EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 188-3

October 1996

Source: ETSI TC-SPS

Reference: DE/SPS-05061-J2-3

ICS: 33.080

Key words: ISDN, DSS1, supplementary service, 3PTY, testing, TSS&TP, user

Integrated Services Digital Network (ISDN);
Three-Party (3PTY) supplementary service;
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 Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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) Three-Party (3PTY) 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".

Transposition dates	
Date of adoption of this ETS:	4 October 1996
Date of latest announcement of this ETS (doa):	31 January 1997
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 July 1997
Date of withdrawal of any conflicting National Standard (dow):	31 July 1997

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1 Scope

This third part of ETS 300 188 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 [7]) of implementations conforming to the stage three standard for Three-Party (3PTY) supplementary service for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, ETS 300 188-1 [1].

A further part of this ETS specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (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 300 188-1 [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 300 188-1 (1993): "Integrated Services Digital Network (ISDN); Three-Party (3PTY) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
[2]	ETS 300 188-2 (1995): "Integrated Services Digital Network (ISDN); Three-Party (3PTY) 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]	ETS 300 196-1 (1993): "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol".
[7]	ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".
[8]	ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".
[9]	ITU-T Recommendation I.112 (1993): "Vocabulary and terms for ISDNs".
[10]	CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".
[11]	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].

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].

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 (TP): Refer to ISO/IEC 9646-1 [3].

3.2 Definitions related to ETS 300 188-1

3PTY active: An occurrence of the 3PTY supplementary service exists;

3PTY idle: An occurrence of the 3PTY supplementary service has not been requested;

Begin3PTY request: The 3PTY supplementary service has been requested by the served user;

Call Held auxiliary state: See ETS 300 196-1 [6], subclause 7.1.2.

Call Reference (CR): See ETS 300 102-1 [8], subclause 4.3.

component: See ETS 300 196-1 [6], subclause 11.2.2.1.

End3PTY request: The served user wants to have a private conversation with one of the remote users.

Idle auxiliary state: See ETS 300 196-1 [6], subclause 7.1.2.

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [9], definition 308.

ISDN number: A number conforming to the numbering and structure specified in CCITT Recommendation E.164 [10].

invoke component: See ETS 300 196-1 [6], subclause 11.2.2.1.

remote user: the two other users to the served user who are involved in the two calls that are joined together in a three-way conversation.

return error component: See ETS 300 196-1 [6], subclause 11.2.2.1.

return result component: See ETS 300 196-1 [6], subclause 11.2.2.1.

served user: The served user is the user who invokes the 3PTY supplementary service.

service; telecommunication service: See ITU-T Recommendation I.112 [9], definition 201.

supplementary service: See ITU-T Recommendation I.210 [11], 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:

(Held)	Call Held auxiliary state
(Idle)	Idle auxiliary state
3PTY	Three-Party
ATM	Abstract Test Method
ATS	Abstract Test Suite
CEI	Connection Endpoint Identifier
CR	Call Reference
CR1	CR for a call in the Active call state and Idle auxiliary state
CR2	CR for a call in the Active call state and Call Held auxiliary state
DSS1	Digital Subscriber Signalling System No. one
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
TP	Test Purpose
TSS	Test Suite Structure
U00	Idle call state
U10	Active call state
U11	Disconnect Request call state
U19	Release Request call state

5   Test Suite Structure (TSS)

3PTY - User

User (S/T)

Valid behaviour
(01)

Syntactically invalid behaviour
(02)
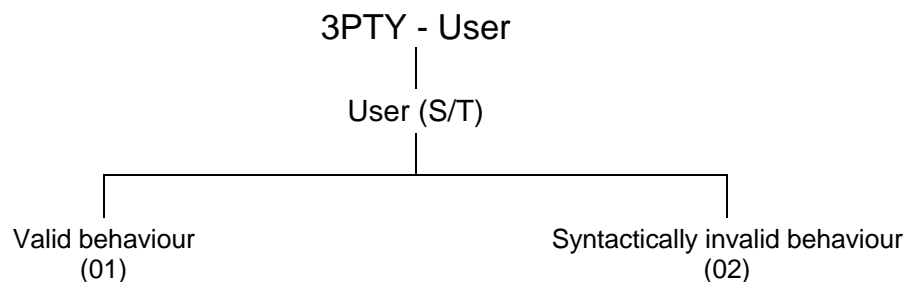
NOTE: Numbers in brackets represent group numbers and are used in TP identifiers.

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 300 188-1 [1], clauses 9, 10 and 14.

