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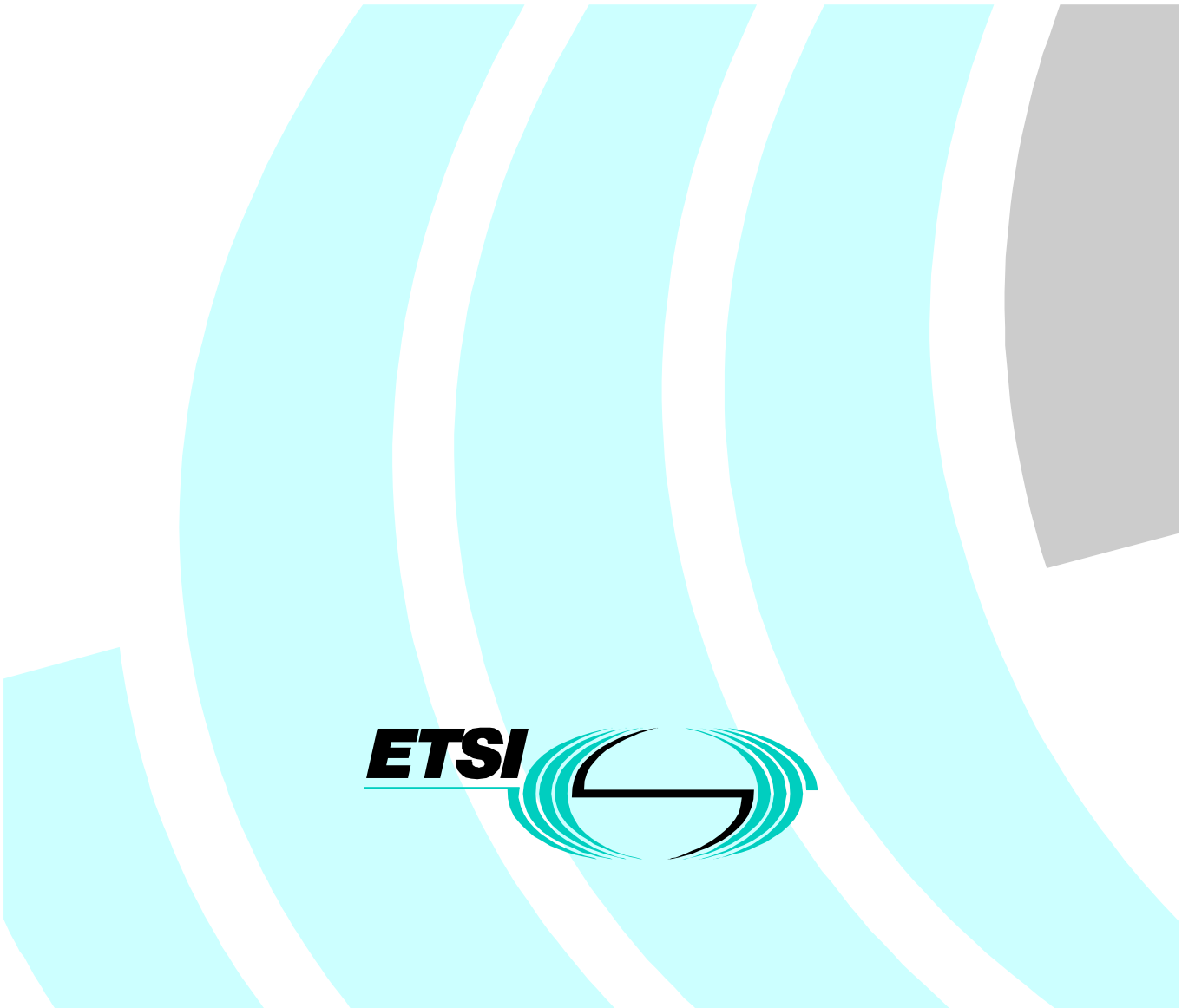
European Standard (Telecommunications series)

**Broadband Integrated Services Digital Network (B-ISDN);
Digital Subscriber Signalling System No. two (DSS2) protocol;
Switched virtual path capability;
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 deliverable covering the Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Switched virtual path capability, as identified below:

Part 1: "Protocol Specification [ITU-T Recommendation Q.2934 (1999), modified]";

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 user Test Suite Structure and Test Purposes (TSS&TP) for the T_B reference point or coincident S_B and T_B reference point (as defined in ITU-T Recommendation I.413 [5]) of implementations conforming to the standards for the signalling user-network layer 3 specification for the switched virtual path capability of the Digital Subscriber Signalling System No. 2 (DSS2) protocol for the pan-European Broadband Integrated Services Digital Network (B-ISDN), EN 301 487-1 [3].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma based on the present document.

