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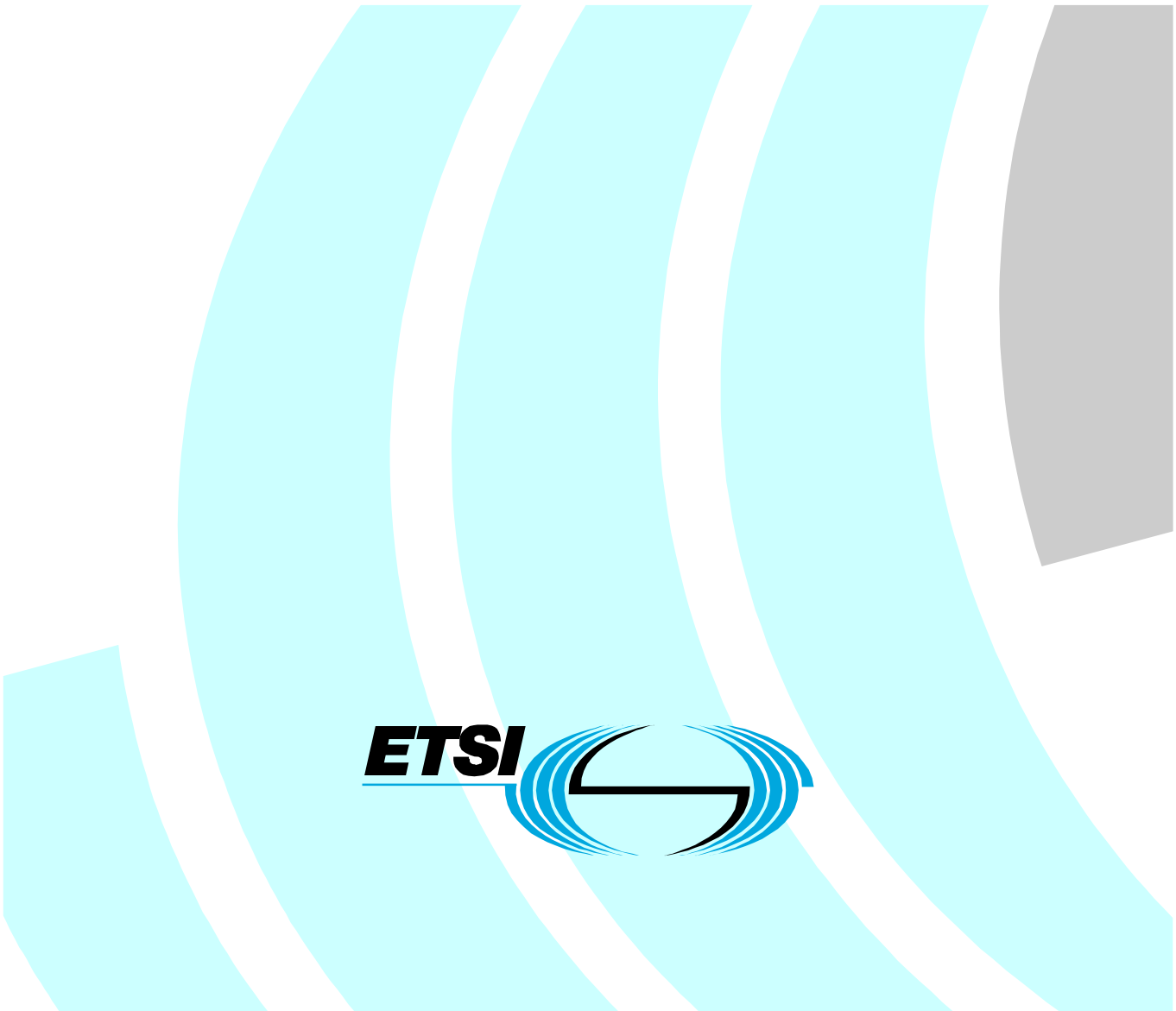
European Standard (Telecommunications series)

Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Quality of Service class and parameters indication at call/connection establishment; Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user



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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
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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 Digital Subscriber Signalling System No. two (DSS2) protocol specification for the Broadband Integrated Services Digital Network (B-ISDN) to support Quality of Service class and parameters indication at call/connection establishment, as identified below:

Part 1: "Protocol specification [ITU-T Recommendations Q.2965.1 (1999) and Q.2965.2 (1999), modified]";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification [ITU-T Recommendations Q.2965.1B (2000) and Q.2965.2B (2000), modified]";

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:	11 October 2002
Date of latest announcement of this EN (doa):	31 January 2003
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Date of withdrawal of any conflicting National Standard (dow):	31 July 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 Broadband Integrated Services Digital Network (B-ISDN) Digital Subscriber Signalling System No. two (DSS2) protocol specification for support of Quality of Service Class and parameters indication at call/connection establishment defined in EN 301 815-1 [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 301 815-1 [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 301 815-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Quality of Service Class and parameters indication at call/connection establishment; Part 1: Protocol specification [ITU-T Recommendations Q.2965.1 (1999) and Q.2965.2 (1999), modified]".

[2] ETSI EN 301 815-2: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Quality of Service class and parameters indication at call/connection establishment; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification [ITU-T Recommendations Q.2965.1B (2000) and Q.2965.2B (2000), modified]".

[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 301 815-1 [1], EN 300 443-1 [7] and the following apply.

3.1.1 Definitions related to conformance testing

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

Abstract Test Method (ATM): 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].

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

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

Lower Tester (LT): 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].

