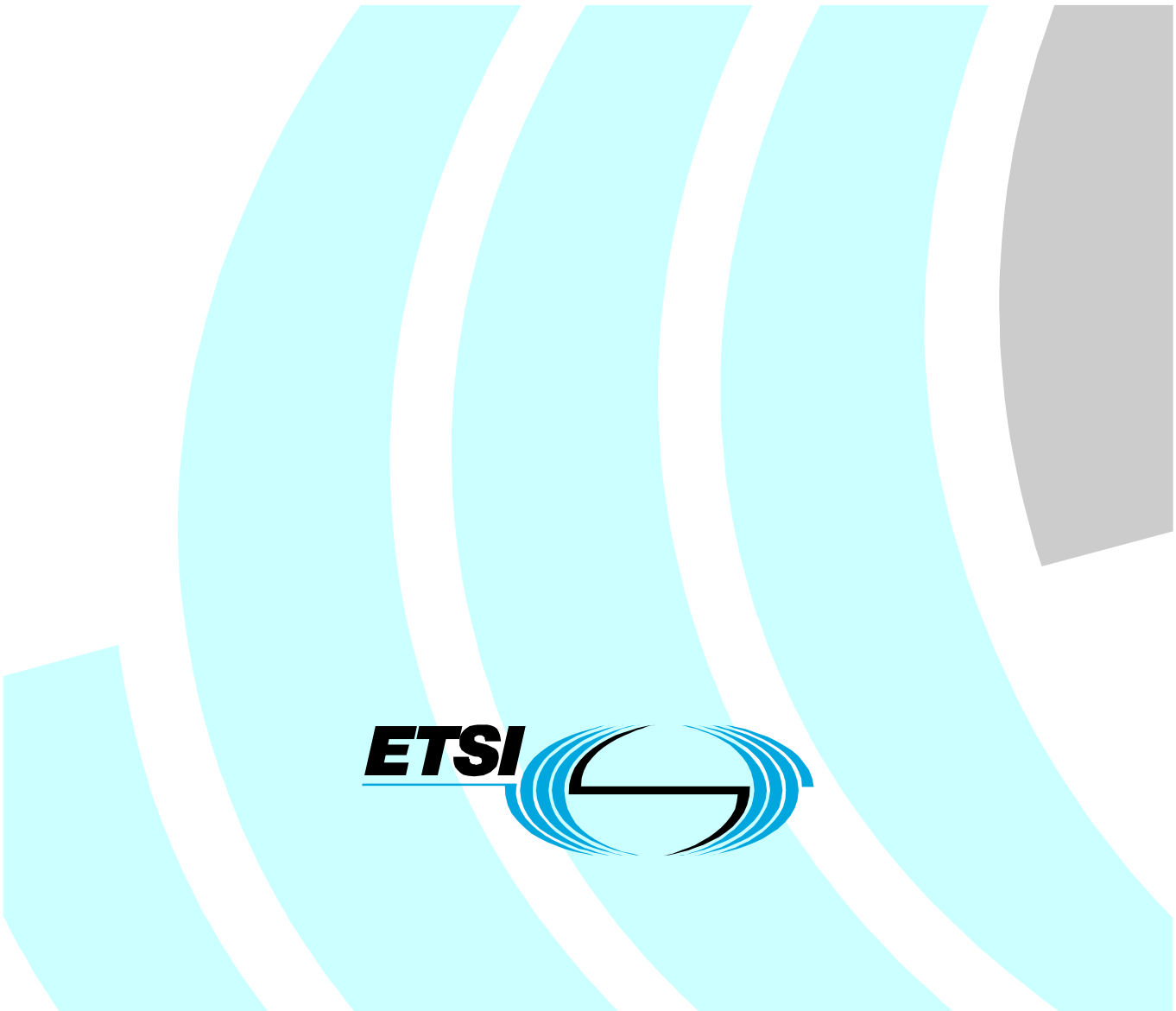
ETSI EN 301 068-4 V1.2.1 (2002-08)

European Standard (Telecommunications series)

**Broadband Integrated Services Digital Network (B-ISDN);
Digital Subscriber Signalling System No. two (DSS2) protocol;
Connection characteristics;
ATM transfer capability and traffic parameter indication;
Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma 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 4 of a multi-part deliverable covering the Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. 2 (DSS2) protocol; Connection characteristics; ATM transfer capability and traffic parameter indication, as identified below:

Part 1: "Protocol specification [ITU-T Recommendations Q.2961.1 (1995), Q.2961.2 (1997), Q.2961.3 (1997), Q.2961.4 (1997), Q.2961.6 (1998), 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".