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

[2] ETSI EN 300 443-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Part 1: Protocol specification [ITU-T Recommendation Q.2931 (1995), modified]".

[3] ETSI EN 301 487-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling No. two (DSS2) protocol; Switched virtual path capability; Part 1: Protocol Specification [ITU-T Recommendation Q.2934 (1999), modified]".

[4] ETSI EN 301 487-2: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for switched virtual path capability; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[5] ITU-T Recommendation I.413 (1993): "B-ISDN user-network interface".

[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] ITU-T Recommendation Q.2934: "Digital Subscriber Signalling System No. 2 - Switched virtual path capability".

[9] ETSI EN 300 443-3: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 487-1 [3], EN 300 443-1 [2] and the following apply.

3.1.1 Definitions related to conformance testing

abstract test case: Refer to ISO/IEC 9646-1 [6].

Abstract Test Method (ATM): 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].

lower tester: 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].

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

3.1.2 Definitions related to the IUT

user: DSS2 protocol entity at the User side of the user-network interface where a T_B reference point or coincident S_B and T_B reference point applies

user (S_B/T_B): DSS2 protocol entity at the User side of the user-network interface where a coincident S_B and T_B reference point applies

user (T_B): DSS2 protocol entity at the User side of the user-network interface where a T_B reference point applies (user is a private ISDN)

3.2 Abbreviations

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

ATM	Abstract Test Method
ATS	Abstract Test Suite
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TP	Test Purpose
TSS	Test Suite Structure
U0	Null call state
U1	Call Initiated call state
U7	Call Received call state
U8	Connect request call state
U9	Incoming Call Proceeding call state

4 Test Suite Structure (TSS)

Signalling procedures at the coincident S_B/T_B and at the T_B reference points

Call/connection establishment at the originating interface	(01)
Call/connection establishment at the destination interface	(02)
Restart procedure	(03)
Combination of parameters	(04)

Figure 1: Test suite structure

5 Test Purposes (TP)

5.1 Introduction

The procedures for the switched virtual path capability are based on the procedures of EN 300 443-1 [2]. Therefore the test purposes defined in EN 300 443-3 [9] apply. Consequently, only for test requirements in addition to the requirements of EN 300 443-1 [2] TPs are defined.

5.1.1 TP naming convention

TPs are numbered, starting at 01, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite (see table 1).

Table 1: TP identifier naming convention scheme

Identifier:	**<suite_id>_<group>_<nnn>**		
<suite_id>	=	type of IUT:	"SVPU" for **S**witched **V**irtual **P**ath capability, IUT = **U**ser
<group>	=	group number:	two character field representing the group reference according to TSS
<nn>	=	sequential number:	(01-99)

5.1.2 Source of TP definition

The TPs are based on EN 301 487-1 [3].

5.1.3 Test strategy

As the base standard EN 301 487-1 [3] 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 301 487-2 [4].

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 [1]).

5.1.4 Test of call states

Many TPs include a reference to the IUT's final call state after the realization of the TP. In these cases the TP includes the requirement to ensure that the IUT has entered this particular final call state. Ensuring that the IUT is in a particular call state shall be realized by following the procedures described in clause 5.6.11 of EN 300 443-1 [2]. According to these procedures, the IUT on receipt of a STATUS ENQUIRY message, shall respond with a STATUS message indicating, in the fifth octet of the Call state information element, the current call state of the IUT. This exchange of messages is not mentioned explicitly in each TP but is considered to be implicit in the reference to the final call state. This way of phrasing the TPs has been used to avoid over-complicating the text and structure of the TPs and to improve the readability.

5.2 TPs for the ATM traffic descriptor modification with negotiation, user

All PICS items referred to in this clause are as specified in EN 301 487-2 [4] 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.

5.2.1 Signalling procedures at the coincident S_B/T_B and at the T_B reference points

5.2.1.1 Call/connection establishment at the originating interface (01)

Test purposes for EN 301 487-1 [3], clause 9.1.

NOTE: The test purposes of the test group 02 "Associated signalling" of EN 300 443-3 [9] do not apply for the virtual switched patch capability.