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* **<type of test>** *tab* **<condition>** *CR.*	see table 1 **subclause 0.0.0** **valid, invalid, inopportune** **mandatory, optional, conditional**
Stimulus	Ensure that the IUT in the <supplementary service state> and with CR1 in <basic call state> (<auxiliary state>) and with CR2 in <basic call state> (<auxiliary state>) <trigger> *see below for message structure* *or* <goal>	3PTY Idle state and U10 (Idle), U10 (Held), 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 call state(s) *or* and enters call 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 300 188-1 [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 300 188-2 [2]. The criteria applied included the following:

- only the requirements from the point of view of the T or coincident Sand T reference point are considered;

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

6.2 User TPs for 3PTY

NOTE: All calls have the same Connection Endpoint Identifier (CEI) value.

6.2.1 Valid behaviour

3PTY_U01_001   **subclause 9.2.1.1, 2nd paragraph**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Idle state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), to request the 3PTY supplementary service,
     sends a FACILITY message containing a Facility information element with a Begin3PTY invoke component using the call reference of CR2 and enters the Begin3PTY Request state and remains in the same call states.

3PTY_U01_002   **subclause 9.2.1.1, 5th paragraph**   **valid**   **mandatory**
Ensure that the IUT in the Begin3PTY Request state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with a Begin3PTY return result component,
     does not respond and enters the 3PTY Active state and remains in the same call states.

3PTY_U01_003   **subclause 9.2.1.2, 3rd paragraph**   **valid**   **mandatory**
Ensure that the IUT in the Begin3PTY Request state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with a Begin3PTY return error component,
     takes no action and enters the 3PTY Idle state and remains in the same call states.

3PTY_U01_004   **subclause 9.2.1.2, 5th paragraph**   **valid**   **mandatory**
Ensure that the IUT in the Begin3PTY Request state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with a reject component,
     takes no action and enters the 3PTY Idle state and remains in the same call states.

3PTY_U01_005   **subclause 9.2.2.1 a)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), in order to clear the call associated with CR1,
     sends a DISCONNECT message and enters the call state U11 for CR1 and remains in the same call state for CR2.

3PTY_U01_006   **subclause 9.2.2.1 a)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U11 (Idle) and CR2 in call state U10 (Held), on receipt of a RELEASE message for CR1,
     sends a RELEASE COMPLETE message and enters call state U00 for CR1, and sends a RETRIEVE message and enters the Retrieve Request auxiliary state for CR2 and remains in the same call state for CR2.

3PTY_U01_007   **subclause 9.2.2.1 b)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), in order to clear the call associated with CR2,
     sends a DISCONNECT message and enters the call state U11 for CR2 and remains in the same call state for CR1.

3PTY_U01_008   **subclause 9.2.3.1, 1st paragraph**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), in order to clear the calls associated with CR1 and CR2,
     sends a DISCONNECT message and enters state U11 for CR1 and sends a DISCONNECT message and enters U11 for CR2.

3PTY_U01_009   **subclause 9.2.3.1, 1st paragraph**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U11 and CR2 in call state U11 (Held), on receipt of a RELEASE message for CR1,
     sends a RELEASE COMPLETE message and enters state U00 for CR1 and does NOT send a RETRIEVE message for CR2 and remains in the same call state for CR2.

3PTY_U01_010   **subclause 9.2.4.1 a)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state
U10 (Held), to establish a private communication with the remote user associated with CR2,
     sends a FACILITY message for CR2 containing a Facility information element with an End3PTY
     invoke component and enters the End3PTY Request state and remains in the same call states.

3PTY_U01_011   **subclause 9.2.4.1 a)**   **valid**   **mandatory**
Ensure that the IUT in the End3PTY Request state (invoked for CR2), with CR1 in call state U10 (Idle) and
CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information
element with an End3PTY return result component,
     sends a HOLD message for CR1 and a RETRIEVE message for CR2 and enters the 3PTY Idle
     state and on completion of the Hold and Retrieve functions enters state U10 (Held) for CR1 and
     state U10 (Idle) for CR2.

3PTY_U01_012   **subclause 9.2.4.1 b)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state
U10 (Held), to establish a private communication with the remote user associated with CR1,
     sends a FACILITY message for CR1 containing a Facility information element with an End3PTY
     invoke component to the network and enters the End3PTY Request state and remains in the same
     call states.

3PTY_U01_013   **subclause 9.2.4.1 b)**   **valid**   **mandatory**
Ensure that the IUT in the End3PTY Request state (invoked for CR1), with CR1 in call state U10 (Idle) and
CR2 in call state U10 (Held), on receipt of a FACILITY message for CR1 containing a Facility information
element with an End3PTY return result component,
     takes no action and enters the 3PTY Idle state and remains in the same call states.

