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European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) protocol;
Data link layer;
Part 7: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification for the general protocol**



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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 7 of a multi-part standard covering the Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer, as identified below:

- Part 1: "General aspects [ITU-T Recommendation Q.920 (1993), modified]";
- Part 2: "General protocol specification [ITU-T Recommendation Q.921 (1993), modified]";
- Part 3: "Frame relay protocol specification";
- Part 4: "Protocol Implementation Conformance Statement (PICS) proforma specification for the general protocol";
- Part 5: "Protocol Implementation Conformance Statement (PICS) proforma specification for the frame relay protocol";
- Part 6: "Test Suite Structure and Test Purposes (TSS&TP) specification for the general protocol";
- Part 7: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the general protocol".**

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1 Scope

This seventh part of EN 300 402 specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the user-network interface data link layer at the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [9]) of implementations conforming to the standard for the general data link layer protocol for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, ETS 300 402-2 [1].

ETS 300 402-6 [3] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification.

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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] 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]".
- [2] ETSI ETS 300 402-4 (1996): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 4: Protocol Implementation Conformance statement (PICS) proforma specification for the general protocol".
- [3] 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".
- [4] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [5] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [6] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [7] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [8] 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".
- [9] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".

3 Definitions and abbreviations

3.1 Definitions

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

Abstract Test Suite (ATS): see ISO/IEC 9646-1 [4].

Implementation Under Test (IUT): see ISO/IEC 9646-1 [4].

Lower Tester (LT): see ISO/IEC 9646-1 [4].

Point of Control and Observation (PCO): see ISO/IEC 9646-1 [4].

Protocol Conformance Test Report (PCTR): see ISO/IEC 9646-1 [4].

Protocol Implementation Conformance Statement (PICS): see ISO/IEC 9646-1 [4].

PICS proforma: see ISO/IEC 9646-1 [4].

Protocol Implementation eXtra Information for Testing (PIXIT): see ISO/IEC 9646-1 [4].

PIXIT proforma: see ISO/IEC 9646-1 [4].

System Under Test (SUT): see ISO/IEC 9646-1 [4].

Upper Tester (UT): see ISO/IEC 9646-1 [4].

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
CM	Co-ordination Message
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
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SUT	System Under Test
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

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.

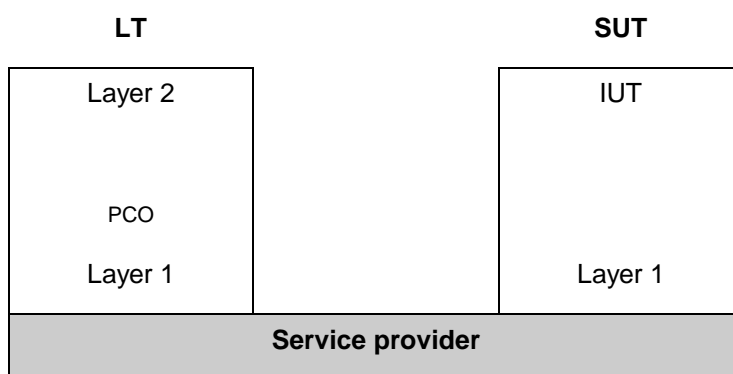


Figure 1: Remote test method

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 subclauses 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 the 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 the 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 the 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

No test suite variables are used or defined in this ATS.

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	
<pre> /* 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 </pre>	
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 the 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 the 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 Ms and Mr 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 [6]. 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 its parameter. No matching 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 the 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 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 ETS 300 402-6 [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 [6]. 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 [8], to produce a PCTR conformant with the PCTR template given in annex B of ISO/IEC 9646-5 [8].

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 [7], 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.

A test laboratory, offering testing for the ATS specification contained in annex C, is required, as specified in ISO/IEC 9646-5 [8], 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.

10 ATS conformance

The test realizer, producing MOT and ExTS for this ATS specification, shall comply with the requirements of ISO/IEC 9646-4 [7]. 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 [8].

