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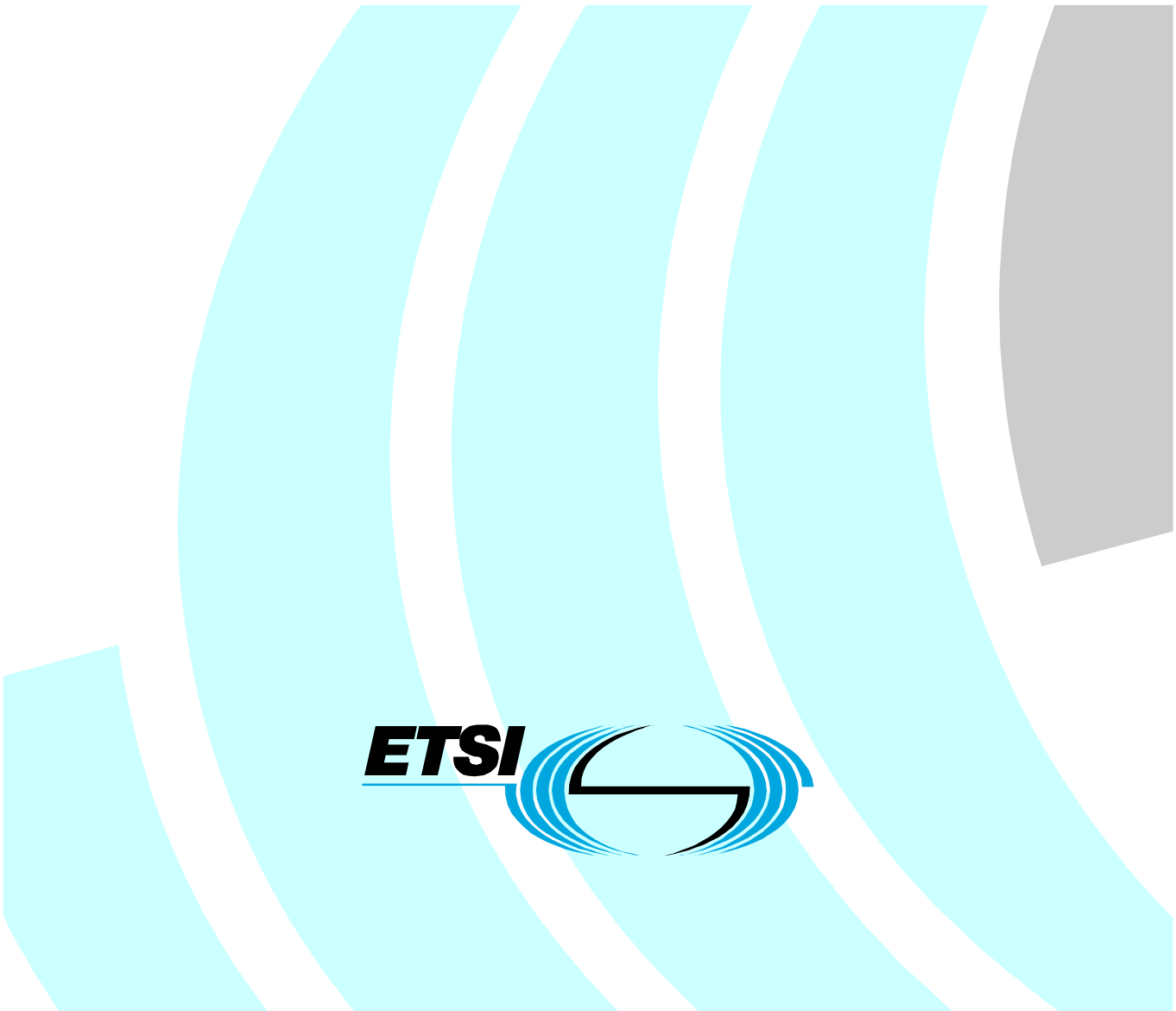
European Standard (Telecommunications series)

Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 6: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the NMDS Layer 2 PSTN-GW function (NTN side)



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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 6 of a multi-part deliverable covering the Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS), as identified below:

Part 1: "NMDS interface specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the data link layer (NTN side)";

Part 4: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (NTN side)";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (LE side)";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the NMDS Layer 2 PSTN-GW function (NTN side)";

Part 7: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the PSTN NMDS interface Layer 3 (NTN side)";

Part 8: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the PSTN NMDS interface Layer 3 (LE side)".

