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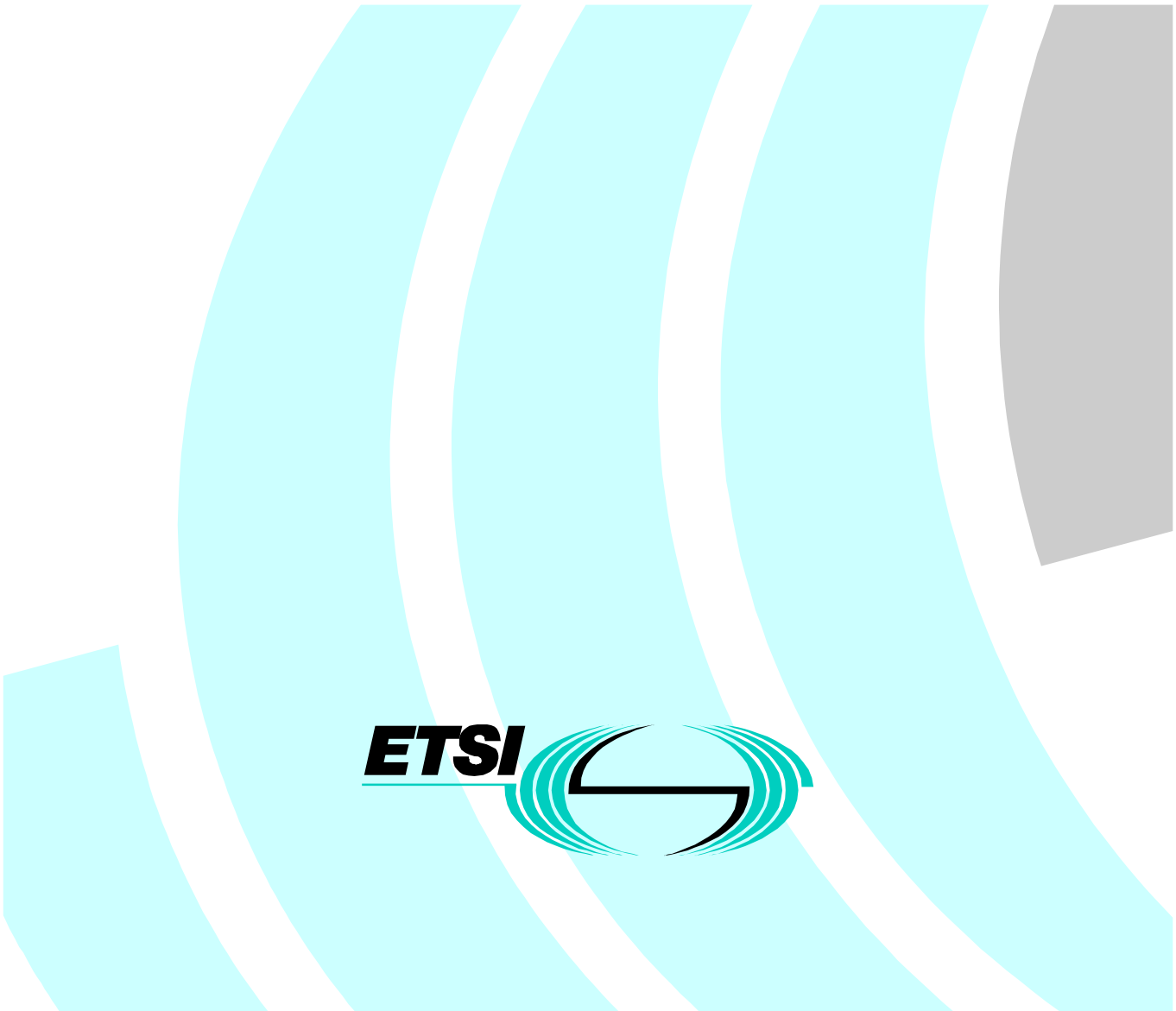
European Standard (Telecommunications series)