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

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PCTR proforma in this annex so that it can be used for its intended purposes and may further publish the completed PCTR.
--

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:	ETS 300 402-2
PICS:	
Previous PCTRs (if any):	

A.1.3 Testing environment

PIXIT reference number:	
ATS specification:	ETS 300 402-7
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 this report) 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 this report) 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 1				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L10_V_1				
L2U_L10_V_2				
L2U_L10_V_3				
L2U_L10_V_4				
L2U_L10_V_5				
L2U_L10_V_6				
L2U_L10_V_7				
L2U_L10_V_8				
L2U_L10_V_9				
L2U_L10_V_10				
L2U_L10_I_1				
L2U_L10_I_2				
L2U_L10_I_3				
L2U_L10_I_4				
L2U_L10_I_5				
L2U_L10_I_6				
L2U_L10_I_7				
L2U_L10_S_1				

Layer management - User - State 1				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
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 3				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L30_V_1				
L2U_L30_V_2				
L2U_L30_V_3				
L2U_L30_V_4				
L2U_L30_V_5				
L2U_L30_V_6				
L2U_L30_V_7				
L2U_L30_V_8				
L2U_L30_V_9				
L2U_L30_V_10				
L2U_L30_I_1				
L2U_L30_I_2				
L2U_L30_I_3				
L2U_L30_I_4				
L2U_L30_I_5				
L2U_L30_I_6				
L2U_L30_I_7				
L2U_L30_S_1				
L2U_L30_S_2				
L2U_L30_S_3				
L2U_L30_S_4				
L2U_L30_S_5				
L2U_L30_S_6				
L2U_L30_S_7				
L2U_L30_S_8				
L2U_L30_S_9				
L2U_L30_S_10				
L2U_L30_S_11				
L2U_L30_S_12				
L2U_L30_S_13				
L2U_L30_S_14				
L2U_L30_S_15				
L2U_L30_T_1				
L2U_L30_C_1				

Layer management - User - State 4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L40_V_1				
L2U_L40_V_2				
L2U_L40_V_3				
L2U_L40_V_4				
L2U_L40_V_5				
L2U_L40_V_6				
L2U_L40_V_7				

Layer management - User - State 4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L40_V_8				
L2U_L40_V_9				
L2U_L40_V_10				
L2U_L40_V_11				
L2U_L40_I_1				
L2U_L40_I_2				
L2U_L40_I_3				
L2U_L40_I_4				
L2U_L40_I_5				
L2U_L40_I_6				
L2U_L40_I_7				
L2U_L40_I_8				
L2U_L40_I_9				
L2U_L40_I_10				
L2U_L40_I_11				
L2U_L40_I_12				
L2U_L40_I_13				
L2U_L40_S_1				
L2U_L40_S_2				
L2U_L40_S_3				
L2U_L40_S_4				
L2U_L40_S_5				
L2U_L40_S_6				
L2U_L40_S_7				
L2U_L40_S_8				
L2U_L40_S_9				
L2U_L40_S_10				
L2U_L40_S_11				
L2U_L40_S_12				
L2U_L40_T_1				
L2U_L40_C_1				
L2U_L40_C_2				

Layer management - User - State 5.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L50_V_1				
L2U_L50_V_2				
L2U_L50_V_3				
L2U_L50_V_4				
L2U_L50_V_5				
L2U_L50_I_1				
L2U_L50_I_2				
L2U_L50_I_3				
L2U_L50_C_1				
L2U_L50_C_2				

Layer management - User - State 6				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L60_V_1				
L2U_L60_V_2				
L2U_L60_V_3				
L2U_L60_V_4				
L2U_L60_V_5				
L2U_L60_I_1				
L2U_L60_I_2				
L2U_L60_I_3				
L2U_L60_C_1				
L2U_L60_C_2				

Layer management - User - State 7.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L70_V_1				
L2U_L70_V_2				
L2U_L70_V_3				
L2U_L70_V_4				
L2U_L70_V_5				
L2U_L70_I_1				
L2U_L70_I_2				
L2U_L70_I_3				
L2U_L70_I_4				
L2U_L70_I_5				

Layer management - User - State 8.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2U_L80_V_1				
L2U_L80_V_2				
L2U_L80_V_3				
L2U_L80_V_4				
L2U_L80_V_5				
L2U_L80_I_1				
L2U_L80_I_2				
L2U_L80_I_3				
L2U_L80_I_4				
L2U_L80_I_5				