National transposition dates	
Date of adoption of this EN:	8 February 2002
Date of latest announcement of this EN (doa):	31 May 2002
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Date of withdrawal of any conflicting National Standard (dow):	30 November 2002

1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the user-network interface data link layer PSTN-GW part at the T* or V1* reference points shown in figure 2 of EN 301 141-1 [1]. The present document contains the ATS and partial PIXIT proforma for only the NTN side.

EN 301 141-2 [2] specifies the Protocol Implementation Conformance Statement (PICS) proforma related to this ATS.

EN 301 141-3 [3] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification.

An NMDS implementation may contain one ISDN-BA port and/or a limited number of PSTN ports up to a maximum of 10. Typically one or two PSTN ports would be supported.

The objective of the present document part is to provide conformance tests giving a high probability of inter-operability of a Network Termination Node (NTN) and a Local Exchange (LE) on the DLL from different manufacturers over the NMDS interface. The present document covers only the procedures described in EN 301 141-1 [1].

ISO/IEC 9646-1 [11] is used as the basis for the methodology of conformance testing.

EN 301 141-1 [1] defines the NMDS layer 2 functions:

- For the ISDN-BA layer 2 functions, point-to-point (i.e. TEI 0) or point-to-multipoint procedures may be supported using the full ISDN TEI assignment procedures as currently defined. These include TEI assignment and removal procedures. However, there is an NMDS-specific constraint. TEI values 117 through 126 are now reserved for the PSTN_GW layer 2 frames and shall not be used for the ISDN_BA frames. Thus, the DLL TSS and TP as given in ETS 300 402-6 [6] apply as well to the NMDS interface for the ISDN-BA layer 2. The present document does not repeat them.

- For the PSTN layer 2 functions, EN 301 141-1 [1] presents two different state machines. The NTN DLL state machine is an adaptation of the ISDN DSS1 protocol data link layer in ETS 300 402-2 [5]. The LE layer 2 state machine shall be per ETS 300 402-2 [5]. The present document contains the PSTN layer 2 ATS and PIXIT for the NTN side only.

- The ISDN-BA and PSTN layer 2 functions both use ISDN layer 2 frame formats shown in figure 1/Q.921 of ETS 300 125 [4].

The present document contains no requirements concerning data link layer conformance tests for the ISDN-BA component of the NMDS when provisioned.

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 301 141-1 (V2.1.1): "Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 1: NMDS interface specification".

[2] ETSI EN 301 141-2 (V1.3.1): "Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ETSI EN 301 141-3 (V1.1.1): "Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the data link layer (NTN side)".

[4] ETSI ETS 300 125 (1991): "Integrated Services Digital Network (ISDN); User-network interface data link layer specification; Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".

[5] ETSI ETS 300 402-2 (1995): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 2: General protocol specification [ITU-T Recommendation Q.921 (1993), modified]".

[6] ETSI ETS 300 402-6 (1997): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 6: Test Suite Structure and Test Purposes (TSS&TP) specification for the general protocol".

[7] ISO/IEC 7498-1: "Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model".

[8] ISO/IEC 7498-2: "Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 2: Security Architecture".

[9] ISO/IEC 7498-3: "Information technology - Open Systems Interconnection - Basic Reference Model: Naming and addressing".

[10] ISO/IEC 7498-4: "Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 4: Management framework".

[11] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[12] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".

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

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

[15] 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".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

abstract test suite: See ISO/IEC 9646-1 [11].

data link layer: See ISO/IEC 7498 [7] to [10].

implementation under test: See ISO/IEC 9646-1 [11].

lower tester: See ISO/IEC 9646-1 [11].

point of control and observation: See ISO/IEC 9646-1 [11].

protocol conformance test report: See ISO/IEC 9646-1 [11].

Protocol Implementation Conformance Statement: See ISO/IEC 9646-1 [11].

proforma: See ISO/IEC 9646-1 [11].

Protocol Implementation eXtra Information for Testing: See ISO/IEC 9646-1 [11].