Integrated Services Digital Network (ISDN);
Security tools (SET) procedures;
Digital Subscriber Signalling System No. one (DSS1) protocol;
Part 3: Test Suite Structure and Test Purposes (TSS&TP)
specification for the user



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Contents

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 3 of a multi-part EN covering the Integrated Services Digital Network (ISDN); Security tools (SET) procedures; Digital Subscriber Signalling System No. one (DSS1) protocol, as identified below:

Part 1: "Protocol specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";

Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

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1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for the User side of the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [6]) of implementations conforming to the stage three standard for the Security tools (SET) procedures for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 301 002-1 [1].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial PIXIT proforma based on the present document. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the Network side of the T reference point or coincident S and T reference point of implementations conforming to EN 301 002-1 [1].

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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ETSI EN 301 002-1: "Integrated Services Digital Network (ISDN); Security tools (SET) procedures; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[2] ETSI EN 301 002-2: "Integrated Services Digital Network (ISDN); Security tools (SET) procedures; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[4] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".

[5] ETSI EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[6] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces – Reference configurations".

[7] ETSI EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

[8] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[9] ITU-T Recommendation E.164 (1997): "The international public telecommunication numbering plan".

[10] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

[11] ETSI ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[12] ETSI ETR 232: "Security Techniques Advisory Group (STAG); Glossary of security terminology".

[13] ETSI EN 301 132: "Integrated Services Digital Network (ISDN); Security tools (SET) for use within telecommunication services".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

3.1.1 Definitions related to conformance testing

Abstract Test Suite (ATS): refer to ISO/IEC 9646-1 [3].

Implementation Under Test (IUT): refer to ISO/IEC 9646-1 [3].

Protocol Implementation Conformance Statement (PICS): refer to ISO/IEC 9646-1 [3].

PICS proforma: refer to ISO/IEC 9646-1 [3].

Protocol Implementation eXtra Information for Testing (PIXIT): refer to ISO/IEC 9646-1 [3].

PIXIT proforma: refer to ISO/IEC 9646-1 [3].

system under test: refer to ISO/IEC 9646-1 [3].

Test Purpose (TP): refer to ISO/IEC 9646-1 [3].

3.1.2 Definitions related to EN 301 002-1

component: see EN 300 196-1 [5], subclause 11.2.2.1.

Dummy call reference: see EN 300 403-1 [7], subclause 4.3.

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [8], definition 308.

invoke component: see EN 300 196-1 [5], subclause 11.2.2.1.

ISDN number: number conforming to the numbering and structure specified in ITU-T Recommendation E.164 [9].

Personal Identification Number (PIN): see ETR 232 [12].

return error component: see EN 300 196-1 [5], subclause 11.2.2.1.

return result component: see EN 300 196-1 [5], subclause 11.2.2.1.

S/T: DSS1 protocol entity at the User side of the user-network interface where a coincident S and T reference point applies.

security tool: see EN 301 132 [13], clause 3.

served user: user to whom a security tool is provided in combination with a telecommunication service.

service; telecommunication service: see ITU-T Recommendation I.112 [8], definition 201.

supplementary service: see ITU-T Recommendation I.210 [10], subclause 2.4.

T: DSS1 protocol entity at the User side of the user-network interface where a T reference point applies (User is a Private ISDN).

Transaction Number (TAN): see EN 301 132 [13], clause 3.

3.2 Abbreviations

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

ATS	Abstract Test Suite
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SET	Security tools
TAN	Transaction Number
TP	Test Purpose
TSS	Test Suite Structure

4 Test Suite Structure (TSS)

Signalling procedures at the coincident S and T reference point and for interworking with private ISDN	**Group**
Registration - PIN	U01
Notification of possible fraudulent use	
PIN	U02
TAN	U03

Figure 1: Test suite structure

5 Test Purposes (TP)

5.1 Introduction

For each test requirement a TP is defined.

5.1.1 TP naming convention

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite and whether it applies to the network or the user (see table 1).