Layer management - Network - State 1				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2N_L10_V_1				
L2N_L10_V_2				
L2N_L10_I_1				
L2N_L10_I_2				
L2N_L10_I_3				
L2N_L10_I_4				
L2N_L10_I_5				
L2N_L10_I_6				
L2N_L10_I_7				
L2N_L10_I_8				
L2N_L10_S_1				
L2N_L10_S_2				
L2N_L10_S_3				
L2N_L10_S_4				
L2N_L10_S_5				
L2N_L10_S_6				
L2N_L10_S_7				
L2N_L10_S_8				
L2N_L10_S_9				
L2N_L10_S_10				
L2N_L10_S_11				
L2N_L10_S_12				
L2N_L10_S_13				

Layer management - Network - State 4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2N_L40_V_1				
L2N_L40_V_2				
L2N_L40_V_3				
L2N_L40_I_1				
L2N_L40_I_2				
L2N_L40_I_3				
L2N_L40_I_4				
L2N_L40_I_5				
L2N_L40_I_6				
L2N_L40_I_7				
L2N_L40_I_8				
L2N_L40_I_9				
L2N_L40_I_10				
L2N_L40_I_11				
L2N_L40_S_1				
L2N_L40_S_2				
L2N_L40_S_3				
L2N_L40_S_4				
L2N_L40_S_5				
L2N_L40_S_6				
L2N_L40_S_7				
L2N_L40_S_8				
L2N_L40_S_9				
L2N_L40_S_10				
L2N_L40_S_11				
L2N_L40_S_12				
L2N_L40_S_13				
L2N_L40_S_14				
L2N_L40_S_15				
L2N_L40_S_16				
L2N_L40_S_17				
L2N_L40_S_18				
L2N_L40_T_1				
L2N_L40_C_1				

Layer management - Network - State 5.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2N_L50_V_1				
L2N_L50_I_1				
L2N_L50_C_1				

Layer management - Network - State 6				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2N_L60_V_1				
L2N_L60_I_1				
L2N_L60_C_1				

Layer management - Network - State 7.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2N_L70_V_1				
L2N_L70_I_1				
L2N_L70_I_2				

Layer management - Network - State 8.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2N_L80_V_1				
L2N_L80_I_1				
L2N_L80_I_2				

Data control (User and Network) - State 4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D40_V_1				
L2C_D40_V_2				
L2C_D40_V_3				
L2C_D40_V_4				
L2C_D40_I_1				
L2C_D40_I_2				
L2C_D40_I_3				
L2C_D40_I_4				
L2C_D40_I_5				
L2C_D40_I_6				
L2C_D40_I_7				
L2C_D40_I_8				
L2C_D40_I_9				
L2C_D40_I_10				
L2C_D40_I_11				
L2C_D40_I_12				
L2C_D40_I_13				
L2C_D40_I_14				
L2C_D40_I_15				
L2C_D40_S_1				
L2C_D40_S_2				
L2C_D40_S_3				
L2C_D40_S_4				
L2C_D40_S_5				
L2C_D40_S_7				
L2C_D40_S_8				
L2C_D40_S_9				
L2C_D40_S_10				
L2C_D40_S_11				

Data control (User and Network) - State 5.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D50_V_1				
L2C_D50_V_2				
L2C_D50_V_3				
L2C_D50_I_1				
L2C_D50_I_2				
L2C_D50_I_3				
L2C_D50_I_4				
L2C_D50_I_5				
L2C_D50_I_6				
L2C_D50_I_7				
L2C_D50_I_8				
L2C_D50_I_9				
L2C_D50_I_10				
L2C_D50_I_11				
L2C_D50_I_12				
L2C_D50_I_13				
L2C_D50_I_14				
L2C_D50_I_15				
L2C_D50_I_16				
L2C_D50_S_1				
L2C_D50_S_2				
L2C_D50_S_3				
L2C_D50_S_4				
L2C_D50_S_5				
L2C_D50_S_6				
L2C_D50_T_1				

Data control (User and Network) - State 5.1				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D51_V_1				
L2C_D51_V_2				