National transposition dates	
Date of adoption of this EN:	2 August 2002
Date of latest announcement of this EN (doa):	30 November 2002
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2003
Date of withdrawal of any conflicting National Standard (dow):	31 May 2003

1 Scope

The present document specifies the user Abstract Test Suite (ATS) for the T_B reference point or coincident S_B and T_B reference point (as defined in ITU-T Recommendation I.413 [6]) of implementations conforming to the standards for the signalling user-network layer 3 specification for ATM transfer capability and traffic parameter indication of the Digital Subscriber Signalling System No. two (DSS2) protocol for the pan-European Broadband Integrated Services Digital Network (B-ISDN), EN 301 068-1 [1].

A further part of the present document specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma. Other parts specify the TSS&TP and the ATS and partial PIXIT proforma for the Network side of the T_B reference point or coincident S_B and T_B reference point of implementations conforming to EN 301 068-1 [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 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 EN 301 068-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; ATM transfer capability and traffic parameter indication; Part 1: Protocol specification [ITU-T Recommendations Q.2961.1 (1995), Q.2961.2 (1997), Q.2961.3 (1997), Q.2961.4 (1997) and Q.2961.6 (1997), modified]".

[2] ETSI EN 301 068-2: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Connection characteristics; ATM transfer capability and traffic parameter indication; 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] ISO/IEC 9646-3: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".

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

[7] 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]".

[8] ISO/IEC 9646-4: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 4: Test realization".

[9] ISO/IEC 9646-5: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process".

[10] ETSI EN 300 443-2: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Parts 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 068-1 [1], EN 300 443-1 [7] and the following apply:

3.1.1 Definitions related to conformance testing

Abstract test case: See ISO/IEC 9646-1 [3].

Abstract Test Method (ATM): See ISO/IEC 9646-1 [3].

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

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

System Under Test (SUT): See ISO/IEC 9646-1 [3].

Upper Tester (UT): See ISO/IEC 9646-1 [3].

Lower Tester (LT): See ISO/IEC 9646-1 [3].

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

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

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

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

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

Point of Control and Observation (PCO): See ISO/IEC 9646-1 [3].

3.1.2 Definitions related to EN 301 068-1

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

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

user (TB): DSS2 protocol entity at the User side of the user-network interface where a TB 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
B-ISDN	Broadband Integrated Services Digital Network
DSS2	Digital Subscriber Signalling System No. two
ExTS	Executable Test Suite

IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SCTR	System Conformance Test Report
SUT	System Under Test
TCP	Termination Connection Point
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester
U0	Null link state
U7	Call Received link state
VCI	Virtual Channel Identifier
VPCI	Virtual Path Connection Identifier

4 Abstract Test Method (ATM)

The remote test method is applied for the user ATS. The Point of Control and Observation (PCO) resides at the service access point between layers 2 and 3. This PCO is named "L0" (for Lower). The L0 PCO is used to control and observe the behaviour of the Implementation Under Test (IUT) and test case verdicts are assigned depending on the behaviour observed at this PCO.

