

**Integrated Services Digital Network (ISDN) and
Broadband Integrated Services Digital Network (B-ISDN);
Generic Addressing and Transport (GAT) protocol;
Part 4: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification**



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN), and is now submitted for the Vote phase of the ETSI standards Two-step Approval Procedure.

The present document is part 4 of a multi-part deliverable covering the Digital Subscriber Signalling System No one (DSS1) and the Signalling System No 7 (SS7) ISDN User Part (ISUP) protocol specifications for the Integrated Services Digital Network (ISDN), and the Digital Subscriber Signalling System No two (DSS2) and Signalling System No 7 (SS7) B-ISDN User Part (B-ISUP) protocol specifications for the Broadband Integrated Services Digital Network (B-ISDN) to support the Generic Addressing and Transport protocol (GAT), as identified below:

- Part 1: "Protocol specification [ITU-T Recommendation Q.860 (2000), modified]";
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification";
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".**

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Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for implementations conforming to the stage three standard for the Generic Addressing and Transport protocol for the pan-European Integrated Services Digital Network (ISDN).

The present document is applicable to both user and network sides of the T or T_b reference point or coincident S and T or S_b and T_b reference points and to inter-exchange links.

The normative part of the present document is independent of the underlying signalling system(s) which may include DSS1, DSS2 and SS7. In addition informative material concerning its application over DSS1 is included.

NOTE: The scope of EN 301 813-1 [1] includes operation over SS7, however ITU-T Recommendation Q.765.4 specifies support for GAT by SS7 in a manner which differs in some respects from EN 301 813-1 [1]. As the present document is a test specification for EN 301 813-1 [1] no provision is made for such differences.

EN 301 813-3 [3] specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma.

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 301 813-1 (V1.1.1): "Integrated Services Digital Network (ISDN) and Broadband Integrated Services Digital Network (B-ISDN); Generic Addressing and Transport (GAT) protocol; Part 1: Protocol specification [ITU-T Recommendation Q.860 (2000), modified]".
- [2] ETSI EN 301 813-2 (V1.1.1): "Integrated Services Digital Network (ISDN) and Broadband Integrated Services Digital Network (B-ISDN); Generic Addressing and Transport (GAT) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [3] ETSI EN 301 813-3 (V1.1.1): "Integrated Services Digital Network (ISDN) and Broadband Integrated Services Digital Network (B-ISDN); Generic Addressing and Transport (GAT) protocol; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification".
- [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 (1998): "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 X.680 (1997): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [10] ITU-T Recommendation X.690 (1997): "Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".

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 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].

3.2 Abbreviations

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

ASN.1	Abstract Syntax Notation One
ATM	Abstract Test Method
ATS	Abstract Test Suite
BER	Basic Encoding Rules
CM	Co-ordination Message
DSS1	Digital Subscriber Signalling System No. one
DSS2	Digital Subscriber Signalling System No. two
ExTS	Executable Test Suite
GAT	Generic Addressing and Transport
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
MTC	Main Test Component
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
PTC	Parallel Test Component
SUT	System Under Test
SS7	Signalling System number Seven
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation

4 Abstract Test Method

4.1 Description of ATM used

A GAT entity can, in the context of a particular connection, communicate with one or two peer entities. Where it communicates with two peer entities the interactions between the two interfaces is defined by the GAT protocol and is therefore tested. A combination of the Multi-Party and Remote test methods is therefore used. The multi-party test method is used for all test cases where more than one interface is used for a connection, the remote test method when only one interface is used in a connection.

An overview of these abstract test methods is shown in figure 1.

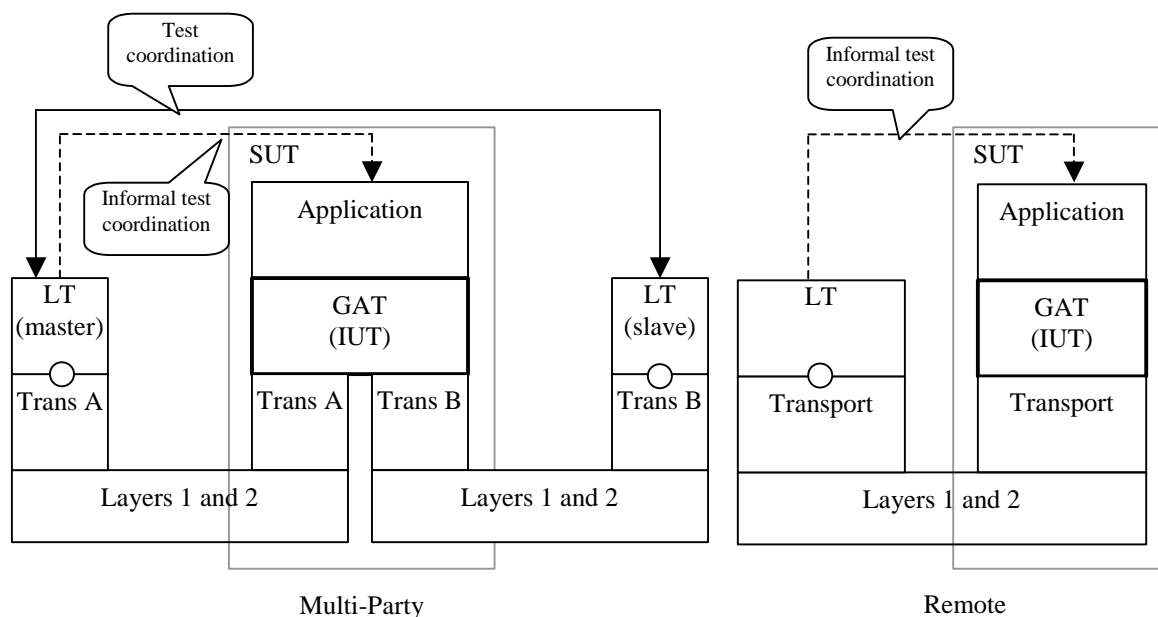


Figure 1: Abstract test methods

Some points concerning these methods are given below:

- The two transport mechanisms (Trans A and Trans B in figure 1) in the multi-party case may be the same or different.
- Control and observation of the IUT is carried out at one or two interfaces through the transport mechanism.
- Behaviour at both of these interfaces can contribute to the final verdict.
- Control (but not observation) can be carried out through the application layer in the SUT by using informal test co-ordination (i.e. operator interaction).