PIXIT proforma: See ISO/IEC 9646-1 [11].

system under test: See ISO/IEC 9646-1 [11].

upper tester: See ISO/IEC 9646-1 [11].

3.2 Abbreviations

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

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
DLL	Data Link Layer
ExTS	Executable Test Suite
ISDN	Integrated Services Digital Network
ISDN-BA	Integrated Services Digital Network-Basic Access
IUT	Implementation Under Test
LE	Local Exchange
LT	Lower Tester
MOT	Means Of Testing
NMDS	Narrowband Multi-service Delivery System
NTN	Network Termination Node
PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PSTN	Public Switched Telephone Network
SAPI	Service Access Point Identifier
SUT	System Under Test
TEI	Terminal Endpoint Identifier
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation

4 Abstract Test Method (ATM)

The remote test method is applied for this ATS. The Point of Control and Observation (PCO) resides at the service access point between layers 1 and 2. This PCO is named "L" (for Lower). The L 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.

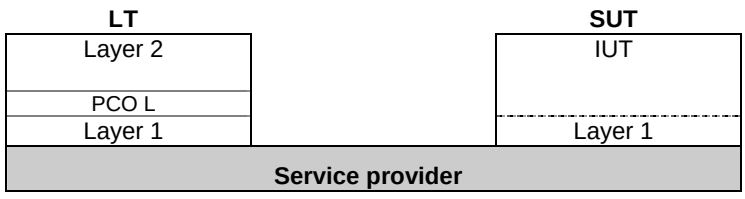

Figure 1: Remote test method

5 Untestable test purposes

There are no untestable test purposes associated with this ATS.

6 ATS conventions

This clause is structured similarly to the structure of a TTCN ATS. However, the names of the clauses are arranged in a way more suitable to the present document.

6.1 Declarations part

6.1.1 Type definitions

6.1.1.1 Simple type definitions

Where appropriate, simple types have a length, a value list, or a range restriction attached.

Simple types defined as being of some string type (e.g. BIT STRING, OCTET STRING) have a length restriction or a value list attached.

Simple types, defined as being of INTEGER type, have a value list or a range restriction attached.

6.1.1.2 Structured type definitions

6.1.1.2.1 TTCN structured type definitions

All structured type definitions are provided with a full name.

All elements in every structured type definition, defined as being of some string type (e.g. BIT STRING, OCTET STRING), have a length restriction attached.

6.1.1.2.2 ASN.1 structured type definitions

There are no ASN.1 structured type definitions in this ATS.

6.1.1.3 ASP type definitions

6.1.1.3.1 TTCN ASP type definitions

TTCN ASP type definitions only contain one PDU or no PDU at all.

All TTCN ASP type definitions are provided with a full identifier.

Some ASPs are not parameterized as shown in the example in table 1. Such ASPs are only used for requesting or receiving service from the lower layer.

Table 1: TTCN ASP type definition PH_ACT_IN

TTCN ASP Type Definition		
ASP NAME: PH_ACT_IN(PH_Activate_Indication) **PCO Type:** PSAP **Comments:**		
Parameter Name	**Parameter Type**	**Comments**
Detailed Comments:		

Table 2 shows an example of a parameterized ASP, PH_DATA_RQ, which is an ASP to be sent and contains a PDU and a Priority Indicator.

Table 2: TTCN ASP type definition PH_DATA_RQ

TTCN ASP Type Definition		
ASP NAME: PH_DATA_RQ(PH_DATA_Request) **PCO Type:** PSAP **Comments:**		
Parameter Name	**Parameter Type**	**Comments**
PI (Priority Indicator)	INTEGER	
MU (MessageUnit)	PDU	Data Link Layer peer to peer message
Detailed Comments:		

Table 3 shows an example of a parameterized ASP, PH_DATA_IN, which is an ASP to be received and contains a PDU and no Priority Indicator.

Table 3: TTCN ASP type definition PH_DATA_IN

TTCN ASP Type Definition		
ASP NAME: PH_DATA_IN(PH_DATA_Indication) **PCO Type:** PSAP **Comments:**		
Parameter Name	**Parameter Type**	**Comments**
MU (MessageUnit)	PDU	Data Link Layer peer to peer message
Detailed Comments:		

6.1.1.3.2 ASN.1 ASP type definitions

There are no ASN.1 ASP type definitions in this ATS.