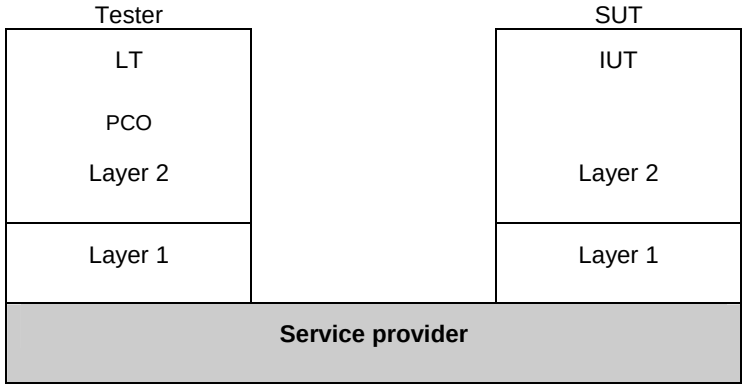

Figure 1: Remote test method

ISO/IEC 9646-2 [4] allows the informal expression of Test Co-ordination Procedures (TCP) between the System Under Test (SUT) upper layer(s) and the Lower Tester (LT). In the ATS contained in annex C, TCP is achieved by use of a second "informal" PCO, called "O" (for Operator). This PCO is used to specify control but not observation above the IUT and consequently, events at this PCO are never used to generate test case verdicts. The use of this O PCO is regarded as a preferred alternative to the use of the implicit send event, in that it allows the ATS to specify in a clear and meaningful way what actions are required to be performed on the IUT.

5 Untestable Test Purposes

There are no untestable test purposes associated with this ATS.

6 ATS to TP map

The identifiers used for the TPs are reused as test case names. Thus there is a straightforward one-to-one mapping.

7 PCTR conformance

A test laboratory, when requested by a client to produce a PCTR, is required, as specified in ISO/IEC 9646-5 [9], to produce a PCTR conformant with the PCTR template given in annex B of ISO/IEC 9646-5 [9].

Furthermore, a test laboratory, offering testing for the ATS specification contained in annex C, when requested by a client to produce a PCTR, is required to produce a PCTR conformant with the PCTR proforma contained in annex A of the present document.

A PCTR which conforms to this PCTR proforma specification shall preserve the content and ordering of the clauses contained in annex A. Clause A.6 of the PCTR may contain additional columns. If included, these shall be placed to the right of the existing columns. Text in italics may be retained by the test laboratory.

8 PIXIT conformance

A test realizer, producing an executable test suite for the Abstract Test Suite (ATS) specification contained in annex C, is required, as specified in ISO/IEC 9646-4 [8], to produce an augmented partial PIXIT proforma conformant with this partial PIXIT proforma specification.

An augmented partial PIXIT proforma which conforms to this partial PIXIT proforma specification shall, as a minimum, have contents which are technically equivalent to annex B. The augmented partial PIXIT proforma may contain additional questions that need to be answered in order to prepare the Means Of Testing (MOT) for a particular Implementation Under Test (IUT).

A test laboratory, offering testing for the ATS specification contained in annex C, is required, as specified in ISO/IEC 9646-5 [9], to further augment the augmented partial PIXIT proforma to produce a PIXIT proforma conformant with this partial PIXIT proforma specification.

A PIXIT proforma which conforms to this partial PIXIT proforma specification shall, as a minimum, have contents which are technically equivalent to annex B. The PIXIT proforma may contain additional questions that need to be answered in order to prepare the test laboratory for a particular IUT.

9 ATS Conformance

The test realizer, producing a Means Of Testing (MOT) and Executable Test Suite (ExTS) for this Abstract Test Suite (ATS) specification, shall comply with the requirements of ISO/IEC 9646-4 [8]. In particular, these concern the realization of an Executable Test Suite (ExTS) based on each ATS. The test realizer shall provide a statement of conformance of the MOT to this ATS specification.

An ExTS which conforms to this ATS specification shall contain test groups and test cases which are technically equivalent to those contained in the ATS in annex C. All sequences of test events comprising an abstract test case shall be capable of being realized in the executable test case. Any further checking which the test system might be capable of performing is outside the scope of this ATS specification and shall not contribute to the verdict assignment for each test case.

Test laboratories running conformance test services using this ATS shall comply with ISO/IEC 9646-5 [9].

A test laboratory which claims to conform to this ATS specification shall use an MOT which conforms to this ATS.

Annex A (normative): Protocol Conformance Test Report (PCTR) proforma

A.1 Identification summary

A.1.1 Protocol conformance test report

PCTR number:	
PCTR Date:	
Corresponding SCTR number:	
Corresponding SCTR date:	
Test Laboratory identification:	
Test Laboratory Manager:	
Signature:	

A.1.2 IUT identification

Name:	
Version:	
Protocol specification:	EN 301 068-1
PICS:	
Previous PCTRs (if any)	

A.1.3 Testing environment

PIXIT Reference number:	
ATS Specification:	EN 301 068-4
Abstract Test Method:	Remote test method (see ISO/IEC 9646-2)
Means of Testing identification:	
Dates of testing:	
Conformance Log reference(s):	
Retention Date for Log reference(s):	

A.1.4 Limits and reservations

Additional information relevant to the technical contents or further use of the test report, or to the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the present document.

