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Digitalno omrežje z integriranimi storitvami (ISDN) - Medsebojno vplivanje dopolnilne storitve - Protokol digitalne naročniške signalizacije št. 1 (DSS1) - 3. del: Zgradba preskuševalnega niza in nameni preskuševanja (TSS&TP) - Specifikacija za uporabnika

Integrated Services Digital Network (ISDN); Supplementary service interactions; 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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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); Supplementary service interactions; 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 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 for the network".

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Date of adoption of this EN:	28 April 2000
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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 [12]) of implementations conforming to the stage three standard for supplementary service interactions for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 300 195-1 [2].

A further part of EN 300 195 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 300 195-1 [2].

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 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]".

[2] ETSI EN 300 195-1 (V1.4): "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[3] ETSI EN 300 195-2 (V1.3): "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[4] 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".

[5] ETSI EN 300 207-1 (V1.2): "Integrated Services Digital Network (ISDN); Diversion supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

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

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

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

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

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

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

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

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

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 case: refer to ISO/IEC 9646-1 [6].

Abstract Test Suite (ATS): refer to ISO/IEC 9646-1 [6].

Implementation Under Test (IUT): refer to ISO/IEC 9646-1 [6].

implicit send event: refer to ISO/IEC 9646-3 [8].

lower tester: refer to ISO/IEC 9646-1 [6].

point of control and observation: refer to ISO/IEC 9646-1 [6].

Protocol Implementation Conformance Statement (PICS): refer to ISO/IEC 9646-1 [6].

PICS proforma: refer to ISO/IEC 9646-1 [6].

Protocol Implementation eXtra Information for Testing (PIXIT): refer to ISO/IEC 9646-1 [6].

PIXIT proforma: refer to ISO/IEC 9646-1 [6].

system under test: refer to ISO/IEC 9646-1 [6].

Test Purpose (TP): refer to ISO/IEC 9646-1 [6].

3.1.2 Definitions related to EN 300 195-1

call held auxiliary state: see EN 300 196-1 [4], subclause 7.1.2.

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

component: see EN 300 196-1 [4], subclause 11.2.2.1.

idle auxiliary state: see EN 300 196-1 [4], subclause 7.1.2.

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [10], definition 308.

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

invoke component: see EN 300 196-1 [4], subclause 11.2.2.1.

return error component: see EN 300 196-1 [4], subclause 11.2.2.1.

return result component: see EN 300 196-1 [4], subclause 11.2.2.1.

served user: served user is the user who invokes the supplementary service.

service; telecommunication service: see ITU-T Recommendation I.112 [10], definition 201.

supplementary service: see ITU-T Recommendation I.210 [11], subclause 2.4.

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

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

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

3.2 Abbreviations

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

3PTY	Three-Party
AOC	Advice of Charge
AOC-D	Advice of Charge During the call
AOC-E	Advice of Charge at the End of the call
AOC-S	Advice of Charge at call Set-up time
CCBS	Completion of Calls to Busy Subscriber
CCNR	Completion of Calls on No Reply
CD	Call Deflection
CFB	Call Forwarding Busy
CFNR	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CONF	Conference call, add-on
CUG	Closed User Group
CW	Call Waiting
ECT	Explicit Call Transfer
FPH	Freephone
HOLD	Call Hold
IUT	Implementation Under Test
MCID	Malicious Call Identification
MSN	Multiple Subscriber Number
MWI	Message Waiting Indication
OCB	Outgoing Call Barring
OCB-F	Outgoing Call Barring: Fixed
OCB-UC	Outgoing Call Barring: User Controlled
SCF	Selective Call Forwarding
SSI	Supplementary Service Interactions
SUB	Subaddressing
TP	Terminal Portability
TP	Test Purpose
TSS	Test Suite Structure
U00	Null call state
U01	Call Initiated call state
U02	Overlap Sending call state
U03	Outgoing Call Proceeding call state
U04	Call Delivered call state
U06	Call Present call state
U07	Call Received call state
U09	Incoming Call Proceeding call state
U10	Active Call state
U11	Disconnect Request call state

U15	Suspend Request call state
U17	Resume Request call state
U25	Overlap Receiving call state
U31	Bearer Independent Transport call state
UUI	User-to-User Information
UUS	User-to-User Signalling