6.1.1.4 PDU type definitions

6.1.1.4.1 TTCN PDU type definitions

The TTCN PDU type reflects the actual data being transferred or received. All PDUs are embedded in ASPs.

If a specific PDU type definition contains elements defined in terms of a pre-defined type, that element has a restriction attached to it.

6.1.1.4.2 ASN.1 PDU type definitions

There are no ASN.1 PDU type definitions in this ATS.

6.1.2 Test suite constants

Each test suite constant is defined in terms of a predefined type or a referenced type. The values given in the value column will remain unchanged throughout the test suite.

6.1.3 Test suite parameters

Each test suite parameter is defined in terms of a predefined type.

6.1.4 Variables

6.1.4.1 Test suite variables

Each test suite variable is defined in terms of a predefined type.

Where test suite variables are used in constraints, they are passed as formal parameters.

6.1.4.2 Test case variables

Each test case variable is defined in terms of a predefined type.

Where test case variables are used in constraints, they are passed as formal parameters.

6.1.5 Test suite operation definitions

The description part of a test suite operation definition uses either natural language or a procedural definition.

Table 4: Test suite operation definition using natural language

Test Suite Operation Definition
Operation Name : RANDOM (low:INTEGER; high:INTEGER) **Result Type :** INTEGER **Comments :**
Description
The return value represents a random value between "low" and "high" values. This operation is useful to provide the RI value during TEI management.
Detailed comments:

Table 5: Test suite operation definition using a procedural definition

Test Suite Operation Definition
Operation Name : CR_CMD (S_R, IUT_TYPE:BOOLEAN) **Result Type :** BITSTRING **Comments :** Calculate the C/R bitstring for a command frame according to the given condition (send or receive, user or network).
Description
/* S_R: parameter to indicate if the send is to be sent or received. */ /* S_R = 1 -> send, */ /* S_R = 0 -> receive. */ IF IUT_TYPE THEN /* IUT has the user role */ IF S_R THEN /* frame to be sent */ RETURNVALUE '1'B ELSE /* frame to be received */ RETURNVALUE '0'B ENDIF ELSE /* IUT has the network role * IF S_R THEN /* frame to be sent */ RETURNVALUE '0'B ELSE /* frame to be received */ RETURNVALUE '1'B ENDIF ENDIF
Detailed comments:

6.2 Constraints part

6.2.1 Structured type constraint declaration

For every structured type definition, there exists one or more structured type constraints.

6.2.2 ASN.1 type constraint declaration

There are no ASN.1 type constraint declarations in this ATS.

6.2.3 ASP type constraint declaration

6.2.3.1 ASN.1 ASP type constraint declaration

There are no ASN.1 ASP type constraint declarations in this ATS.

6.2.3.2 TTCN ASP type constraint declaration

The PDUs to be sent or received are passed to the TTCN ASP constraint declarations Fs and Fr as parameters of meta type PDU. Only if values inside a specific PDU have to be referenced, the use of the meta type PDU is not allowed according to ISO/IEC 9646-3 [13]. In such cases, different TTCN ASP constraint declarations are used which are defined to carry only a specific type of PDU (e.g. SETUP).

Tables 6 and 7 show examples of such TTCN ASP constraint declarations.

Table 6: TTCN ASP constraint declaration Fs

TTCN ASP Constraint Declaration		
Constraint Name : Fs(PAR:PDU)		
ASP Type : PH_DATA_RQ		
Derivation Path :		
Comments : This constraint is used to send PDUs.		
Parameter Name	**Parameter Value**	**Comments**
PI	1	High priority value for SAPI 0
MU	PAR	
Detailed Comments:		

Table 7: TTCN ASP constraint declaration Fr

TTCN ASP Constraint Declaration		
Constraint Name : Fr(PAR:PDU)		
ASP Type : PH_DATA_IN		
Derivation Path :		
Comments : This constraint is used to receive PDUs.		
Parameter Name	**Parameter Value**	**Comments**
MU	PAR	
Detailed Comments:		

All ASP constraints have a specific value for their parameters. No matching or wildcard symbols are used in ASPs.