NOTE: This is generally similar to the test method used for the Network side testing of most ISDN supplementary services. The most significant difference is that both interfaces in the multi-party case are associated with the same GAT entity and therefore can contribute to a pass or fail verdict.

4.2 Detailed test method in normative ATS

In the normative ATS communication between the tester and the underlying transport mechanisms is using a set of primitives specified in annex D. These include:

- the primitives implicitly defined by EN 301 813-1 [1], clause 5.4.3 for communication between GAT and the transport mechanism;
- primitives to control functionality of the transport mechanism that is not controlled by GAT but is necessary in the ATS (e.g. establishing and clearing basic calls); and
- primitives to allow the transport mechanism to report error conditions.

The behaviour relating to the actual tests is concentrated in the main test component MTC A. MTC A will not have any PCOs but will communicate with the SUT through a parallel test component for each interface. MTC A will send and receive co-ordination messages which will either have a one-to-one mapping with the primitives or contain the primitives embedded within them. Thus functionally MTC A is the same as if it communicated directly with the transport mechanism using a PCO, although it differs syntactically.

In the normative ATS the PTCs attached to the PCOs are transparent. Their only functionality is to pass primitives between the transport mechanism and MTC A, carrying out any mapping or encapsulation/decapsulation between ASPs and CMs necessary.

It is necessary for the test tool to implement transport mechanism(s), compatible with the IUT and the primitives defined, but the detail would be out of the scope of the ATS specification.

An additional "informal" PCO is included in MTC A to provide limited control of the IUT by means of operator interaction with the application(s) in the SUT.

Figure 2 gives examples of the detailed test method used in the normative ATS.

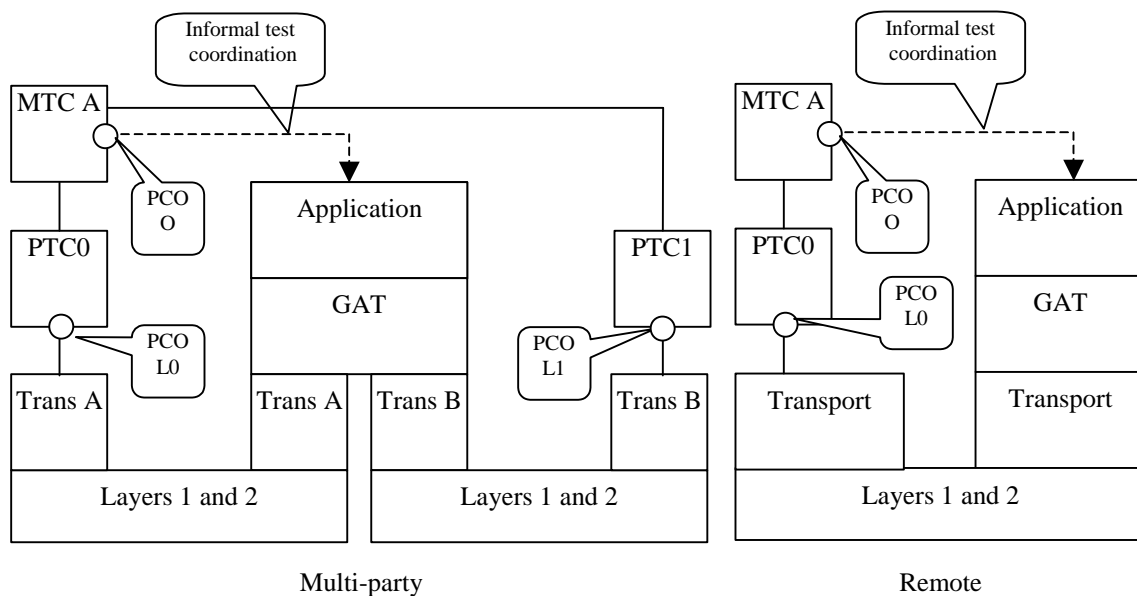


Figure 2: Normative ATS test architecture

4.3 PCO assignment

Four PCOs are defined in this ATS two for user/network interfaces (L0 and L1) and two for network/network interfaces (L2 and L3). In each test case one or two of these are used dependant on the types of interfaces applicable in the test case concerned. This is described in table 1.

Table 1: PCO assignment

Role	Equipment type	Description	First PCO	Second PCO
A	Terminal	Interacts with a single network node	L0	-
B	Network node (local exchange)	Interacts with one terminal and one other network node	L0	L2
C	Network node	Interacts with one other network node	L2	-
D	Network node (transit exchange)	Interacts with two other network nodes	L2	L3
E	Network node (local exchange)	Interacts with two terminals	L0	L1
F	Network node (local exchange)	Interacts with one terminal	L0	-
G	Network node (local exchange)	Interacts with one terminal and one other network node	L2	L0

NOTE: Cases B and G relate to the same configuration but with different interfaces as the focus of the test.

4.4 Transport mechanism specific extensions

In addition to the normative ATS the present document includes extensions for DSS1. These will of test steps, together with relevant declarations and constraints, to run in the PTCs associated with the PCOs (PTC0 and PTC 1) implementing the transport mechanism (or at least a sufficient part of it). These test steps can be used to replace the test steps implantiing the transparent behaviour in these PTCs in the normative ATS.

The test architecture using the transport mechanism specific extensions is shown in figure 3.