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A.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the PCTR, for example, to note disagreement between the two parties.

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A.2 IUT Conformance status

This IUT has or has not been shown by conformance assessment to be non-conforming to the specified protocol specification.

Strike the appropriate words in this sentence. If the PICS for this IUT is consistent with the static conformance requirements (as specified in clause A.3 of the present document) and there are no "FAIL" verdicts to be recorded (in clause A.6) strike the words "has or", otherwise strike the words "or has not".

A.3 Static conformance summary

The PICS for this IUT is or is not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in this sentence.

A.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the IUT.

Strike the appropriate words in this sentence. If there are no "FAIL" verdicts to be recorded (in clause A.6 of the present document) strike the words "did or", otherwise strike the words "or did not".

Summary of the results of groups of tests:

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A.5 Static conformance review report

If clause A.3 indicates non-conformance, this clause itemizes the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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A.6 Test campaign report

ATS Reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
Signalling procedures at the coincident S_B/T_B and at the T_B reference points				
INDU_01_01				
INDU_01_02				
INDU_01_03				
INDU_02_01				
INDU_02_02				
INDU_02_03				
INDU_02_04				
INDU_02_05				
INDU_02_06				
INDU_02_07				
INDU_02_08				
INDU_02_09				
INDU_02_10				
INDU_03_01				
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INDU_07_08				
INDU_08_01				
INDU_08_02				
INDU_09_01				
INDU_09_02				
INDU_09_03				
INDU_09_04				
INDU_09_05				

ATS Reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
INDU_10_01				
INDU_11_01				
INDU_11_02				
INDU_11_03				
INDU_11_04				
INDU_12_01				
INDU_12_02				
INDU_12_03				
INDU_12_04				
INDU_13_01				
INDU_13_02				
INDU_13_03				
INDU_13_04				
INDU_14_01				
INDU_14_02				
INDU_14_03				
INDU_14_04				
INDU_14_05				
INDU_14_06				
INDU_14_07				
INDU_14_08				
INDU_14_09				
INDU_14_10				

A.7 Observations

Additional information relevant to the technical content of the PCTR are given here.

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Annex B (normative): Partial PIXIT proforma

B.1 Identification summary

PIXIT Number:

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Test Laboratory Name:

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Date of Issue:

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Issued to:

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B.2 Abstract test suite summary

Protocol Specification:	EN 301 068-1
ATS Specification:	EN 301 068-4
Abstract Test Method:	Remote test method (see ISO/IEC 9646-2)

B.3 Test laboratory

Test Laboratory Identification:

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Accreditation status of the test service:

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Accreditation reference:

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Test Laboratory Manager:

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Test Laboratory contact:

.....

Means of Testing:

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Test Laboratory instructions for Completion:

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B.4 Client (of the Test Laboratory)

Client Identification:

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Client Test manager:

.....

Client contact:

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Test Facilities required:

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B.5 SUT

Name:

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Version:

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SCS Reference:

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Machine configuration:

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Operating System Identification:

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IUT Identification:

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PICS (all layers):

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Limitations of the SUT:

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Environmental Conditions:

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B.6 Protocol information

B.6.1 Protocol identification

Specification reference: EN 301 068-1

Protocol Version:

PICS Reference:

NOTE: The PICS Reference should reference a completed PICS which is conformant with the PICS proforma contained in EN 300 443-2 and EN 301 068-2.

B.6.2 Configuration to be tested

Table B.1: Configuration to be tested

Item	Configuration Is the access to be tested ...	Supported Y/N
1.1	releasing layer 2 after entering the Null link state U0?	
1.2	stable in Call Received link state U7 (i.e. CONNECT message is not sent automatically)?	