6.2.4 PDU type constraint declaration

6.2.4.1 ASN.1 PDU type constraint declaration

There are no ASN.1 PDU type constraint declarations in this ATS.

6.2.4.2 TTCN PDU type constraint declaration

PDU constraints are used for assigning values or patterns to the data being sent or received.

6.2.5 Derived constraints

Derived constraints are used in this ATS for some PDUs.

6.2.6 Parameterized constraints

Parameterized constraints are used in this ATS.

6.2.7 Value assignment

6.2.7.1 Specific values

For specific value assignment both explicit values and references to explicit values are used.

6.2.7.2 Matching values

As matching/wildcard values the following mechanisms are used:

- Instead of Value:
  - AnyOrOmit "*"
  - AnyValue "?"
  - Omit "-"
- Inside value:
  - AnyOne "?"
  - AnyOrNone "*"

6.3 Dynamic part

6.3.1 Test cases

Each test case contains the test purpose text from EN 301 141-3 [3]. To be able to read and understand the test case dynamic behaviour, it is recommended that the test steps are understood first.

6.3.2 Test steps

Much use has been made of test steps to avoid needless repetition of dynamic behaviour.

6.3.3 Defaults

Note the use of the RETURN statement which is defined in DAM1 of ISO/IEC 9646-3 [13]. This allows valid background behaviour to be handled in the default tree with a possibility to return to the original set of alternatives in the test case.

7 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.

8 PCTR conformance

A test laboratory, when requested by a client to produce a PCTR, is required, as specified in ISO/IEC 9646-5 [15], to produce a PCTR conformant with the PCTR template given in annex B of the present document.

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.

9 PIXIT conformance

A test realizer, producing an Executable Test Suite (ExTS) for the ATS specification contained in annex C, is required, as specified in ISO/IEC 9646-4 [14], 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 IUT.

10 ATS conformance

The test realizer, producing MOT and ExTS for this ATS specification, shall comply with the requirements of ISO/IEC 9646-4 [14]. In particular, these concern the realization of an 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 [15].

A test laboratory which claims to conform with ISO/IEC 9646-5 [15] 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 301 141-1
PICS:	EN 301 141-2
Previous PCTRs (if any):	

A.1.3 Testing environment

PIXIT reference number:	
ATS specification:	EN 301 141-6
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/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 word "has", otherwise strike the words "has not".

A.3 Static conformance summary

The PICS for this IUT is/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/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 word "did", otherwise strike the words "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

Layer management - User - State 9				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_L90_I_1				
L2U_L90_I_2				
L2U_L90_I_3				
L2U_L90_I_4				
L2U_L90_I_5				
L2U_L90_I_6				
L2U_L90_I_7				
L2U_L90_I_8				
L2U_L90_I_9				
L2U_L90_I_10				
L2U_L10_I_11				
L2U_L10_I_12				
L2U_L10_I_13				
L2U_L10_I_14				
L2U_L10_I_15				
L2U_L10_I_16				
L2U_L10_I_17				
L2U_L10_I_18				

Layer management - User - State 9				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_L10_I_19				
L2U_L10_I_20				
L2U_L10_I_21				
L2U_L10_S_1				
L2U_L10_S_2				
L2U_L10_S_3				
L2U_L10_S_4				
L2U_L10_S_5				
L2U_L10_S_6				
L2U_L10_S_7				
L2U_L10_S_8				
L2U_L10_S_9				
L2U_L10_S_10				
L2U_L10_S_11				
L2U_L10_S_12				

Layer management - User - State 7.0				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_L70_I_1				
L2U_L70_I_2				
L2U_L70_I_3				
L2U_L70_I_4				
L2U_L70_I_5				
L2U_L70_I_6				

Layer management - User - State 8.0				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_L80_I_1				
L2U_L80_I_2				
L2U_L80_I_3				
L2U_L80_I_4				
L2U_L80_I_5				
L2U_L80_I_6				

Data control - User - State 4				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D40_V_1				
L2U_D40_V_2				
L2U_D40_I_1				
L2U_D40_I_2				
L2U_D40_I_3				
L2U_D40_I_4				
L2U_D40_I_5				
L2U_D40_I_6				
L2U_D40_I_7				
L2U_D40_I_8				
L2U_D40_I_9				
L2U_D40_I_10				
L2U_D40_I_11				
L2U_D40_I_12				
L2U_D40_I_13				
L2U_D40_I_14				
L2U_D40_I_15				
L2U_D40_S_1				
L2U_D40_S_2				