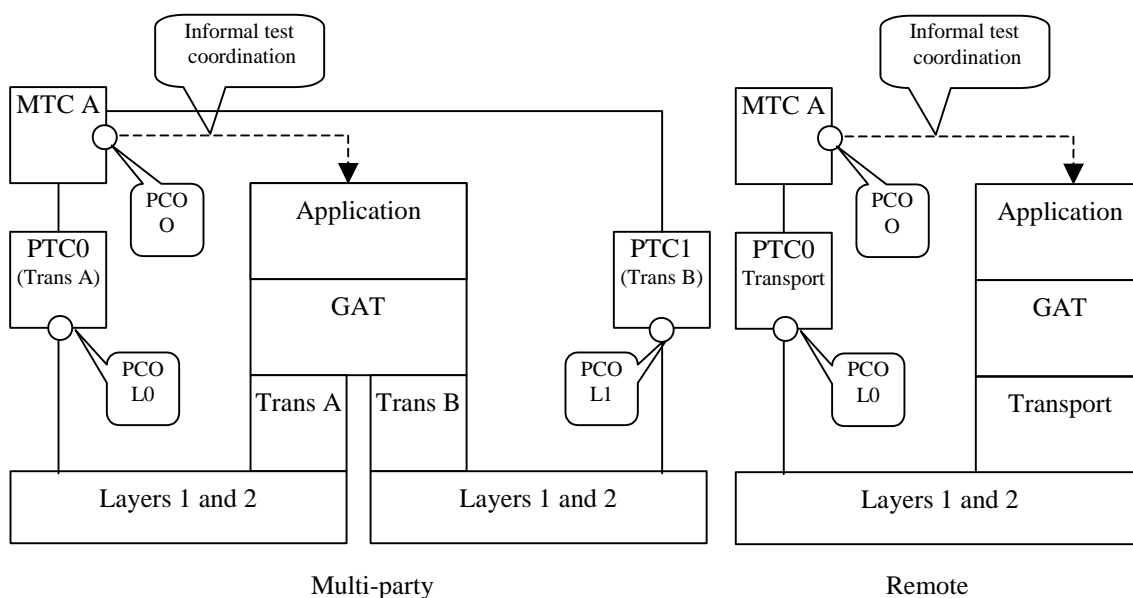


Figure 3: Test architecture with transport mechanism specific extensions

The extensions will be designed so that in the multi-party case they can be used independently for each interface e.g. to allow for different signalling systems on the different interfaces.

It is intended that the following would all be functionally equivalent and that a tester could be implemented in any of these ways:

- the normative ATS and an implementation of the relevant transport mechanism supporting the primitives specified;
- the ATS with transport mechanism specific extensions; or
- the ATS with PTC0 etc. removed and co-ordination points changed to PCOs and an implementation of the relevant transport mechanism supporting the primitives specified.

5 Untestable test purposes

The following test purposes are untestable because there is no externally observable behaviour: GAT_S_03_001 to 5.

6 ATS conventions

6.1 Version of TTCN used

The version of TTCN used is that defined in ISO/IEC 9646-3 [6].

6.2 Use of ASN.1

6.2.1 Situations where ASN.1 is used

All data types in the GAT protocol are defined in ASN.1. Therefore ASN.1 is used for all data types defined that directly relate to the protocol.

In addition, types defined in ASN.1 can model problems that "pure" TTCN cannot. For instance, data structures modelling ordered or unordered sequences of data are preferably defined in ASN.1 and ASN.1 provides a better restriction mechanism for type definitions by using sub-type definitions. Therefore ASN.1 has been used to define several other types in the ATS that are not directly concerned with the GAT protocol.

In the normative ATS ASN.1 is used to define all types except those related to the PCO O.

In the transport mechanism specific extensions the same conventions as for DSS1 supplementary service ATSs have been used concerning the use of ASN.1.

6.2.2 Coding rules - normative ATS

At the level of the GAT protocol coding rules are not relevant. It is therefore not necessary to specify encoding rules in the normative ATS. EN 301 813-1 [1] specifies that where the GAT PDU is carried in a Facility information element (as is the case in DSS1 and DSS2) that Basic Encoding Rules (BER) encoding according to ITU-T Recommendation X.209 or ITU-T Recommendation X.690 [10] shall be used and gives guidelines concerning length forms. The underlying transport mechanism in the tester shall comply with these requirements and any in the underlying protocol.

6.2.3 Coding rules - Transport mechanism specific extensions

In the transport mechanism specific extensions for DSS1, two variations of encoding rules are used. One is the known as Basic Encoding Rules (BER) as specified in ITU-T Recommendation X.209 and ITU-T Recommendation X.690 [10]. In the second case the encoding is according to ISDN, i.e. the ASN.1 data types are a representation of structures contained within the ISDN specification (basic call or Generic functional protocol). For example, if octets of an information element are specified in ASN.1 as a SEQUENCE then this should be encoded in an Executable Test Suite (ExTS) as any other ISDN information element specified using tabular TTCN.

The mechanism for specifying encoding rules in ISO/IEC 9646-3 [6] does not facilitate describing this situation used in this ATS. The encoding is therefore indicated in comment fields:

- Types defined in the basic ATS (i.e. common with the normative ATS) are encoded using BER.
- Types defined in the DSS1 extensions with "ASN1_Encoding: BER" in the table header are encoded using BER.
- Other types defined in the DSS1 extensions are encoded using ISDN encoding.

Note that within BER, there are a number of variations for the encoding of lengths of fields. According to EN 301 813-1 [1], an IUT should be able to interpret all length forms within BER for received PDUs. When sending PDUs containing BER encoding, EN 301 813-1 [1] gives guidelines but makes no restrictions on the length forms within BER which an IUT may apply.

7 ATS to TP map

The TC identifiers used in this ATS are the TP identifier with a letter appended indicating which of the roles described in clause 4.3 applies to that test case. Where a TP is applicable to more than one role there are separate TCs for each role to which it is applicable.

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 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:	EN 301 813-1
PICS:	
Previous PCTRs (if any):	

A.1.3 Testing environment

PIXIT reference number:	
ATS specification:	EN 301 813-4
Abstract test method:	Remote and Multi-party test methods (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.

.....

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.

.....

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 words "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:

.....

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.

.....

A.6 Test campaign report

Either the table in clauses A.6.1 or A.6.2 should be present according to the characteristics of the IUT.