3PTY_U01_014   **subclause 9.2.4.2, 5th paragraph**   **valid**   **mandatory**
Ensure that the IUT in the End3PTY Request state (invoked for CR1), with CR1 in call state U10 (Idle) and
CR2 in call state U10 (Held), on receipt of a FACILITY message for CR1 containing a Facility information
element with an End3PTY return error component,
     takes no action and enters the 3PTY Active state and remains in the same call states.

3PTY_U01_015   **subclause 9.2.4.2, 5th paragraph**   **valid**   **mandatory**
Ensure that the IUT in the End3PTY Request state (invoked for CR2), with CR1 in call state U10 (Idle) and
CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information
element with an End3PTY return error component,
     takes no action and enters the 3PTY Active state and remains in the same call states.

3PTY_U01_016   **subclause 9.2.4.2, 6th paragraph**   **valid**   **mandatory**
Ensure that the IUT in the End3PTY Request state (invoked for CR2), with CR1 in call state U10 (Idle) and
CR2 in call state U10 (Held) (where a three-way conversation exists), on receipt of a FACILITY message
for CR2 containing a Facility information element with a reject component,
     takes no action and enters the 3PTY Active state and remains in the same call states.

3PTY_U01_017   **subclause 9.2.4.2, 6th paragraph**   **valid**   **mandatory**
Ensure that the IUT in the End3PTY Request state (invoked for CR1), with CR1 in call state U10 (Idle) and
CR2 in call state U10 (Held) (where a three-way conversation exists), on receipt of a FACILITY message
for CR1 containing a Facility information element with a reject component,
     takes no action and enters the 3PTY Active state and remains in the same call states.

3PTY_U01_018   **subclause 9.2.5.1 a)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state
U10 (Held) on receipt of a DISCONNECT message for CR1,
     sends a RELEASE message and enters call state U19 for CR1 and sends a RETRIEVE message
     and enters the Retrieve Request auxiliary state for CR2 and remains in the same call state for CR2.

3PTY_U01_019   **subclause 9.2.5.1 b)**   **valid**   **mandatory**
Ensure that the IUT in the 3PTY Active state, with CR1 in call state U10 (Idle) and CR2 in call state
U10 (Held) on receipt of a DISCONNECT message for CR2,
     responds with a RELEASE message and enters call state U19 for CR2 and remains in the same
     call state for CR1.

6.2.2 Syntactically invalid behaviour

3PTY_U02_001   subclauses 7.1 and 9.2.1.2   invalid   mandatory
Ensure that the IUT in the Begin3PTY Request state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with an invalid Begin3PTY return result component,
    sends a FACILITY message for CR2 containing a Facility information element with a reject component and remains in the same call states.

3PTY_U02_002   subclauses 7.1 and 9.2.1.2   invalid   mandatory
Ensure that the IUT in the Begin3PTY Request state, with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with an invalid Begin3PTY return error component,
    sends a FACILITY message for CR2 containing a Facility information element with a reject component and remains in the same call states.

3PTY_U02_003   subclauses 7.1 and 9.2.4.2   invalid   mandatory
Ensure that the IUT in the End3PTY Request state (invoked for CR2), with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with an invalid End3PTY return result component,
    sends a FACILITY message for CR2 containing a Facility information element with a reject component and remains in the same call states.

3PTY_U02_004   subclauses 7.1 and 9.2.4.2   invalid   mandatory
Ensure that the IUT in the End3PTY Request state (invoked for CR2), with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR2 containing a Facility information element with an invalid End3PTY return error component,
    sends a FACILITY message for CR2 containing a Facility information element with a reject component and remains in the same call states.

3PTY_U02_005   subclauses 7.1 and 9.2.4.2   invalid   mandatory
Ensure that the IUT in the End3PTY Request state (invoked for CR1), with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR1 containing a Facility information element with an invalid End3PTY return result component,
    sends a FACILITY message for CR1 containing a Facility information element with a reject component and remains in the same call states.

3PTY_U02_006   subclauses 7.1 and 9.2.4.2   invalid   mandatory
Ensure that the IUT in the End3PTY Request state (invoked for CR1), with CR1 in call state U10 (Idle) and CR2 in call state U10 (Held), on receipt of a FACILITY message for CR1 containing a Facility information element with an invalid End3PTY return error component,
    sends a FACILITY message for CR1 containing a Facility information element with a reject component and remains in the same call states.

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 300 188-1 [1].

History

Document history			
October 1995	Public Enquiry	PE 94:	1995-10-23 to 1996-02-16
August 1996	Vote	V 108:	1996-08-05 to 1996-09-27
October 1996	First Edition		