Data control - User - State 4				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D40_S_3				
L2U_D40_S_4				
L2U_D40_S_5				
L2U_D40_S_7				
L2U_D40_S_8				
L2U_D40_S_9				
L2U_D40_S_10				

Data control - User - State 5.1				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D51_V_1				
L2U_D51_V_2				

Data control - User - State 7.0				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D70_V_1				
L2U_D70_V_2				
L2U_D70_V_3				
L2U_D70_V_4				
L2U_D70_V_5				
L2U_D70_V_6				
L2U_D70_V_7				
L2U_D70_V_8				
L2U_D70_V_9				
L2U_D70_V_10				
L2U_D70_V_11				
L2U_D70_V_12				
L2U_D70_V_13				
L2U_D70_V_14				
L2U_D70_V_15				
L2U_D70_V_16				
L2U_D70_I_1				
L2U_D70_I_2				
L2U_D70_I_3				
L2U_D70_I_4				
L2U_D70_I_5				
L2U_D70_I_6				
L2U_D70_I_7				
L2U_D70_I_8				
L2U_D70_I_9				
L2U_D70_I_10				
L2U_D70_I_11				
L2U_D70_I_12				
L2U_D70_I_13				
L2U_D70_I_14				
L2U_D70_I_15				
L2U_D70_I_16				
L2U_D70_I_17				
L2U_D70_I_18				
L2U_D70_I_19				
L2U_D70_I_20				
L2U_D70_I_21				
L2U_D70_I_22				
L2U_D70_I_23				
L2U_D70_I_24				
L2U_D70_I_25				
L2U_D70_I_26				

Data control - User - State 7.0				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D70_I_27				
L2U_D70_I_28				
L2U_D70_I_29				
L2U_D70_I_30				
L2U_D70_S_1				
L2U_D70_S_2				
L2U_D70_S_3				
L2U_D70_S_4				
L2U_D70_S_5				
L2U_D70_S_6				
L2U_D70_S_7				
L2U_D70_S_8				
L2U_D70_S_9				
L2U_D70OI_V_1				
L2U_D70OI_V_2				
L2U_D70OI_V_3				
L2U_D70OI_V_4				
L2U_D70OI_V_5				
L2U_D70OI_V_6				
L2U_D70OI_V_7				
L2U_D70OI_V_8				
L2U_D70OI_V_9				
L2U_D70OI_V_10				
L2U_D70OI_V_11				
L2U_D70OI_V_12				
L2U_D70OI_I_1				
L2U_D70OI_I_2				
L2U_D70OI_I_3				
L2U_D70OI_I_4				
L2U_D70OI_I_5				
L2U_D70_T_1				
L2U_D70_T_2				
L2U_D70_T_3				
L2U_D70_T_4				
L2U_D70_T_5				
L2U_D70_T_6				
L2U_D70_T_7				

Data control - User - State 7.1				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D71_V_1				
L2U_D71_V_2				
L2U_D71_I_1				
L2U_D71_I_2				

Data control - User - State 7.4				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D74_V_1				
L2U_D74_V_2				
L2U_D74_V_3				
L2U_D74_V_4				
L2U_D74_V_5				
L2U_D74_V_6				
L2U_D74_V_7				
L2U_D74_V_8				
L2U_D74_V_9				
L2U_D74_V_10				