A.6.1 Terminal

ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
GAT_S_01_001_A				
GAT_S_01_003_A				
GAT_S_01_005_A				
GAT_S_01_007_A				
GAT_S_01_009_A				
GAT_S_02_003_A				
GAT_S_02_004_A				
GAT_S_02_011_A				
GAT_S_02_012_A				
GAT_S_03_001_A				
GAT_S_03_002_A				
GAT_S_03_003_A				
GAT_S_03_004_A				
GAT_S_03_005_A				
GAT_RE_11_001_A				
GAT_RE_13_005_A				
GAT_RE_13_006_A				
GAT_RE_14_001_A				
GAT_RE_14_002_A				
GAT_RE_14_003_A				
GAT_CF_16_001_A				
GAT_CF_16_002_A				
GAT_CF_16_003_A				
GAT_CF_16_004_A				
GAT_RO_17_001_A				

A.6.2 Network Node

ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
GAT_S_01_002_C				
GAT_S_01_002_D				
GAT_S_01_002_G				
GAT_S_01_004_B				
GAT_S_01_004_C				
GAT_S_01_004_D				
GAT_S_01_004_E				
GAT_S_01_004_F				
GAT_S_01_004_G				
GAT_S_01_006_C				
GAT_S_01_006_D				
GAT_S_01_006_G				
GAT_S_01_008_C				
GAT_S_01_008_D				
GAT_S_01_008_G				
GAT_S_01_010_B				
GAT_S_01_010_C				
GAT_S_01_010_D				
GAT_S_01_010_E				
GAT_S_01_010_F				
GAT_S_01_010_G				
GAT_S_02_001_C				
GAT_S_02_001_E				
GAT_S_02_001_F				
GAT_S_02_001_G				
GAT_S_02_002_C				
GAT_S_02_002_G				
GAT_S_02_005_C				
GAT_S_02_005_D				
GAT_S_02_005_G				
GAT_S_02_006_B				
GAT_S_02_006_C				
GAT_S_02_006_D				
GAT_S_02_006_E				
GAT_S_02_006_F				
GAT_S_02_006_G				
GAT_S_02_007_C				
GAT_S_02_007_G				
GAT_S_02_008_C				
GAT_S_02_008_D				
GAT_S_02_008_G				
GAT_S_02_009_C				
GAT_S_02_009_D				
GAT_S_02_009_G				
GAT_S_02_010_C				
GAT_S_02_010_D				
GAT_S_02_010_G				
GAT_S_03_001_C				
GAT_S_03_001_F				
GAT_S_03_002_C				
GAT_S_03_002_F				
GAT_S_03_003_C				
GAT_S_03_003_F				
GAT_S_03_004_C				
GAT_S_03_004_F				
GAT_S_03_005_C				
GAT_S_03_005_F				
GAT_RT_07_001_B				
GAT_RT_07_001_D				

ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
GAT_RT_07_001_E				
GAT_RT_07_001_G				
GAT_RT_08_001_B				
GAT_RT_08_001_D				
GAT_RT_08_002_B				
GAT_RT_08_002_D				
GAT_RT_08_003_B				
GAT_RT_08_003_D				
GAT_RT_08_004_B				
GAT_RT_08_004_D				
GAT_RT_09_001_B				
GAT_RT_09_001_D				
GAT_RT_09_001_E				
GAT_RT_09_001_G				
GAT_RT_10_001_B				
GAT_RT_10_001_D				
GAT_RT_10_002_B				
GAT_RT_10_002_D				
GAT_RE_11_001_B				
GAT_RE_11_001_C				
GAT_RE_11_001_D				
GAT_RE_11_001_E				
GAT_RE_11_001_F				
GAT_RE_11_001_G				
GAT_RE_12_001_B				
GAT_RE_12_001_C				
GAT_RE_12_001_D				
GAT_RE_12_001_E				
GAT_RE_12_001_F				
GAT_RE_12_001_G				
GAT_RE_13_001_C				
GAT_RE_13_001_E				
GAT_RE_13_001_F				
GAT_RE_13_001_G				
GAT_RE_13_002_B				
GAT_RE_13_002_C				
GAT_RE_13_002_D				
GAT_RE_13_002_E				
GAT_RE_13_002_F				
GAT_RE_13_002_G				
GAT_RE_13_003_C				
GAT_RE_13_003_E				
GAT_RE_13_003_F				
GAT_RE_13_003_G				
GAT_RE_13_004_C				
GAT_RE_13_004_E				
GAT_RE_13_004_F				
GAT_RE_13_004_G				
GAT_RE_14_001_B				
GAT_RE_14_001_C				
GAT_RE_14_001_D				
GAT_RE_14_001_E				
GAT_RE_14_001_F				
GAT_RE_14_001_G				
GAT_RE_14_002_B				
GAT_RE_14_002_C				
GAT_RE_14_002_D				
GAT_RE_14_002_E				
GAT_RE_14_002_F				
GAT_RE_14_002_G				
GAT_RE_14_003_B				
GAT_RE_14_003_C				

ATS reference	Selected? (Y/N)	Run? (Y/N)	Verdict	Observations
GAT_RE_14_003_D				
GAT_RE_14_003_E				
GAT_RE_14_003_F				
GAT_RE_14_003_G				
GAT_RE_15_001_C				
GAT_RE_15_001_E				
GAT_RE_15_001_F				
GAT_RE_15_001_G				
GAT_RE_15_002_C				
GAT_RE_15_002_E				
GAT_RE_15_002_F				
GAT_RE_15_002_G				
GAT_RE_15_003_C				
GAT_RE_15_003_E				
GAT_RE_15_003_F				
GAT_RE_15_003_G				
GAT_CF_16_001_B				
GAT_CF_16_001_C				
GAT_CF_16_001_D				
GAT_CF_16_001_E				
GAT_CF_16_001_F				
GAT_CF_16_001_G				
GAT_CF_16_002_B				
GAT_CF_16_002_C				
GAT_CF_16_002_D				
GAT_CF_16_002_E				
GAT_CF_16_002_F				
GAT_CF_16_002_G				
GAT_CF_16_003_B				
GAT_CF_16_003_C				
GAT_CF_16_003_D				
GAT_CF_16_003_E				
GAT_CF_16_003_F				
GAT_CF_16_003_G				
GAT_CF_16_004_B				
GAT_CF_16_004_C				
GAT_CF_16_004_D				
GAT_CF_16_004_E				
GAT_CF_16_004_F				
GAT_CF_16_004_G				
GAT_RO_17_001_B				
GAT_RO_17_001_C				
GAT_RO_17_001_D				
GAT_RO_17_001_E				
GAT_RO_17_001_F				
GAT_RO_17_001_G				