B.6.3 Test management timers

Table B.2: Timer values

Item	Timer Give a value for the timer that is used ...	Value (in seconds)
3.1	as network side value for T310 (default value 10 s).	
3.2	to wait for the IUT to respond to a stimulus sent by the tester (TAC).	
3.3	to control that the IUT does not respond to a stimulus sent by the tester (TNOAC).	
3.4	to wait for the test operator to perform an implicit send action (TWAIT).	
NOTE: The IUT provider may fill in a value range rather than a fixed value for the test management timers. During test execution the test laboratory will choose specific values for the timers dependant on the means of testing used. These specific values may even be beyond the range given by the IUT provider, if this is necessary for achieving satisfactory test results.		

B.6.4 Parameter Values

Table B.3: Parameter values

Item	Parameter values Give ...	Value
4.1	a coding of the Type of number and the Addressing/Numbering plan identification fields of the Called party number information elements to be sent to the IUT.	
4.2	a coding of the number digits to be sent to the IUT.	
4.3	a coding of the ATM traffic descriptor (octet 5 onwards) to be sent to the IUT at call establishment.	
4.4	a coding of a Bearer capability information element, which the IUT is compatible with, for the purpose of accepting incoming calls.	
4.5	a coding of a Bearer capability information element, which the IUT is compatible with, for the purpose of accepting incoming calls with ABR transfer capability.	
4.6	a coding of a Bearer capability information element, which the IUT is compatible with, for the purpose of accepting incoming calls including the broadband transfer capability field.	
4.7	a coding of a Bearer capability information element, which the IUT is compatible with, for the purpose of accepting incoming calls with SBR2 transfer capability.	
4.8	a coding of a Bearer capability information element, which the IUT is compatible with, for the purpose of accepting incoming calls with SBR3 transfer capability.	
4.9	a coding of a Bearer capability information element, which the IUT is incompatible with, for the purpose of rejecting incoming calls.	
4.10	a coding of a compatible ABR set-up parameter i.e. (octet 5 onwards) to be sent to the IUT.	
4.11	a coding of an incompatible ABR set-up parameter i.e. (octet 5 onwards) to be sent to the IUT.	
4.12	a coding of the minimum acceptable ATM traffic descriptor (octet 5 onwards) to be sent to the IUT.	
4.13	a coding of the ATM traffic descriptor (octet 5 onwards) to be sent to the IUT.	
4.14	a coding of a compatible ATM traffic descriptor including sustainable cell rate parameter (octet 5 onwards) to be sent to the IUT.	
4.15	a coding of a compatible ATM traffic descriptor including MCR for ABR negotiation (octet 5 onwards) to be sent to the IUT.	
4.16	a coding of a compatible ATM traffic descriptor for the SBR2 transfer capability (octet 5 onwards) to be sent to the IUT.	
4.17	a coding of a compatible ATM traffic descriptor for the SBR3 transfer capability (octet 5 onwards) to be sent to the IUT.	
4.18	a coding of a not supported ATM traffic descriptor (octet 5 onwards) to be sent to the IUT.	
4.19	a coding of a compatible ATM traffic descriptor including RM pcr parameter for ATM block transfer negotiation (octet 5 onwards) to be sent to the IUT.	
4.20	a value for the preferred VPCI.	
4.21	a value for the preferred VCI.	

Annex C (normative): Abstract Test Suite (ATS)

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [5].

The ATS was developed on a separate TTCN software tool and therefore the TTCN tables are not completely referenced in the table of contents. The ATS itself contains a test suite overview part which provides additional information and references.

C.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (068_4_3.PDF contained in archive en_30106804v010201p0.zip) which accompanies the present document.

C.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (068_4_3.MP contained in archive en_30106804v010201p0.zip) which accompanies the present document.

NOTE: Where an ETSI Abstract Test Suite (in TTCN) is published in both .GR and .MP format these two forms shall be considered equivalent. In the event that there appears to be syntactical or semantic differences between the two then the problem shall be resolved and the erroneous format (whichever it is) shall be corrected.

Annex D (informative): Bibliography

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

History

Document history		
V1.1.1	October 2000	Publication
V1.2.1	April 2002	One-step Approval Procedure OAP 20020802: 2002-04-03 to 2002-08-02
V1.2.1	August 2002	Publication