Data control - User - State 7.4				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D74_V_11				
L2U_D74_V_12				
L2U_D74_V_13				
L2U_D74_I_1				
L2U_D74_I_2				
L2U_D74_I_3				
L2U_D74_I_4				
L2U_D74_I_5				
L2U_D74_I_6				
L2U_D74_I_7				
L2U_D74_I_8				
L2U_D74_I_9				
L2U_D74_I_10				
L2U_D74_I_11				
L2U_D74_I_12				
L2U_D74_I_13				
L2U_D74_I_14				
L2U_D74_I_15				
L2U_D74_I_16				
L2U_D74_I_17				
L2U_D74_I_18				
L2U_D74_I_19				
L2U_D74_I_20				
L2U_D74_I_21				
L2U_D74_I_22				
L2U_D74_I_23				
L2U_D74_I_24				
L2U_D74_I_25				
L2U_D74_I_26				
L2U_D74_S_1				
L2U_D74_S_2				
L2U_D74_S_3				
L2U_D74_S_4				
L2U_D74_S_5				
L2U_D74_S_6				
L2U_D74OI_V_1				
L2U_D74OI_V_2				
L2U_D74OI_V_3				
L2U_D74OI_V_4				
L2U_D74OI_V_5				
L2U_D74OI_V_6				
L2U_D74OI_V_7				
L2U_D74OI_V_8				
L2U_D74OI_I_1				
L2U_D74OI_I_2				
L2U_D74OI_I_3				
L2U_D74OI_I_4				
L2U_D74_T_1				
L2U_D74_T_2				
L2U_D74_T_3				
L2U_D74_T_4				
L2U_D74_T_5				
L2U_D74_T_6				
L2U_D74_T_7				
L2U_D74_T_8				
L2U_D74_T_9				

Data control - User - State 7.5				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D75_V_1				
L2U_D75_V_2				
L2U_D75_I_1				
L2U_D75_I_2				

Data control - User - State 8.0				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D80_V_1				
L2U_D80_V_2				
L2U_D80_V_3				
L2U_D80_V_4				
L2U_D80_V_5				
L2U_D80_V_6				
L2U_D80_V_7				
L2U_D80_I_1				
L2U_D80_I_2				
L2U_D80_I_3				
L2U_D80_I_4				
L2U_D80_I_5				
L2U_D80_I_6				
L2U_D80_I_7				
L2U_D80_I_8				
L2U_D80_I_9				
L2U_D80_I_10				
L2U_D80_I_11				
L2U_D80_I_12				
L2U_D80_I_13				
L2U_D80_I_14				
L2U_D80_I_15				
L2U_D80_I_16				
L2U_D80_I_17				
L2U_D80_I_18				
L2U_D80_I_19				
L2U_D80_I_20				
L2U_D80_I_21				
L2U_D80_I_22				
L2U_D80_I_23				
L2U_D80_I_24				
L2U_D80_I_25				
L2U_D80_I_26				
L2U_D80_I_27				
L2U_D80_I_28				
L2U_D80_I_29				
L2U_D80_I_30				
L2U_D80_I_31				
L2U_D80_I_32				
L2U_D80_I_33				
L2U_D80_S_1				
L2U_D80_S_2				
L2U_D80_S_3				
L2U_D80_S_4				
L2U_D80_S_5				
L2U_D80_S_6				
L2U_D80OI_V_1				
L2U_D80OI_V_2				
L2U_D80OI_I_1				
L2U_D80OI_I_2				
L2U_D80_T_1				
L2U_D80_T_2				

Data control - User - State 8.0				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D80_C_1				

Data control - User - State 8.1				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D81_V_1				
L2U_D81_V_2				
L2U_D81_I_1				
L2U_D81_I_2				

Data control - User - State 8.4				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D84_V_1				
L2U_D84_V_2				
L2U_D84_V_3				
L2U_D84_V_4				
L2U_D84_V_5				
L2U_D84_I_1				
L2U_D84_I_2				
L2U_D84_I_3				
L2U_D84_I_4				
L2U_D84_I_5				
L2U_D84_I_6				
L2U_D84_I_7				
L2U_D84_I_8				
L2U_D84_I_9				
L2U_D84_I_10				
L2U_D84_I_11				
L2U_D84_I_12				
L2U_D84_I_13				
L2U_D84_I_14				
L2U_D84_I_15				
L2U_D84_I_16				
L2U_D84_I_17				
L2U_D84_I_18				
L2U_D84_I_19				
L2U_D84_I_20				
L2U_D84_I_21				
L2U_D84_I_22				
L2U_D84_I_23				
L2U_D84_I_24				
L2U_D84_I_25				
L2U_D84_I_26				
L2U_D84_I_27				
L2U_D84_I_28				
L2U_D84_I_29				
L2U_D84_I_30				
L2U_D84_I_31				
L2U_D84_I_32				
L2U_D84_I_33				
L2U_D84_I_34				
L2U_D84_S_1				
L2U_D84_S_2				
L2U_D84_S_3				
L2U_D84_S_4				
L2U_D84_S_5				
L2U_D84_S_6				
L2U_D84OI_V_1				