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: EN 301 813-1

ATS specification: EN 301 813-4

Abstract test method: Remote and Multi-party test methods (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: EN 301 813-1

Protocol version:

PICS reference:

NOTE: The PICS reference should reference a completed PICS which is conformant with the PICS proforma contained in EN 301 813-2.

B.6.2 Parameter values

Table B.1: Parameter values

Item	Question	Supported? (Y/N)	Allowed values	Value
1.1	Is the IUT to be tested for bearer-related or bearer-independent operation (see note)		Bearer related/bearer independent	
NOTE: The ATS can be used to test an IUT for either bearer related or bearer independent operation. If both are supported and to be tested then a separate PIXIT should be submitted for each.				

B.6.3 Operation values

An operation should be specified such that if an invoke component for that operation containing no parameter is received by the SUT it provokes the SUT to send a Return Result, Return Error or Reject component in response. This should if possible be an operation which is understood by the IUT (i.e. the IUT can determine by examination of the service indicator and/or operation values that the relevant application is present in the SUT); if no such operation is available then an operation which is not understood by the IUT may be provided.

Table B.2: Operation values

Item	Question	Allowed values	Value
2.1	Operation value	OBJECT IDENTIFIER or INTEGER	
2.2	Service Indicator	OBJECT IDENTIFIER	
2.3	Local value indicator	ITU-T or ISO/IEC	
2.4	Does the IUT understand the operation	Yes/No	

B.6.4 Type of network node

Table B.3: Type of network node

Item	Can the SUT operate as...	Supported? (Y/N)
3.1	a local exchange with a connection involving one user-network interface and one network-network interface	
3.2	an exchange with a connection originating or terminating on the SUT involving one network/network interface	
3.3	a transit exchange with a connection involving two network-network interfaces	
3.4	a local exchange with a connection involving two user-network interfaces	
3.5	a local exchange with a connection originating or terminating on the SUT involving one user-network interface	

B.6.5 Identification of interfaces

Up to four interfaces should be identified on the SUT. The number and type of interfaces required depends on the characteristics of the IUT.

Table B.4: Interface identification

Item	PCO identifier	Type of interface	Condition	Supported? (Y/N)	Identification	Transport mechanism
4.1	L0	UNI	MCs 8 OR 3.1 OR 3.4 OR 3.5			
4.2	L1	UNI	3.4			
4.3	L2	NNI	3.1 OR 3.2 OR 3.3			
4.4	L3	NNI	3.3			

B.6.6 Addressing

Table B.5: Addressing

Item	Question	Condition	Supported? (Y/N)	Value
5.1	The service address of the IUT	m		
5.2	Address routed to interface associated with PCO L0	3.1 or 3.2		
5.3	Address routed to interface associated with PCO L1	3.2		
5.4	Address routed to interface associated with PCO L2	3.1 or 3.3		
5.5	Address routed to interface associated with PCO L3	3.3		
5.6	An address which is not a service address of the IUT	m		

B.6.7 Actions Required to provoke the IUT

Table B.6: Actions Required to provoke the IUT

Item	Action: What actions, if possible, have to be taken to provoke the IUT to send, using GAT, an initial service APDU...	Supported? (Y/N)	Stimulus (action taken)
6.1	as a terminal ...		
6.1.1	without explicit indication of the origin or destination of the APDU?		
6.1.2	addressed to the end terminal?		
6.1.3	addressed to the end node?		
6.1.4	addressed to a specific node?		
6.1.5	addressed to the next node that understands the contents of the APDU?		
6.1.6	Addressed to a network node?		
6.2	as a network node, without a connection already existing, on a user-network interface...		
6.2.1	without explicit indication of the origin or destination of the APDU?		
6.2.2	addressed to the end terminal?		
6.2.2a	addressed to the end terminal and indicating the source as end node.		
6.2.2b	addressed to the end terminal and indicating the source by an explicit address.		

Item	Action: What actions, if possible, have to be taken to provoke the IUT to send, using GAT, an initial service APDU...	Supported? (Y/N)	Stimulus (action taken)
6.3	as a network node, without a connection already existing, on a network-network interface...		
6.3.1	without explicit indication of the origin or destination of the APDU?		
6.3.2	addressed to the end terminal?		
6.3.2a	addressed to the end terminal and indicating the source as end node.		
6.3.2b	addressed to the end terminal and indicating the source by an explicit address.		
6.3.3	addressed to the end node?		
6.3.4	addressed to a specific node?		
6.3.5	addressed to the next node that understands the contents of the APDU		
6.3.6a	addressed to a network node and indicating the source as end node.		
6.3.6b	addressed to a network node and indicating the source by an explicit address.		
6.4	as a network node, with a connection already existing, on a user-network interface...		
6.4.1	without explicit indication of the origin or destination of the APDU?		
6.4.2	addressed to the end terminal?		
6.4.2a	addressed to the end terminal and indicating the source as end node.		
6.4.2b	addressed to the end terminal and indicating the source by an explicit address.		
6.5	as a network node, with a connection already existing, on a network-network interface...		
6.5.1	without explicit indication of the origin or destination of the APDU?		
6.5.2	addressed to the end terminal?		
6.5.2a	addressed to the end terminal and indicating the source as end node.		
6.5.2b	addressed to the end terminal and indicating the source by an explicit address.		
6.5.3	addressed to the end node?		
6.5.4	addressed to a specific node?		
6.5.5	addressed to the next node that understands the contents of the APDU		
6.5.6a	addressed to a network node and indicating the source as end node.		
6.5.6b	addressed to a network node and indicating the source by an explicit address.		

