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

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Foreword

This final draft European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Voting phase of the ETSI standards approval procedure.

This ETS is part 3 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Multiple Subscriber Number (MSN) supplementary service, as described 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:   "TSS&TP specification for the network";

Part 6:   "ATS and partial PIXIT proforma specification for the network".

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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1 Scope

This third part of ETS 300 052 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 Multiple Subscriber Number (MSN) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of Digital Subscriber Signalling System No. one (DSS1) protocol, ETS 300 052-1 [1].

A further part of this ETS specifies the Abstract Test Suite (ATS) and partial PIXIT proforma based on this ETS. 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 ETS 300 052-1 [1].

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1]   ETS 300 052-1 (1991): "Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[2]   ETS 300 052-2 (1995): "Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3]   ISO/IEC 9646-1: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 1: General Concepts".

[4]   ISO/IEC 9646-2: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 2: Abstract Test Suite specification".

[5]   ISO/IEC 9646-3: "Information Technology - OSI Conformance Testing Methodology and Framework; Part 3: The Tree and Tabular Combined Notation".

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

[7]   ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

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

[9]   CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".

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

3 Definitions

For the purposes of this ETS, the following definitions apply:

3.1 Definitions related to conformance testing

abstract test case: Refer to ISO/IEC 9646-1 [3].

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

active test: A test case where the IUT is required to send a particular message, but not in reaction to a received message. This would usually involve the use of PIXIT information to see how this message can be generated and quite often is specified in an ATS using an Implicit Send event.

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

implicit send event: Refer to ISO/IEC 9646-3 [5].

lower tester: Refer to ISO/IEC 9646-1 [3].

passive test: A test case where the IUT is required to respond to a protocol event (e.g. received message) with another protocol event (sends message) and normally does not require an any special operator intervention such as is associated with the Implicit Send event.

point of control and observation: 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: Refer to ISO/IEC 9646-1 [3].

3.2 Definitions related to ETS 300 052-1

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

international number: An ISDN number structured as specified in subclause 3.2 (in the paragraphs relating to international number) of CCITT Recommendation E.164 [9].

ISDN number: A number conforming to the numbering and structure specified in CCITT Recommendation E.164 [9].

multiple subscriber number: An ISDN number as part of a set of ISDN numbers assigned to a user which shall be either the whole ISDN number or a part of the ISDN number including only the MSN significant digits (the least significant "n" digit(s) where "n" may be a number up to the full length of the ISDN number) and shall be a number large enough to allow all terminals on an access to be assigned an individual number.

national number; national significant number: An ISDN number structured as specified in subclause 3.2 (in the paragraphs relating to national significant number) of CCITT Recommendation E.164 [9].

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

subscriber number: An ISDN number structured as specified in subclause 3.2 (in the paragraphs relating to subscriber number) of CCITT Recommendation E.164 [9].

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

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

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

4 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ATM   Abstract Test Method
ATS   Abstract Test Suite
IUT   Implementation Under Test
MSN   Multiple Subscriber Number
PICS   Protocol Implementation Conformance Statement
PIXIT   Protocol Implementation eXtra Information for Testing
TON   Type Of Number
TP   Test Purpose
TSS   Test Suite Structure
U00   Null call state

5 Test Suite Structure (TSS)

MSN - User

Called user (S/T)   Calling user (S/T)

Valid Behaviour   Valid Behaviour
(01)   (02)
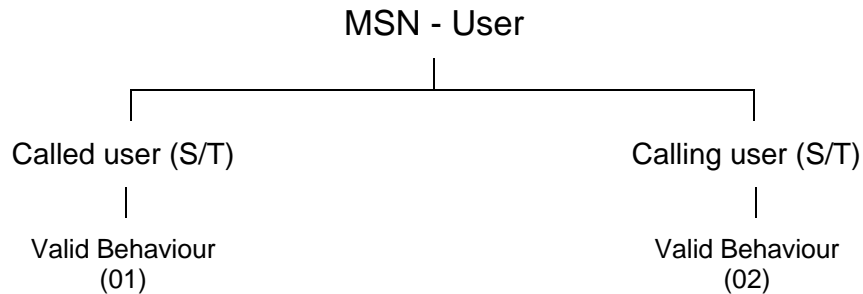
NOTE 1:   Numbers in brackets represent group numbers and are used in TP identifiers.

NOTE 2:   Testing at the T reference point is not applicable to the MSN supplementary service

Figure 1: Test suite structure

6 Test Purposes (TP)

6.1 Introduction

For each test requirement a TP is defined.