Data control - User - State 8.4				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D84OI_V_2				
L2U_D84OI_I_1				
L2U_D84OI_I_2				
L2U_D84OI_I_3				
L2U_D84_T_1				
L2U_D84_T_2				
L2U_D84_C_1				

Data control - User - State 8.5				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_D85_V_1				
L2U_D85_V_2				
L2U_D85_I_1				
L2U_D85_I_2				

Data control - User - Multi Port Testing				
ATS reference	**Selected? (Y/N)**	**Run? (Y/N)**	**Verdict**	**Observations**
L2U_M70_V_1				
L2U_M70_V_2				

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:

.....

Date of issue:

.....

Issued to:

.....

B.2 Abstract test suite summary

Protocol specification:	EN 301 141-1
ATS specification:	EN 301 141-6
Abstract test method:	Remote test method (see ISO/IEC 9646-2)

B.3 Test laboratory

Test laboratory identification:

.....

Accreditation status of the test service:

.....

Accreditation reference:

.....

Test laboratory manager:

.....

Test laboratory contact:

.....

Means of testing:

.....

Test laboratory instructions for completion:

.....

B.4 Client (of the test laboratory)

Client identification:

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Client test manager:

.....

Client contact:

.....

Test facilities required:

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B.5 System Under Test (SUT)

Name:

.....

Version:

.....

SCS reference:

.....

Machine configuration:

.....

Operating system identification:

.....

IUT identification:

.....

PICS (all layers):

.....

.....

Limitations of the SUT:

.....

Environmental conditions:

.....

B.6 Protocol information

B.6.1 Protocol identification

Specification reference: EN 301 141-1

Protocol version: V2.1.1

PICS reference: EN 301 141-2

B.6.2 Configuration to be tested

Table B.1: Configuration to be tested

Item	Configuration	Supported? (Y/N)
1.1	Does the access to be tested support the window size k = 7?	

B.6.3 Test management timers

Table B.2: Timer values

Item	Timer values: Give a value for the timer used to ...	Value (in seconds)
2.1	test the minimum duration of T200	
2.2	test the maximum duration of T200	
2.3	wait for a response generated by layer 3	
2.4	wait for the non reaction of the IUT when no timer (T200) is active	
2.5	wait for the non reaction of the IUT when a timer (T200) is active	
2.6	wait for a response of the IUT	
2.7	wait for an action of the operator	

B.6.4 Sending of messages by IUT

No item.

B.6.5 Parameter values

Table B.3: Parameter values

Item	Parameter values: Give a ...	Allowed values	Value
3.1	SAPI value not supported by the IUT	0..63	

Annex C (normative): Abstract Test Suite (ATS) NMDS_NTN_L2

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [13].

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 (NMDS_NTN_L2.PDF contained in archive en_30114106v010101p0.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 (ntn_l2_ntn.MP contained in archive en_30114106v010101p0.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.

C.3 General structure of an ATS

This clause gives a simple listing of the order of types of tables which appear in a typical ATS. This is intended as an aid in helping readers find particular sections quickly.

Test Suite Overview

Test Suite Structure

Test Case Index

Test Step Index

Default Index

Declarations Part

Simple Type Definitions

Structured Type Definitions

Test Suite Operation Definitions

Test Suite Parameter Declarations

Test Case Selection Expression Definitions

Test Suite Constant Declarations

Test Case Variable Declarations

PCO Declarations

Timer Declarations

TTCN ASP Type Definition

TTCN PDU Type Definition

Alias Definitions

Constraints Part

Structured Type Constraint Declarations

TTCN ASP Constraint Declarations

TTCN PDU Constraint Declarations

Dynamic Part

Test Case Dynamic Behaviour

Test Step Dynamic Behaviour

Default Dynamic Behaviour

History

Document history				
V1.1.1	July 2001	Public Enquiry	PE 20011116:	2001-07-18 to 2001-11-16
V1.1.1	December 2001	Vote	V 20020208:	2001-12-10 to 2002-02-08
V1.1.1	February 2002	Publication		