B.6.8 Timers

Table B.7: Timer values

Item	Timer values: Give a value for the timer that is used to ...	Value (in seconds)
7.1	wait for the test operator to perform an implicit send action (TWAIT) (see note)	
7.2	wait for the IUT to respond to a stimulus sent by the tester (TAC) (see note)	
7.3	check that the IUT does not respond to a stimulus sent by the tester (TNOAC) (see note)	
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 be beyond the range given by the IUT provider, if this is necessary for achieving satisfactory test results.		

B.6.9 DSS1 items

The items in this clause are only required if the IUT is to be tested using the transport mechanism specific extensions for DSS1.

Table B.8: Parameter values

Item	Question	L0	L1	L2	L3
D1.1	Is the interface Basic access?				
D1.2	What is the call reference length (1 or 2 octets)?				
D1.3	Is the interface User side?				
NOTE: A response should be given in this table for each of the interfaces being tested that supports DSS1.					

Table B.9: Codings of information elements

Item	Information element: provide, if possible, ...	Supported? (Y/N)	Value
D2.1	a coding of a Bearer Capability information element, which the IUT is compatible with, for the purpose of accepting received SETUP messages.		
D2.2	a coding of a High layer compatibility information element, which the IUT is compatible with, for the purpose of accepting received SETUP messages.		
D2.3	a coding of a Low layer compatibility information element, which the IUT is compatible with, for the purpose of accepting received SETUP messages.		

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 (GAT_00_03.pdf, GAT_01_03.pdf, GAT_Basic_03.pdf, GAT_DSS1_03.pdf, GAT_Trans_03.pdf contained in archive en_30181304v010101v0.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 (GAT_00_03.mp, GAT_01_03.mp, GAT_Basic_03.mp, GAT_DSS1_03.mp, GAT_Trans_03.mp contained in archive en_30181304v010101v0.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 (normative): Specification of transport service interface

D.1 Introduction

This annex contains a specification of the interface between the lower tester and its underlying transport service provider. It is based on the transport service defined in EN 301 813-1 [1], clause 5.4.3 with some extensions (e.g. to provide for establishment of basic calls).

It is intended that this annex defines a complete transport service interface, including the entire functionality implied by EN 301 813-1 [1], clause 5.4.3. Thus it includes some functionality which is never used in the ATS.

There is no requirement to implement this interface on the tester, however the behaviour of the tester shall be the same as if the normative ATS and transport service(s) implementing this interface was implemented.

D.2 Data types

Data types used in the specification of the transport service interface are defined in table D.1 using the ASN.1 notation defined in ITU-T Recommendation X.680 [9].

Table D.1: Specification of data types used in transport service interface

```
GAT-Test-Primitives-Types
  {itu-t identified-organization etsi (0) 1813 4 gat-test-primitive-types (0)}

DEFINITIONS ::=

EXPORTS      TransParameter, ServiceType;

IMPORTS      PartyNumber FROM Revised-Addressing-Data-Elements
              {itu-t identified-organization etsi (0) 196
               revised-addressing-data-elements (14) },
              GATPDU FROM GAT-PDU {itu-t recommendation q 860 gat-pdu (1)};

BEGIN

TransParameter ::= SEQUENCE {
                    Service      [1] ServiceType,
                    ConnId       [2] INTEGER (1..65535),
                    Cdpn         [3] PartyNumber OPTIONAL,
                    Data          [4] GATPDU OPTIONAL
                }

ServiceType ::= ENUMERATED {
                    bearerRelated (0),
                    bearerIndependent (1)
                }

END
```

NOTE: In some test cases the LT issues primitives where the content of the Data field of TransParameter is not a GAT PDU as defined in EN 301 813-1 [1], in order to test error handling in the IUT. The test tool should include the invalid PDU as received in the primitive.

D.3 Definition of primitives

The following primitives are defined for the transport service interface:

- Transport-Setup request, indication, response and confirm
- Transport-Release request, indication, response and confirm
- Transport-Reject indication
- Transport-Data request and indication

Each primitive carries one parameter of type TransParameter. The Transport-Reset primitives carry no parameters. The usage of fields in TransParameter is indicated in table D.2.

Table D.2: Usage of fields in TransParameter in primitives

Field Name	Transport-Setup				Transport-Release				Trans- Reject	Transport- Data	
	Req	Ind	Res	Con	Req	Ind	Res	Con	Ind	Req	Ind
service	M	M	M	M	M	M	M	M	M	M	M
connId	M	M	M	M	M	M	M	M	M	M	M
cdpn	M	O	O	O	N/A	N/A	N/A	N/A	N/A	N/A	N/A
data	O	O	O	O	O	O	O	O	N/A	M	M

NOTE: Where a field is shown as N/A its presence is not considered as an error, but should be ignored.

D.4 Definition of services

D.4.1 Transport-Setup

The Transport-Setup service is used to establish a basic call or bearer independent connection and to transfer data during connection establishment. It is an extension of the Transport-Setup service defined in EN 301 813-1 [1], clause 5.4.3.

To initiate a connection the LT issues a Transport-Setup request, using the service field to indicate if a basic call or a call independent connection is required, the connId field to indicate a unique value to identify the connection locally (in the range 1 to 127) and the cdpn field to indicate the destination of the connection. It may optionally include a GAT PDU in the data field to request data transfer during connection establishment.

If the connection is successfully established the LT receives a Transport-Setup confirm primitive containing the same values of service and connId fields as in the Transport-Setup request primitive. The cdpn field may be present to indicate the destination of the connection. The data field is present if the destination requested data transfer during call establishment.

The Transport-Setup indication primitive is received by the LT to indicate that an attempt is being made to establish a connection to the LT. The service field indicates if it is a basic call or a call independent connection and the connId contains a unique value to locally identify the connection (in the range 128 to 65535). The cdpn field may be present to identify the destination of the connection, and the data field is present if the initiating entity has requested data transfer during connection establishment.