4 Test Suite Structure (TSS)

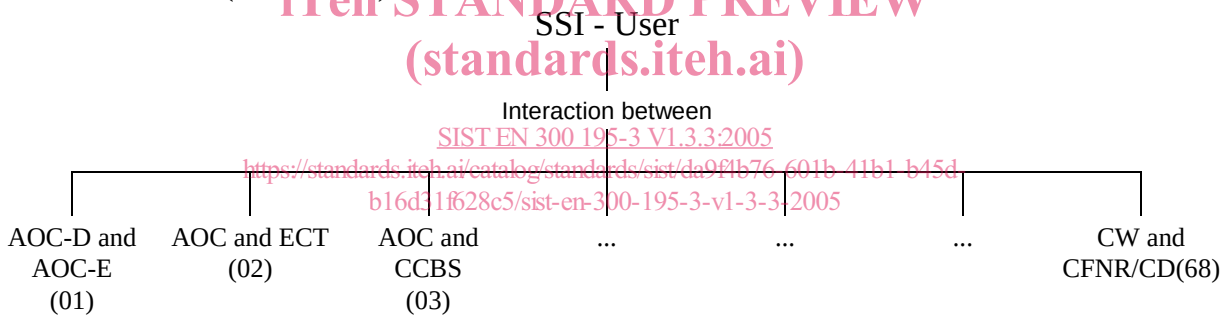
4.1 Two-level structure of the test suite

The supplementary service interaction protocol is structured in two levels. The first level corresponds to a specific case of interaction between two supplementary services. The second level corresponds to the way in which a specific case is substructured. This two-level structure is reflected in the present document.

4.2 Level 1: interaction case (test purpose group)

The interaction cases correspond to subclauses 5.1 to 5.68 of EN 300 195-1 [2]. They are depicted in figure 1 and table 1. Test purposes for the general procedures specified in clause 6 of EN 300 195-1 [2] are included in the groups corresponding to the interaction cases for which they apply.

NOTE: TPs corresponding to subclause 6.1.2 of EN 300 195-1 [2] are in groups 02 (AOC and ECT) and 04 (AOC and CD). No TPs have been defined for the remainder of clause 6.



NOTE: Numbers in brackets represent group numbers and are used in TP identifiers.