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

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

3.1.2 Definitions related to EN 301 815-1

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
B-ISDN	Broadband Integrated Services Digital Network
DSS2	Digital Subscriber Signalling System No. two
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
PCO	Point of Control and Observation
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SUT	System Under Test
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester
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.

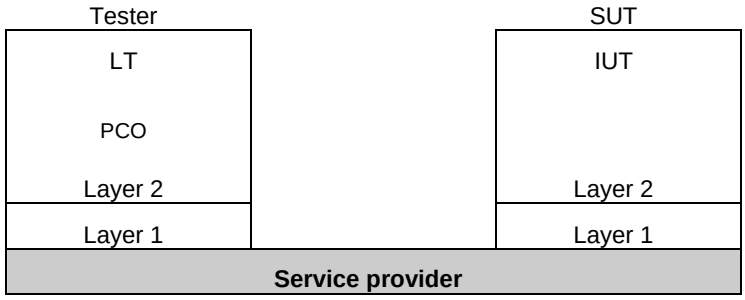

Figure 1: Remote test method

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 301 815-1
PICS:	
Previous PCTRs (if any):	

A.1.3 Testing environment

PIXIT Reference number:	
ATS Specification:	EN 301 815-4
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 report.

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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				
QOSU_01_01				
QOSU_01_02				
QOSU_01_03				
QOSU_01_04				
QOSU_02_01				
QOSU_02_02				
QOSU_02_03				
QOSU_02_04				
QOSU_02_05				
QOSU_02_06				
QOSU_02_07				
QOSU_02_08				
QOSU_02_09				
QOSU_02_10				
QOSU_02_11				
QOSU_02_12				
QOSU_02_13				
QOSU_02_14				
QOSU_02_15				
QOSU_02_16				
QOSU_02_17				
QOSU_02_18				
QOSU_02_19				
QOSU_02_20				
QOSU_02_21				
QOSU_02_22				
QOSU_02_23				
QOSU_03_01				
QOSU_03_02				
QOSU_03_03				
QOSU_03_04				
QOSU_03_05				
QOSU_03_06				
QOSU_03_07				
QOSU_03_08				
QOSU_03_09				

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 301 815-1
ATS Specification:	EN 301 815-4
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:

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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:

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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 301 815-1

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 301 815-2.

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?	

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 T308 (default value 4 seconds).	
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 a Bearer capability information element, which the IUT is compatible with, for the purpose of accepting incoming calls.	
4.2	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.	
4.3	a coding of the number digits to be sent to the IUT.	
4.4	a coding of the ATM traffic descriptor information element, which the IUT is compatible with, for the purpose of accepting incoming calls.	
4.5.1	a coding of a Quality of service information element, which the IUT is compatible with, for the purpose of accepting incoming calls.	
4.5.2	a coding of a Quality of service information element indicating a QOS class that is not supported, for the purpose of rejecting incoming calls (see note).	
4.5.3	a coding of a Quality of service information element indicating a QOS class that can not be provided in combination with the other traffic parameters (given in PIXIT item 4.1 and 4.4), for the purpose of rejecting incoming calls (see note).	
4.6.1.1	a coding of the cumulative end-to-end transit delay (octets 6 and 7 of the End-to-end transit delay information element), which the IUT is compatible with, for the purpose of accepting incoming calls.	
4.6.1.2	a coding of the maximum end-to-end transit delay (octet 9 and 10 of the End-to-end transit delay information element) to be sent together with PIXIT item 4.6.1.1 (see note).	
4.6.2.1	a coding of the cumulative end-to-end transit delay (octet 6 and 7 of the End-to-end transit delay information element), that cannot be supported), for the purpose of rejecting incoming calls (see note).	
4.6.2.2	a coding of the maximum end-to-end transit delay (octet 9 and 10 of the End-to-end transit delay information element), that cannot be supported, for the purpose of rejecting incoming calls (see note).	
4.6.3.1	a coding of the cumulative end-to-end transit delay (octet 6 and 7 of the End-to-end transit delay information element), that can not be provided in combination with the other traffic parameters (given in PIXIT item 4.1, 4.4 and 4.5.1), for the purpose of rejecting incoming calls (see note).	
4.6.3.2	a coding of the maximum end-to-end transit delay (octet 9 and 10 of the End-to-end transit delay information element), that can not be provided in combination with the other traffic parameters (given in PIXIT item 4.1, 4.4 and 4.5.1), for the purpose of rejecting incoming calls (see note).	
4.7.1	a coding of an Extended Quality of service information element, which the IUT is compatible with, for the purpose of accepting incoming calls.	
4.7.2	a coding of an Extended Quality of service information element indicating a QOS class that is not supported, for the purpose of rejecting incoming calls (see note).	
4.7.3	a coding of an Extended Quality of service information element indicating a QOS class that can not be provided in combination with the other traffic parameters (given in PIXIT item 4.1, 4.4 and 4.6.1), for the purpose of rejecting incoming calls (see note).	
4.8	a value for the preferred VPCI.	
4.9	a value for the preferred VCI.	
NOTE: These fields need only be completed, if the specified coding exists.		

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 (815_4_1.PDF contained in archive en_30181504v010101p0.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 (815_4_1.MP contained in archive en_30181504v010101p0.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".

ETSI EN 301 815-3: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Quality of Service Class and parameters indication at call/connection establishment; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".

History

Document history			
V1.1.1	April 2002	Public Enquiry	PE 20020802: 2002-04-03 to 2002-08-02
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