Data control (User and Network) - State 6				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D60_V_1				
L2C_D60_V_2				
L2C_D60_V_3				
L2C_D60_I_1				
L2C_D60_I_2				
L2C_D60_I_3				
L2C_D60_I_4				
L2C_D60_I_5				
L2C_D60_I_6				
L2C_D60_I_7				
L2C_D60_I_8				
L2C_D60_I_9				
L2C_D60_I_10				
L2C_D60_I_11				
L2C_D60_I_12				
L2C_D60_I_13				
L2C_D60_I_14				
L2C_D60_I_15				
L2C_D60_I_16				
L2C_D60_S_1				
L2C_D60_S_2				
L2C_D60_S_3				
L2C_D60_S_4				
L2C_D60_S_5				

Data control (User and Network) - State 6				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D60_S_6				
L2C_D60_T_1				

Data control (User and Network) - State 7.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D70_V_1				
L2C_D70_V_2				
L2C_D70_V_3				
L2C_D70_V_4				
L2C_D70_V_5				
L2C_D70_V_6				
L2C_D70_V_7				
L2C_D70_V_8				
L2C_D70_V_9				
L2C_D70_V_10				
L2C_D70_V_11				
L2C_D70_V_12				
L2C_D70_V_13				
L2C_D70_V_14				
L2C_D70_V_15				
L2C_D70_V_16				
L2C_D70_V_17				
L2C_D70_V_18				
L2C_D70_V_19				
L2C_D70_I_1				
L2C_D70_I_2				
L2C_D70_I_3				
L2C_D70_I_4				
L2C_D70_I_5				
L2C_D70_I_6				
L2C_D70_I_7				
L2C_D70_I_8				
L2C_D70_I_9				
L2C_D70_I_10				
L2C_D70_I_11				
L2C_D70_I_12				
L2C_D70_I_13				
L2C_D70_I_14				
L2C_D70_I_15				
L2C_D70_I_16				
L2C_D70_I_17				
L2C_D70_I_18				
L2C_D70_I_19				
L2C_D70_I_20				
L2C_D70_I_21				
L2C_D70_I_22				
L2C_D70_I_23				
L2C_D70_I_24				
L2C_D70_I_25				
L2C_D70_I_26				
L2C_D70_I_27				
L2C_D70_I_28				
L2C_D70_I_29				
L2C_D70_I_30				
L2C_D70_S_1				
L2C_D70_S_2				
L2C_D70_S_3				
L2C_D70_S_4				
L2C_D70_S_5				
L2C_D70_S_6				

Data control (User and Network) - State 7.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D70_S_7				
L2C_D70_S_8				
L2C_D70_S_9				
L2C_D70OI_V_1				
L2C_D70OI_V_2				
L2C_D70OI_V_3				
L2C_D70OI_V_4				
L2C_D70OI_V_5				
L2C_D70OI_V_6				
L2C_D70OI_V_7				
L2C_D70OI_V_8				
L2C_D70OI_V_9				
L2C_D70OI_V_10				
L2C_D70OI_V_11				
L2C_D70OI_V_12				
L2C_D70OI_I_1				
L2C_D70OI_I_2				
L2C_D70OI_I_3				
L2C_D70OI_I_4				
L2C_D70OI_I_5				
L2C_D70_T_1				
L2C_D70_T_2				
L2C_D70_T_3				
L2C_D70_T_4				
L2C_D70_T_5				
L2C_D70_T_6				
L2C_D70_T_7				
L2C_D70_T_8				

Data control (User and Network) - State 7.1				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D71_V_1				
L2C_D71_V_2				
L2C_D71_I_1				
L2C_D71_I_2				

Data control (User and Network) - State 7.4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D74_V_1				
L2C_D74_V_2				
L2C_D74_V_3				
L2C_D74_V_4				
L2C_D74_V_5				
L2C_D74_V_6				
L2C_D74_V_7				
L2C_D74_V_8				
L2C_D74_V_9				
L2C_D74_V_10				
L2C_D74_V_11				
L2C_D74_V_12				
L2C_D74_V_13				
L2C_D74_I_1				
L2C_D74_I_2				
L2C_D74_I_3				
L2C_D74_I_4				
L2C_D74_I_5				
L2C_D74_I_6				
L2C_D74_I_7				