Figure 1: Test suite structure - level 1

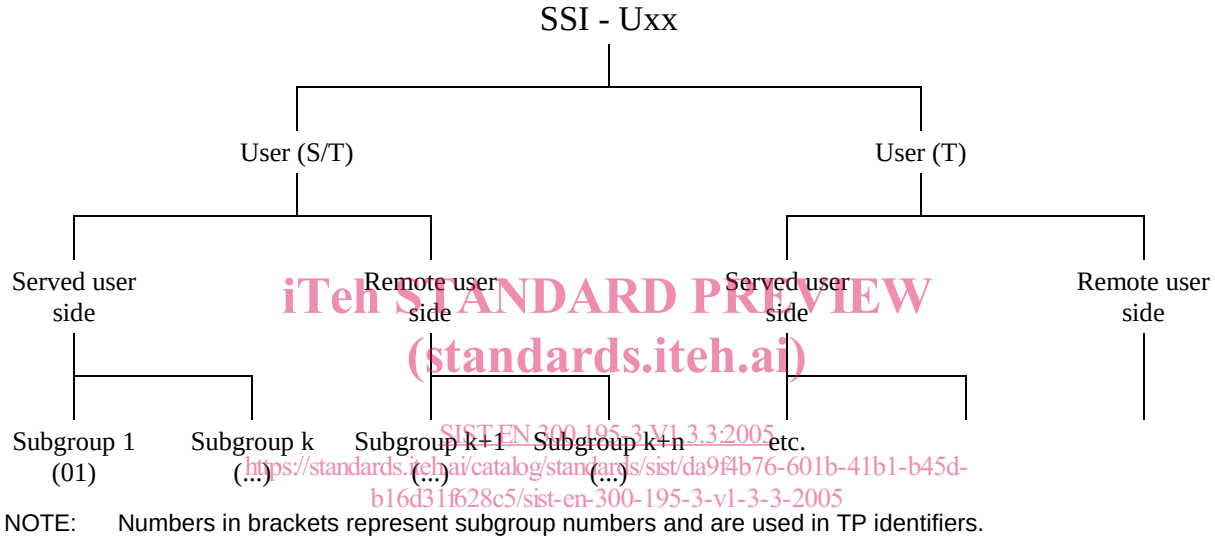
Table 1: Group numbers - level 1

Group	Interaction between:
01	the AOC-D and AOC-E supplementary services
02	the AOC and ECT supplementary services
03	the AOC and CCBS supplementary services
04	the AOC-E and CD supplementary services
05	the AOC-E and CFB supplementary services
06	the AOC-E and CFNR supplementary services
07	the AOC-E and CFU supplementary services
08	the AOC and 3PTY supplementary services
09	the AOC and CONF supplementary services
10	the AOC and Terminal Portability supplementary services
11	the CONF and HOLD supplementary services
12	the CONF and CUG supplementary service
13	the CONF and CONF supplementary services
14	the CONF and Terminal Portability supplementary services
15	the CONF and 3PTY supplementary services
16	the CONF and UUS3 supplementary services
17	the CONF and ECT supplementary services
18	the CD and COLP supplementary services
19	the CD and COLR supplementary services
20	the CD and UUS supplementary services
21	the CFB and COLP supplementary services
22	the CFB and COLR supplementary services
23	the CFB and UUS supplementary services
24	the CFNR and COLP supplementary services
25	the CFNR and COLR supplementary services
26	the CFNR and UUS supplementary services
27	the CFU and COLP supplementary services
28	the CFU and COLR supplementary services
29	the CFU and UUS supplementary services
30	the Terminal Portability and 3PTY supplementary services
31	the HOLD and Terminal Portability supplementary services
32	the HOLD and 3PTY supplementary services
33	the CUG and 3PTY supplementary services
34	the ECT and MCID supplementary services
35	the ECT and 3PTY supplementary services
36	the ECT and UUS supplementary services
37	the CCBS and UUS supplementary services
38	the CCBS and CLIP supplementary services
39	the CCBS and CLIR supplementary services
40	the CCBS and CUG supplementary services
41	the CCBS and MSN supplementary services
42	the CCBS and SUB supplementary services
43	the FPH and COLP supplementary services
44	the ECT and CUG supplementary services
45	the ECT and Terminal Portability supplementary services
46	the CONF and MCID supplementary services
47	the CCBS and CW supplementary services
48	the UUS and Terminal Portability supplementary services
49	the MWI and MSN supplementary services
50	the OCB and CCBS supplementary services
51	the OCB and MSN supplementary services
52	the OCB and CFB supplementary services
53	the OCB and CFNR supplementary services
54	the OCB and CFU supplementary services
55	the OCB and CD supplementary services
56	the OCB-UC and OCB-F supplementary services
57	the CCNR and AOC supplementary services
58	the CCNR and CW supplementary services
59	the CCNR and CLIP supplementary services
60	the CCNR and CLIR supplementary services
61	the CCNR and CUG supplementary services
62	the CCNR and CCBS supplementary services

Group	Interaction between:
63	the CCNR and MSN supplementary services
64	the CCNR and SUB supplementary services
65	the CCNR and UUS supplementary services
66	the CCNR and OCB supplementary services
67	the OCB and SCF supplementary services
68	the CW and CFNR/CD supplementary services

4.3 Level 2: substructure of an interaction case (test purpose subgroup)

The specific substructure of each interaction case is depicted in the corresponding subclause of clause 5. An example of a possible substructure is given in figure 2 for illustrative purposes. In the root node "SSI - Uxx", the symbol "xx" needs to be replaced by the relevant value of column 1 in table 1.



NOTE: Numbers in brackets represent subgroup numbers and are used in TP identifiers.

Figure 2: Example of test suite substructure - level 2

Within the group of general procedures, a subgroup is reserved for each individual procedure, starting with subgroup 01.

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/subgroup combination. The group/subgroup combinations are organized according to the TSS described in clause 4. Additional references are added to identify the actual test suite and whether it applies to the network or the user (see table 2).

Table 2: TP identifier naming convention scheme

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

5.1.2 Source of TP definition

The TPs are based on EN 300 195-1 [2], clauses 5 and 6.

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 3. This table should be read in conjunction with any TP, i.e. use a test purpose as an example to fully understand the table.

NOTE: The structuring of TP grouping in two levels (TP group and subgroup) is specific to the present document. Most other DSS1 TSS&TP standards use only one level of TP grouping.

Table 3: Structure of a single TP

TP part	Text	Example
Header	<Identifier> *tab* <subclause number in base standard> *tab*	see table 1 subclause 0.0.0
Stimulus	Ensure that the IUT in the <basic call state> <trigger> *see below for message structure* *or* <goal>	 U00, U10, etc. 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 state(s) *or* and enters state <state> with CR<number(s)>	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, ...
NOTE: Text in italics will not appear in TPs and text between <> is filled in for each TP and may differ from one TP to the next.		

5.1.4 Test strategy

As the base standard EN 300 195-1 [2] 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 300 195-2 [3].

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 [13]).