Table 1: TP identifier naming convention scheme

Identifier: **<ss>_<iut><group>_<nnn>**				
<ss>	=	supplementary service:	"SET"	
<iut>	=	type of IUT:	U	User
			N	Network
<group>	=	group	2 digit field representing group reference according to TSS	
<nnn>	=	sequential number	(001-999)	

5.1.2 Source of TP definition

The TPs are based on EN 301 002-1 [1].

5.1.3 TP structure

Each TP has been written in a manner which is consistent with all other TPs. The intention of this is to make the TPs more readable and checkable. A particular structure has been used and this is illustrated in table 2. This table should be read in conjunction with any TP, i.e. use a TP as an example to fully understand the table.

Table 2: Structure of a single TP for SET

TP Part	Text	Example
Header	TP Identifier Reference to the subclause of the base specification containing the conformance requirement. Reference to selection criteria	see table 1 subclause 9.1.1 see note 1
Stimulus	Ensure that the IUT in the <basic call state> and <supplementary service state> <trigger> *see below for message structure* *or* <goal>	 U00, U10 etc. SCNFR Wait Deactivation state receiving a XXXX message to request a ...
Reaction	<action> <conditions> *if the action is sending* *see below for message structure* <next action>, *etc.* and enters <supplementary service state> *and/or* and remains in the same call state(s) *or* and enters call state <state>	sends, saves, does, etc. using en-bloc sending, ...
Message structure	<message type> message containing a *a)* <info element> information element with *b)* a <field name> encoded as *or* including <coding of the field> and *back to a or b,*	SETUP, FACILITY, CONNECT, ... Bearer capability, Facility, ... see note 2
Selection	Selection criteria reference	Call forwarding supported. PICS: R 1.3
NOTE 1: In order to use the same structure as for test group selection, the selection criteria is indicated at the bottom of the test purpose. NOTE 2: Unless specified the messages are valid and contain at least the mandatory information elements and possibly optional information elements, the information elements are valid and contain at least the mandatory parameters and possibly optional parameters.		

5.1.4 Test strategy

As the base standard EN 301 002-1 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification EN 301 002-2 [2].

The TPs are only based on conformance requirements related to the externally observable behaviour of the IUT, and are limited to conceivable situations to which a real implementation is likely to be faced (ETS 300 406 [11]).

All the test purposes are mandatory unless they have a selection criteria. Optional test purposes (with selection criteria), are applicable according to the configuration options of the IUT. The configuration option shall be covered by a PICS item.

5.2 User TPs for SET

All PICS items referred to in this subclause are as specified in EN 301 002-2 [2] unless indicated otherwise by another numbered reference.

Unless specified:

- the messages indicated are valid and contain at least the mandatory information elements and possibly optional information elements;
- the information elements indicated are valid and contain at least the mandatory parameters and possibly optional parameters;
- the FACILITY messages are transmitted using the point to point connectionless bearer independent transport mechanism (dummy call reference, DL-DATA-REQUEST) as specified in subclause 8.3.2.2 of EN 300 196-1 [5]. Where the broadcast connectionless bearer independent transport mechanism applies (dummy call reference, DL-UNIT DATA-REQUEST), the indication of the corresponding subclause of EN 300 196-1 [5] is given, i.e. subclause 8.3.2.4 of EN 300 196-1 [5].

5.2.1 Signalling procedures at the coincident S and T reference point and for interworking with private ISDN

NOTE: The signalling procedures use mainly the bearer-independent connectionless transport mechanism with the dummy call reference. To augment the readability of the test purposes, basic call states are only mentioned where significant.

5.2.1.1 Registration - PIN

Selection: IUT supports registration of PIN security. PICS: R 4.1.

SET_U01_001 subclause 9.3.1
Ensure that the IUT in the Idle state, to modify the PIN after initial registration,
sends a FACILITY message containing a Facility information element with a ModifyPin invoke component including the oldPin, the newPin and the servedUserNr parameters, and enters the Registrate Request state.

SET_U01_002 subclause 9.3.1
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return result component,
sends no message and enters the Idle state.

SET_U01_003 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "invalidServedUserNr",
sends no message and enters the Idle state.