Data control (User and Network) - State 7.4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D74_I_8				
L2C_D74_I_9				
L2C_D74_I_10				
L2C_D74_I_11				
L2C_D74_I_12				
L2C_D74_I_13				
L2C_D74_I_14				
L2C_D74_I_15				
L2C_D74_I_16				
L2C_D74_I_17				
L2C_D74_I_18				
L2C_D74_I_19				
L2C_D74_I_20				
L2C_D74_I_21				
L2C_D74_I_22				
L2C_D74_I_23				
L2C_D74_I_24				
L2C_D74_I_25				
L2C_D74_I_26				
L2C_D74_S_1				
L2C_D74_S_2				
L2C_D74_S_3				
L2C_D74_S_4				
L2C_D74_S_5				
L2C_D74_S_6				
L2C_D74OI_V_1				
L2C_D74OI_V_2				
L2C_D74OI_V_3				
L2C_D74OI_V_4				
L2C_D74OI_V_5				
L2C_D74OI_V_6				
L2C_D74OI_V_7				
L2C_D74OI_V_8				
L2C_D74OI_I_1				
L2C_D74OI_I_2				
L2C_D74OI_I_3				
L2C_D74OI_I_4				
L2C_D74_T_1				
L2C_D74_T_2				
L2C_D74_T_3				
L2C_D74_T_4				
L2C_D74_T_5				
L2C_D74_T_6				
L2C_D74_T_7				
L2C_D74_T_8				
L2C_D74_T_9				

Data control (User and Network) - State 7.5				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D75_V_1				
L2C_D75_V_2				
L2C_D75_I_1				
L2C_D75_I_2				

Data control (User and Network) - State 8.0				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D80_V_1				
L2C_D80_V_2				
L2C_D80_V_3				
L2C_D80_V_4				
L2C_D80_V_5				
L2C_D80_V_6				
L2C_D80_V_7				
L2C_D80_I_1				
L2C_D80_I_2				
L2C_D80_I_3				
L2C_D80_I_4				
L2C_D80_I_5				
L2C_D80_I_6				
L2C_D80_I_7				
L2C_D80_I_8				
L2C_D80_I_9				
L2C_D80_I_10				
L2C_D80_I_11				
L2C_D80_I_12				
L2C_D80_I_13				
L2C_D80_I_14				
L2C_D80_I_15				
L2C_D80_I_16				
L2C_D80_I_17				
L2C_D80_I_18				
L2C_D80_I_19				
L2C_D80_I_20				
L2C_D80_I_21				
L2C_D80_I_22				
L2C_D80_I_23				
L2C_D80_I_24				
L2C_D80_I_25				
L2C_D80_I_26				
L2C_D80_I_27				
L2C_D80_I_28				
L2C_D80_I_29				
L2C_D80_I_30				
L2C_D80_I_31				
L2C_D80_I_32				
L2C_D80_I_33				
L2C_D80_S_1				
L2C_D80_S_2				
L2C_D80_S_3				
L2C_D80_S_4				
L2C_D80_S_5				
L2C_D80_S_6				
L2C_D80OI_V_1				
L2C_D80OI_V_2				
L2C_D80OI_I_1				
L2C_D80OI_I_2				
L2C_D80_T_1				
L2C_D80_T_2				
L2C_D80_C_1				

Data control (User and Network) - State 8.1				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D81_V_1				
L2C_D81_V_2				
L2C_D81_I_1				
L2C_D81_I_2				

Data control (User and Network) - State 8.4				
ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
L2C_D84_V_1				
L2C_D84_V_2				
L2C_D84_V_3				
L2C_D84_V_4				
L2C_D84_V_5				
L2C_D84_I_1				
L2C_D84_I_2				
L2C_D84_I_3				
L2C_D84_I_4				
L2C_D84_I_5				
L2C_D84_I_6				
L2C_D84_I_7				
L2C_D84_I_8				
L2C_D84_I_9				
L2C_D84_I_10				
L2C_D84_I_11				
L2C_D84_I_12				
L2C_D84_I_13				
L2C_D84_I_14				
L2C_D84_I_15				
L2C_D84_I_16				
L2C_D84_I_17				
L2C_D84_I_18				
L2C_D84_I_19				
L2C_D84_I_20				
L2C_D84_I_21				
L2C_D84_I_22				
L2C_D84_I_23				
L2C_D84_I_24				
L2C_D84_I_25				
L2C_D84_I_26				
L2C_D84_I_27				
L2C_D84_I_28				
L2C_D84_I_29				
L2C_D84_I_30				
L2C_D84_I_31				
L2C_D84_I_32				
L2C_D84_I_33				
L2C_D84_I_34				
L2C_D84_S_1				
L2C_D84_S_2				
L2C_D84_S_3				
L2C_D84_S_4				
L2C_D84_S_5				
L2C_D84_S_6				
L2C_D84OI_V_1				
L2C_D84OI_V_2				
L2C_D84OI_I_1				
L2C_D84OI_I_2				
L2C_D84OI_I_3				
L2C_D84_T_1				
L2C_D84_T_2				
L2C_D84_C_1				