SVPU_01_01
Ensure that the IUT in U0, to initiate the establishment of a switched virtual path,
sends a SETUP message (Broadband bearer capability present, bearer class field = Transparent VP Service, Connection identifier absent or present with: VP-associated signalling = explicit indication of VPCI, preferred exclusive = exclusive VPCI; no VCI) and enters U1.

5.2.1.2 Call/connection establishment at the destination interface (02)

Test purposes for EN 301 487-1 [3], clause 9.2.

NOTE: The test purposes of the test group 09 "Associated signalling" of EN 300 443-3 [9] do not apply for the virtual switched patch capability.

SVPU_02_01
Ensure that the IUT in U0, on receipt of a SETUP message (Broadband bearer capability present,
bearer class field = Transparent VP Service, Connection identifier absent), when any VPCI is available,
sends any of a CALL PROCEEDING, ALERTING or CONNECT message (Connection identifier present, VP-associated signalling = explicit indication of VPCI, preferred exclusive = exclusive VPCI; no VCI, virtual path connection identifier indicating a specific VPCI) and enters the relevant call state U9, U7 or U8.

SVPU_02_02
Ensure that the IUT in U0, on receipt of a SETUP message (Broadband bearer capability present, bearer class field = Transparent VP Service, Connection identifier present, VP-associated signalling = explicit indication of VPCI, preferred exclusive = exclusive VPCI; no VCI), when the indicated VPCI is available,
sends any of a CALL PROCEEDING, ALERTING or CONNECT message (Connection identifier present, VP-associated signalling = explicit indication of VPCI, preferred exclusive = exclusive VPCI; no VCI, virtual path connection identifier indicating the requested VPCI) and enters the relevant call state U9, U7 or U8.

SVPU_02_03
Ensure that the IUT in U0, on receipt of a SETUP message (Broadband bearer capability present, bearer class field = Transparent VP Service, Connection identifier absent), when no VPCI can be allocated,
sends a RELEASE COMPLETE message (Cause value = 45 "No VPCI/VCI available") and remains in U0.

SVPU_02_04
Ensure that the IUT in U0, on receipt of a SETUP message (Broadband bearer capability present, bearer class field = Transparent VP Service, Connection identifier present, VP-associated signalling = explicit indication of VPCI, preferred exclusive = exclusive VPCI; no VCI), when the indicated VPCI is not available,
sends a RELEASE COMPLETE message (Cause value = 35 "requested VPCI/VCI not available") and remains in U0.

5.2.1.3 Restart procedure (03)

Test purposes for EN 301 487-1 [3], clause 9.3.

The test purposes of the test groups 18 "Sending RESTART" and 19 "Receipt of RESTART" of EN 300 443-3 [9] apply. Throughout the text of those test purposes only the descriptors of the restart indicator class of the Restart indicator information element have to be replaced by the terms specific to the switched virtual path capability:

- Restart indicator class = all virtual channels in the indicated VPC which are controlled via the signalling virtual channel on which the RESTART message is sent;

  replace with:

  Restart indicator class = indicated switched virtual path or all virtual channels in the indicated VPC which are controlled via the signalling virtual channel on which the RESTART message is sent; and

- Restart indicator class = all virtual channels controlled by the layer 3 entity which sends the RESTART message;

  replace with:

  Restart indicator class = all Switched Virtual Channels and switched virtual paths controlled by the layer 3 entity which sends the RESTART message.

5.2.1.4 Combination of parameters (04)

Test purposes for EN 301 487-1 [3], annex A.

SVPU_04_01
Ensure that the IUT in U0, on receipt of a SETUP message (Broadband bearer capability present, invalid combination of parameters in octet 5 and 5a),
sends a RELEASE COMPLETE message (Cause value = 65 "Bearer capability not supported") and remains in U0.

SVPU_04_02
Ensure that the IUT in U0, on receipt of a SETUP message (Broadband bearer capability present, invalid combination of parameters in octet 5 and 5a with the traffic parameters of the ATM traffic descriptor information element),
sends a RELEASE COMPLETE message (Cause value = 73 "Unsupported combination of traffic parameters") and remains in U0.

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 5;

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 [7].

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 [7], shall be used by any organization claiming to provide a comprehensive testing service for network equipment claiming conformance to EN 301 487-1 [3].

Annex A (informative): Bibliography

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

History

Document history				
V1.1.1	January 2001	Public Enquiry	PE 20010601:	2001-01-31 to 2001-06-01
V1.1.1	July 2001	Vote	V 20010831:	2001-07-02 to 2001-08-31
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