6.1.1 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:	e.g. "3PTY_"
<iut>	=	type of IUT:	U User N Network
<group>	=	group	2 digit field representing group reference according to TSS
<nnn>	=	sequential number	(001-999)

6.1.2 Source of TP definition

The TPs are based on ETS 300 052-1 [1].

6.1.3 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

TP part	Text	Example
Header	**<Identifier>** *tab* **<paragraph number in base ETS>** *tab* **<PICS reference>** *tab* **<condition>** *CR.*	see table 1 **subclause 0.0.0** **XY 0.0** **mandatory, optional, conditional**
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.	

6.1.4 Test strategy

As the base standard ETS 300 052-1 [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 ETS 300 052-2 [2]. The criteria applied include the following:

- only the requirements from the point of view of the coincident S and T reference point are considered;

- whether or not a test case can be built from the test purpose is not considered.

6.2 User TPs for MSN

All PICS items referred to in this subclause are as specified in ETS 300 052-2 [2] unless indicated otherwise by another numbered reference.

6.2.1 Called user (S/T)

Selection: IUT supports coincident S and T reference point procedures

6.2.1.1 Valid behaviour

MSN_U01_001   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and the Sending complete information element (MSN = part of the ISDN number including only the MSN significant digits, TON = unknown),
    handles the call following the basic call procedures.

MSN_U01_002   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and the Sending complete information element (MSN = complete ISDN number, TON = national number),
    handles the call following the basic call procedures.

MSN_U01_003   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and the Sending complete information element (MSN = complete ISDN number, TON = international number),
    handles the call following the basic call procedures.

MSN_U01_004   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and the Sending complete information element (MSN = complete ISDN number, TON = subscriber number),
    handles the call following the basic call procedures.

MSN_U01_005   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and without the Sending complete information element (MSN = part of the ISDN number including only the MSN significant digits, TON = unknown),
    handles the call following the basic call procedures.

MSN_U01_006   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and without the Sending complete information element (MSN = complete ISDN number, TON = national number),
    handles the call following the basic call procedures.

MSN_U01_007   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and without the Sending complete information element (MSN = complete ISDN number, TON = international number),
    handles the call following the basic call procedures.

MSN_U01_008   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with MSN digits and without the Sending complete information element (MSN = complete ISDN number, TON = subscriber number),
    handles the call following the basic call procedures.

MSN_U01_009   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message without MSN digits,
    handles the call following the basic call procedures.

MSN_U01_010   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with mismatching MSN digits (MSN = part of the ISDN number including only the MSN significant digits, TON = unknown),
    does not respond and remains in the same state.

MSN_U01_011   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with mismatching MSN digits (MSN = complete ISDN number, TON = national number),
    does not respond and remains in the same state.

MSN_U01_012   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with mismatching MSN digits (MSN = complete ISDN number, TON = international number),
    does not respond and remains in the same state.

MSN_U01_013   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00, receiving a valid and compatible SETUP message with mismatching MSN digits (MSN = complete ISDN number, TON = subscriber number),
    does not respond and remains in the same state.

MSN_U01_014   subclause 9.2.1   MC 1.1   mandatory
Ensure that the IUT in the Null call state U00,
    supports employment of the least significant digits necessary for terminal selection as programmed for, discarding the reminder (MSN = part of the ISDN number including more digits than the MSN significant digits, TON = unknown).

6.2.2   Calling user (S/T)

Selection: IUT supports coincident S and T reference point procedures

6.2.2.1   Valid behaviour

MSN_U02_001   subclause 9.3.1   SC 2.1   optional
Ensure that the IUT in the Null call state U00, in order to establish a call using the MSN supplementary service where a full ISDN number is used,
    sends a SETUP message containing a valid Calling party number information element with the numbering plan identification encoded as "unknown" or "ISDN/telephony numbering plan" and the type of number encoded as "subscriber number", "national number" or "international number".

MSN_U02_002   subclause 9.3.1   SC 2.2   optional
Ensure that the IUT in the Null call state U00, in order to establish a call using the MSN supplementary service where a partial ISDN number is used,
    sends a SETUP message containing a valid Calling party number information element with the numbering plan identification encoded as "unknown" or "ISDN/telephony numbering plan" and the type of number encoded as "unknown".

7   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 5;
c)   use the same naming conventions for the test groups and test cases;
d)   maintain the relationship specified in clause 6 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 6 shall be included in a compliant ATS.

8   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 user equipment claiming
conformance to ETS 300 052-1 [1].

History

Document history			
October 1995	Public Enquiry	PE 94:	1995-10-23 to 1996-02-16
May 1996	Vote	V 103:	1996-05-20 to 1996-08-23