To accept a connection the LT issues a Transport-Setup indication primitive containing the same values of service and connId as in the Transport-Setup indication. It may include the cdpn field to indicate the destination of the connection and the data field to request data transfer during connection establishment.

The values of service and connId included in the Transport-Setup primitives are included in all subsequent primitives for the connection without being explicitly mentioned.

NOTE 1: No information concerning the basic service to be used when establishing a basic call is included in these primitives. This is a matter for the transport mechanism implementation in the test tool.

NOTE 2: It is intended that the connId value can be mapped directly to the Call reference when the underlying transport mechanism is DSS1.

D.4.2 Transport-Release

The Transport-Release service is used to release a basic call or bearer independent connection and to transfer data during connection clearing. It is an extension of the Transport-Setup service defined in EN 301 813-1 [1], clause 5.4.3.

To initiate clearing the LT issues a Transport-Release request. When the connection has been successfully cleared it receives a Transport-Release confirm. The Transport-Release confirm primitive is also used to indicate failure of an attempt to establish a connection.

If the peer entity requests clearing the LT receives a Transport-Release indication to which it should respond with a Transport-Release response.

NOTE: The connection is cleared following the Transport-Release indication even if the LT does not issue the Transport-Release response.

The data field may be included in any Transport-Release primitive to request or indicate data transport during connection clearing.

D.4.3 Transport-Reject

The LT receives a Transport-Reject indication primitive if the transport mechanism cannot accept a primitive issued by the LT and there is no other more appropriate primitive. It can also be received in the event of an error occurring in the transport mechanism. This is based in the Transport-Reject service defined in EN 301 813-1 [1], clause 5.4.3.

D.4.4 Transport-Data

The Transport-Data service is used to transfer data during the active phase of a connection. It is as defined in EN 301 813-1 [1], clause 5.4.3. The PDU to be sent is included in the data field.

In addition the transport mechanism may issue a Transport-Data indication to the LT in during the establishment or clearing phases to deliver data before a Transport-Setup confirm or Transport-Release confirm can be issued.

D.5 Sequences of primitives

Valid sequences of primitives are indicated in the state transition tables D.3 and D.4. The states in these tables are solely to assist in the definition of the interface and are not intended to constrain implementations. The DSS1 messages shown are typical examples and do not imply any requirement for that message to be used in all situations.

Table D.3: State transition table for Transport Mechanism side of Tester-Transport Mechanism interface

	Idle	SetupOut	SetupIn	Active	ClearOut	ClearIn
TR_SU_RQ	Commence establishment (SETUP) SetupOut	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN
TR_SU_RS	TR_RJ_IN	TR_RJ_IN	Complete establishment (CONNECT) Active	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN
TR_RL_RQ	Ignore	Commence Clearing (RELEASE), start clearing timer ClearOut	Commence Clearing (RELEASE), start clearing timer ClearOut	Commence Clearing (RELEASE), start clearing timer ClearOut	Ignore	Complete Clearing (REL COM) TR_RL_CO Idle
TR_RL_RS	Ignore	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	Complete Clearing (REL COM) Idle
TR_DA_RQ	TR_RJ_IN	TR_RJ_IN	Ignore	Send data (FACILITY)	Ignore	Send data (FACILITY)
Establishment accepted (CONNECT)	-	TR_SU_CO Active	-	-	-	-
Inward Clearing (RELEASE) (note 1)	-	TR_RL_CO Idle	TR_RL_IN ClearIn	TR_RL_IN ClearIn	TR_RL_CO Idle	-
Establishment requested (SETUP)	TR_SU_IN SetupIn	-	-	-	-	-
Data received (FACILITY)	-	TR_DA_IN	TR_DA_IN	TR_DA_IN	TR_DA_IN	TR_DA_IN
Clearing completed (REL COM)	-	-	-	-	TR_RL_CO Idle	-
Clearing timer expired	-	-	-	-	-	Complete clearing (REL COM) Idle
Lower layer error (note 2)	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN	TR_RJ_IN
- Event not valid for state.						
Ignore No action to be taken on event.						
(MESSAGE) DSS1 message typically received or sent for event or action.						
NOTE 1: Also includes failure of connection request (e.g. no response to SETUP).						
NOTE 2: Only errors which impact on GAT testing need be reported (e.g. if transport service fails).						

Table D.4: State transition table for Tester side of Tester-Transport Mechanism interface

	Idle	SetupOut	Active	ClearOut
TR_SU_IN	TR_SU_RS Active or TR_RL_RS	Error	Error	Error
TR_SU_CO	Error	Active	Error	Error
TR_RL_IN	Error	Error	TR_RL_RS Idle	Ignore
TR_RL_CO	Error	Idle	Error	Idle
TR_DA_IN	Error	*	*	*
TR_RJ_IN	*	*	*	*
TR_RS_CO	Error	Error	Error	Error
To establish connection	TR_SU_RQ SetupOut	-	-	-
To send data	-	-	TR_DA_RQ	-
To clear connection	-	TR_RL_RQ	TR_RL_RQ ClearOut	-
*	No state change as a result of event (the tester may take further action which could lead to a state change).			
-	Event not valid for state.			
Error	Event can only occur as a result of missoperation of the transport mechanism			

Annex E (informative): Transport mechanism specific extensions

E.1 Introduction

As described in clause 4, the ATS in the present document includes provision for transport mechanism specific extensions to be used in order to facilitate use over different transport mechanisms. Transport mechanism specific extensions for DSS1 are included in the present document.

E.2 Modular structure

The ATS has a modular structure. The modules included are described in table E.1.

