system ports and addresses

It.	Identifier	Type	Description
1	PX_IMS_TS_SCSCF_IPADDR	Charstring	IP address of the test system CSCF
2	PX_IMS_TS_SCSCF_PORT	Integer	Port number of the test system CSCF
3	PX_IMS_TS_SCSCF_HOME_DOMAIN	Charstring	Domain name of the test system CSCF

Table A.7: SUT ports and addresses

It.	Identifier	Type	Description
1	PX_IMS_SUT_AS_IPADDR	Charstring	Isc SCC-AS address of the system under test
2	PX_IMS_SUT_AS_PORT	Integer	Isc SCC-AS number of the system under test
3	PX_IMS_SUT_AS_HOME_DOMAIN	Charstring	Isc SCC-AS domain name of the system under test

A.8.3 Isc interface items

Table A.8: Isc interface

It.	Identifier	Type	Description
1	PX_ATCF_MGMT_URI	Charstring	ATCF management URI in Contact header field
2	PX_ATCF_URI	Charstring	ATCF URI in Contact header field
3	PX_ICSI_URI	Charstring	ICSI URI in Contact header field
4	PX_SCCAS_URI	SipUrl	SCCAS URI in PAssertedID header field
5	PX_IMS_TS_UE1_IPADDR	Charstring	IP address used by the UE1 to exchange SIP messages
6	PX_IMS_TS_UE1_PORT	Integer	Port number used by the UE1 to exchange SIP messages
7	PX_IMS_TS_UE1_REGISTRAR	Charstring	Home(TS) REGISTRAR domain
8	PX_IMS_TS_UE1_BEARER_IPADDR	Charstring	IP address used by the TS to exchange media streams for UE1
9	PX_IMS_TS_UE1_HOME_DOMAIN	Charstring	Identity of the tester UE1 - local domain
10	PX_IMS_TS_UE1_PUBLIC_USER	Charstring	Identity of the tester UE1 - public user
11	PX_IMS_TS_UE1_PRIVAT_USERNAME	Charstring	Privat username of UE1
12	PX_IMS_TS_UE1_PRIVAT_PASSWD	Charstring	Privat passwd of UE1
13	PX_IMS_TS_UE1_QOP	Charstring	qop options of UE1
14	PX_IMS_TS_UE1_DISPLAY	Charstring	UE1 display name

A.8.4 LibCommon items

Table A.9: PIXIT for LibCommon

It.	Identifier	Type	Description
1	PX_TSYNC_TIME_LIMIT	Float	Default time limit for a sync client to reach a synchronization point
2	PX_TSHUT_DOWN_TIME_LIMIT	Float	Default time limit for a sync client to finish its execution of the shutdown default

Annex B (normative): Abstract Test Suite (ATS)

B.1 The TTCN-3 Module

This ATS has been produced using the Testing and Test Control Notation (TTCN-3) according to ETSI ES 201 873-1 [i.4].

The TTCN-3 library modules corresponding to the ATS are contained in archive `ts_10383303v010101p0.zip` which accompanies the present document.

History

Document history		
V1.1.1	December 2022	Publication