SET_U01_004 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "pinNotProvided",
sends no message and enters the Idle state.

SET_U01_005 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "userControlBlocked",
sends no message and enters the Idle state.

SET_U01_006 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "invalidPin",
sends no message and enters the Idle state.

SET_U01_007 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "invalidNewPin",
sends no message and enters the Idle state.

SET_U01_008 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "primitivePin",
sends no message and enters the Idle state.

SET_U01_009 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a ModifyPin return error component indicating "newPinIsOldPin",
sends no message and enters the Idle state.

SET_U01_010 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on expiry of the timer T-REGISTRATE,
sends no message and enters the Idle state.

SET_U01_011 subclause 9.3.2
Ensure that the IUT in the Registrate Request state, on receipt of a FACILITY message containing a Facility information element with a reject component,
sends no message and enters the Idle state.

5.2.1.2 Invocation and Operation

Invocation of the PIN security tool shall consist of using the registered PIN in association with certain telecommunication services, requiring this security tool. The procedures related to the use of a PIN or a TAN in association with telecommunication services are described in the appropriate telecommunication services. Consequently, the test purposes concerning these invocation and operation procedures are included in the TSS&TP documents of the relevant telecommunication services (e.g. Outgoing Call Barring, Remote Control, …).

5.2.1.3 Notification of possible fraudulent use

5.2.1.3.1 PIN

SET_U02_001 subclause 9.7
Ensure that the IUT in the Idle state, on receipt of a FACILITY message (subclause 8.3.2.4 of ETS 300 196-1 [5]) containing a Facility information element with a PossibleFraudulentPinUse invoke component, and without Called Party Number information element,
sends no message and remains the Idle state.

NOTE: The multiple subscriber number service is not provided.

SET_U02_002 subclause 9.7
Ensure that the IUT in the Idle state, on receipt of a FACILITY message (subclause 8.3.2.4 of ETS 300 196-1 [5]) containing a Facility information element with a PossibleFraudulentPinUse invoke component, and with a Called Party Number information element including the multiple subscriber number of the served user,
sends no message and remains the Idle state.

NOTE: The multiple subscriber number service is provided.

Selection: S/T reference point (no private ISDN). PICS: R 3.1.

5.2.1.3.2 TAN

SET_U03_001 subclause 9.8
Ensure that the IUT in the Idle state, on receipt of a FACILITY message (subclause 8.3.2.4 of ETS 300 196-1 [5]) containing a Facility information element with a PossibleFraudulentTanUse invoke component, and without Called Party Number information element,
sends no message and remains the Idle state.

NOTE: The multiple subscriber number service is not provided.

SET_U03_002 subclause 9.8
Ensure that the IUT in the Idle state, on receipt of a FACILITY message (subclause 8.3.2.4 of ETS 300 196-1 [5]) containing a Facility information element with a PossibleFraudulentTanUse invoke component, and with a Called Party Number information element including the multiple subscriber number of the served user,
sends no message and remains the Idle state.

NOTE: The multiple subscriber number service is provided.

Selection: S/T reference point (no private ISDN). PICS: R 3.1.

6 Compliance

An ATS which complies with this TSS&TP specification shall:

a) consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 6;

b) use a TSS which is an appropriate subset of the whole of the TSS specified in clause 4;

c) use the same naming conventions for the test groups and test cases;

d) maintain the relationship specified in clause 5 between the test groups and TPs and the entries in the PICS proforma to be used for test case deselection;

e) comply with ISO/IEC 9646-2 [4].

In the case of a) or b) above, a subset shall be used only where a particular Abstract Test Method (ATM) makes some TPs untestable. All testable TPs from clause 5 shall be included in a compliant ATS.

7 Requirements for a comprehensive testing service

As a minimum the Remote test method, as specified in ISO/IEC 9646-2 [4], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to EN 301 002-1 [1].

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

- EN 300 403-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 3: Protocol Implementation Conformance Statement (PICS) proforma specification".

History

Document history			
V1.1.3	July 1999	Public Enquiry	PE 9951: 1999-07-21 to 1999-11-19
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