Table E.1: TTCN modules

Module name	Filename	Description
GAT_Root	GAT_00_XX.mp/pdf GAT_11_XX.mp/.pdf	Root ATS which links the other modules. This needs to be modified to indicate on which interface(s) transport mechanism specific extensions are to be used. Two versions are provided: GAT_00_XX.mp/pdf is the basic version without any transport mechanism specific extensions; GAT_11_XX.mp/pdf is an example with transport mechanism specific extensions for DSS1 on PCOs L0 and L1.
GAT_Basic	GAT_Basic_XX.mp/pdf	This module contains the basic GAT ATS, including all test cases and general declarations, test steps etc. It is always necessary to include this module.
GAT_Trans	GAT_Trans_XX.mp/pdf	This module contains the transparent test steps that are used for the PTCs controlling any interfaces for which no transport mechanism specific extension is being used. It is necessary to include this module if there is any interface for which no transport mechanism specific extensions are being used.
GAT_DSS1	GAT_DSS1_XX.mp/pdf	This module contains the transport mechanism specific extensions for DSS1. It is necessary to include this module if these are being used on any interface.
NOTE 1: XX in filenames represents the version number. See annex C for the appropriate number.		
NOTE 2: The files in bold form the normative ATS.		

If transport mechanism specific extensions for any other transport mechanism(s) are to be used these should be in separate module(s) and should present the interface described in clause E.4.

E.3 Root ATS

When transport mechanism specific extensions are being used it is necessary to modify the root ATS in order to link to the extensions.

In the import declarations section the PCO type and test step exported by each transport mechanism specific extensions module being used should be imported.

In PCO declarations the PCO type of each PCO for which a transport mechanism specific extension is being used should be the PCO type defined for that transport mechanism specific extension (DSS1_SAP for DSS1). For PCOs for which no transport mechanism specific extension is being used the PCO type should be TR_SAP.

In the test step PTC_0_STEP the test step attached should be that exported by the transport mechanism specific extension used on PCO L0 (PTC_DSS1 for DSS1) or PTC_TRANS when no transport mechanism specific extension is being used on that PCO. In either case the parameters are (L0, CP0). Similarly for PTC_1_STEP, PTC_2_STEP and PTC_3_STEP.

E.4 Interface to Transport Mechanism Specific Extensions

E.4.1 Content of module

The TTCN module for a transport mechanism specific extension should contain and export at least:

- declaration of a PCO type appropriate to the transport mechanism; and
- a test step, to be called by the Root ATS, to execute the transport mechanism.

Additionally all declarations and constraints (except those provided by the basic ATS) and test steps used should be included.

NOTE: Name conflicts with the existing modules should be avoided.

E.4.2 Calling interface

The test step exported by the module should have a name unique to the transport mechanism and two parameters, the first of the PCO type associated with the transport mechanism and the second of the coordination point type.

EXAMPLE: PTC_DSS1(LX: DSS1_SAP; CPX: CP).

When called these parameters are used to indicate the PCO the test step should control and the coordination point that will be used to communicate with the MTC.

E.4.3 Coordination messages

The MTC communicates with the PTC on which the transport mechanism specific extensions run by means of coordination messages. The PTC is expected to provide the transport service defined in annex D (subject to relaxations described below) and coordination messages are mapped to primitives as indicated in table E.2.

Table E.2: Coordination messages

CM name	Direction	Primitive	Comments
C_TR_SU_RQ	MTC → PTC	Transport-Setup request	
C_TR_SU_IN	MTC ← PTC	Transport-Setup indication	
C_TR_SU_RS	MTC → PTC	Transport-Setup response	
C_TR_SU_CO	MTC ← PTC	Transport-Setup confirm	
C_TR_RL_RQ	MTC → PTC	Transport-Release request	
C_TR_RL_IN	MTC ← PTC	Transport-Release indication	
C_TR_RL_RS	MTC → PTC	Transport-Release response	
C_TR_RL_CO	MTC ← PTC	Transport-Release confirm	
C_TR_DA_RQ	MTC → PTC	Transport-Data request	
C_TR_DA_RQ_ERR	MTC → PTC	Transport-Data request	As C_TR_DA_RQ but with syntactically invalid GAT PDU.
C_TR_DA_IN	MTC ← PTC	Transport-Data indication	
END_PTC	MTC → PTC	(none)	Requests PTC to terminate

In general each CM (except END_PTC) carries one parameter of type TransParameter as defined in clause D.2. The exact definition varies between CMs and reference should be made to the GAT_Basic module for the definition of each CM.

E.4.4 Transport service relaxations

The ATS does not make use of all the functionality of the transport service defined in annex D. Therefore some relaxations on the service provided by the transport mechanism specific extensions or other underlying transport mechanisms are possible. These are summarized below:

- The ATS uses no more than one connection at any time. If an attempt is made to establish an incoming connection whilst a connection is already active this may be quietly rejected as an alternative to issuing a Transport-Setup indication primitive.
- The ATS only makes limited use of the *cdpn* and *data* fields in Transport-Setup and Transport-Release primitives. The use of these fields in these primitives is indicated in table E.3. Where a field is not shown as being used it can be ignored in primitives from the MTC and omitted in primitives towards the MTC.

Table E.3: Usage of fields in primitives by ATS

Field Name	Transport-Setup				Transport-Release			
	Req	Ind	Res	Con	Req	Ind	Res	Con
<i>cdpn</i>	√							
<i>data</i>		√				√		

- The transport mechanism may immediately complete clearing initiated by the IUT; it is not necessary to wait for the MTC to send Transport-Release response.
- The ATS can only be used for one type of service at a time (bearer related or bearer independent) selected by a test suite parameter (*PX_Serv*). Transport mechanism specific extensions may use this parameter to select the mechanism to use as an alternative to the value received in the CM.

Annex F (informative): Bibliography

ITU-T Recommendation X.208: "Specification of Abstract Syntax Notation One (ASN.1)".

ITU-T Recommendation X.209: "Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)".

ITU-T Recommendation Q.765.4 (2000): "Signalling System No. 7 - Application transport mechanism - Support of the generic addressing and transport protocol".

ITU-T Recommendation Q.860: "Integrated services digital network (ISDN) and broadband integrated services digital network (B-ISDN) generic addressing and transport (GAT) protocol".

ETSI EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

History

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