Annex B (normative): Partial PIXIT proforma

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PIXIT proforma in this annex so that it can be used for its intended purposes and may further publish the completed PIXIT.

B.1 Identification summary

PIXIT number:

.....

Test laboratory name:

.....

Date of issue:

.....

Issued to:

.....

B.2 Abstract test suite summary

Protocol specification: ETS 300 402-2

ATS specification: ETS 300 402-7

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:

.....

Client test manager:

.....

Client contact:

.....

Test facilities required:

.....

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: ETS 300 402-2

Protocol version:

PICS reference:

NOTE: The PICS reference should reference a completed PICS which is conformant with the PICS proforma contained in ETS 300 402-4.

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 Configuration options

Table B.2: Configuration options

Item	Configuration: What actions, if possible, have to be taken to configure the IUT to ...	Supported? (Y/N)	Stimulus (action taken)
2.1	be able to reach the state 1 and to remain in that state for at least 7 seconds?		
2.2	be able to reach the state 4 and to remain in that state for at least 7 seconds?		
2.3	be able to reach the state 4 and not to be able to establish the link?		
2.4	send a DL_EST_RQ primitive in state 1 on receipt of a set-up message in a UI frame?		
2.5	initiate TEI check after having received a MDL error assuming a possible duplicate assignment?		
2.6	have no automatic TEI value available to be assigned?		
2.7	send an UI frame on demand?		
2.8	send a SABME frame on demand?		
2.9	send a DISC frame on demand?		

B.6.4 Test management timers

Table B.3: Timer values

Item	Timer values: Give a value for the timer used to ...	Value (in seconds)
3.1	test the minimum duration of T200	
3.2	test the maximum duration of T200	
3.3	test the minimum duration of T201	
3.4	test the maximum duration of T201	
3.5	test the minimum duration of T202	
3.6	test the maximum duration of T202	
3.7	test the minimum duration of T203	
3.8	test the maximum duration of T203	
3.9	wait for Identity Request message	
3.10	wait for a response generated by layer 3	
3.11	wait for the non reaction of the IUT when no timer (T200, T201, ...) is active	
3.12	wait for the non reaction of the IUT when a timer (T200, T201, ...) is active	
3.13	wait for a response of the IUT	
3.14	wait for an action of the operator	

B.6.5 Sending of messages by IUT

No item.

B.6.6 Parameter values

Table B.4: Parameter values

Item	Parameter values: Give a ...	Allowed values	Value
5.1	non-automatic TEI value used by the IUT when of type non-automatic TEI	0..63	
5.2	SAPI value not supported by the IUT	0..63	
5.3	layer 3 call reference length value in octets	1, 2	
5.4	layer 3 call reference field length in bits	7, 15	

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 [6].

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 (402_7_09.PDF contained in archive en_30040207v010405p0.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 (402_7_09.MP contained in archive en_30040207v010405p0.ZIP) which accompanies the present document.

Annex D (informative): General structure of ATS

Annex D gives a simple listing of the order of types of tables which appear in a typical supplementary service 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

ASN.1 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

Co-ordination Point Declarations

Timer Declarations

Test Component Declarations

Test Components Configuration Declarations

TTCN ASP Type Definition

TTCN PDU Type Definition

TTCN CM Type Definition

Alias Definitions

Constraints Part

Structured Type Constraint Declarations

ASN.1 Type Constraint Declarations

TTCN ASP Constraint Declarations

TTCN PDU Constraint Declarations

TTCN CM Constraint Declarations

Dynamic Part

Test Case Dynamic Behaviour

Test Step Dynamic Behaviour

Default Dynamic Behaviour

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- CCITT Recommendation X.209 (1988): "Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)".

History

Document history		
Edition 1	September 1997	Publication as ETS 300 402-7
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