

ü]fc_cdUgcj bc`X][]HJbc`ca fYy`Y`n`]bhY[f]fUbj]a]`g]cf]hj Ua]`f6 !=G8 BŁĚ`Dfc]c_c`
X][]HJbY`bUfc b]ý_Y`g][bU]nUWY`Y`ýH`&f8 GG&ŁĚ`GdYWZ]_ UWYU_fa]`Yb`U
j Y nj YnbY[Ubcg]`WUcX`lc _Y`Xc`lc _Y`j`c_c`f ž`Yf`ghU`_]W]b`bcg]`YWc YbUĚ`("
XY. 5 Vg]fU`_Hb]`dfYg_i ýU]b]`b]n`f8 HGL]b`XY`bUXcXU]bU]bZ`fa UWYU`nUdfYg_i ýU]b`Y
]nj YXVY`dfc]c_c`UfD`Ł`ŁĚ`DfcZ`fa UgdYWZ]_ UWYU

Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Point-to-point multiconnection bearer control specification in a separated call and bearer environment; 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).

The present document is part 4 of a multi-part standard covering the Digital Subscriber Signalling System No. two (DSS2) protocol; Point-to-point multiconnection bearer control specification in a separated call and bearer environment, as identified below:

- Part 1: "Protocol specification";
- 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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National transposition dates

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Date of latest announcement of this EN (doa):	30 November 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2001
Date of withdrawal of any conflicting National Standard (dow):	31 May 2001

1 Scope

The present document the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the T_B reference point or coincident S_B and T_B reference point (as defined in ITU-T Recommendation I.413 [10]) of implementations conforming to the standards for the signalling user-network layer 3 specification for the bearer control protocol for point-to-point multiconnection calls of the Digital Subscriber Signalling System No. two (DSS2) protocol for the pan-European Broadband Integrated Services Digital Network (B-ISDN), EN 302 093-1 [1].

A further part of the present document specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma.

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.

- [1] ETSI EN 302 093-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Point-to-point multiconnection bearer control specification in a separated call and bearer environment; Part 1: Protocol specification".
- [2] ETSI EN 302 093-2: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Point-to-point multiconnection bearer control specification in a separated call and bearer environment; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [3] ETSI EN 302 093-3: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; Point-to-point multiconnection bearer control specification in a separated call and bearer environment; 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: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework, Part 3: The Tree and Tabular Combined Notation".
- [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] ETSI EN 302 092-1: "Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN); Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7); Call control in a separated call and bearer control environment; Part 1: Protocol specification".
- [10] ITU-T Recommendation I.413: "B-ISDN user-network interface".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply in addition to the definitions in EN 302 092-1 [9]:

Abstract test case: Refer to ISO/IEC 9646-1 [4]

Abstract Test Method (ATM): Refer to ISO/IEC 9646-1 [4]

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

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

Lower tester (LT): Refer to ISO/IEC 9646-1 [4]

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

PICS proforma: Refer to ISO/IEC 9646-1 [4]

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

PIXIT proforma: Refer to ISO/IEC 9646-1 [4]

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

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

Test Purpose (TP): Refer to ISO/IEC 9646-1 [4]

Upper Tester (UT): Refer to ISO/IEC 9646-1 [4]

3.2 Abbreviations

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

ATM	Abstract Test Method
ATS	Abstract Test Suite
B-ISDN	Broadband Integrated Services Digital Network
CM	Co-ordination Message
CP	Co-ordination Point
DSS2	Digital Subscriber Signalling System No. two
ExTS	Executable Test Suite
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
MTC	Main Test Component
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PTC	Parallel Test Component
SUT	System Under Test
TCP	Test Co-ordination Procedures
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

4 Abstract Test Method

4.1 Description of ATM used

The requirement for testing the network IUT is to focus on the behaviour of the network IUT at the user-network interface where a T_B reference point or coincident S_B and T_B reference point applies. Thus the IUT is the network DSS2 protocol entity at a particular user-network interface and is not the whole network.

It is possible to specify an ATS based on a Single party (remote) test method for such an IUT. However, it is considered that an ATS based on such an approach is of limited use as the only way to specify IUT generated PDUs is to use the "implicit send" statement. Many users of such an ATS would replace the "implicit send" statements with descriptions of the behaviour at other interfaces.

An ATS based on a multi-party test method is considered to be more useful in that it is closer to how a real test suite would be constructed. Such a test method specifies behaviour at multiple network interfaces. One very important limitation here is that tests are focussed on one particular interface. Thus the test system is made up one Main Test Component (MTC) and one or more Parallel Test Components (PTC), see figure 1.

4.2 Conventions for test components and PCOs

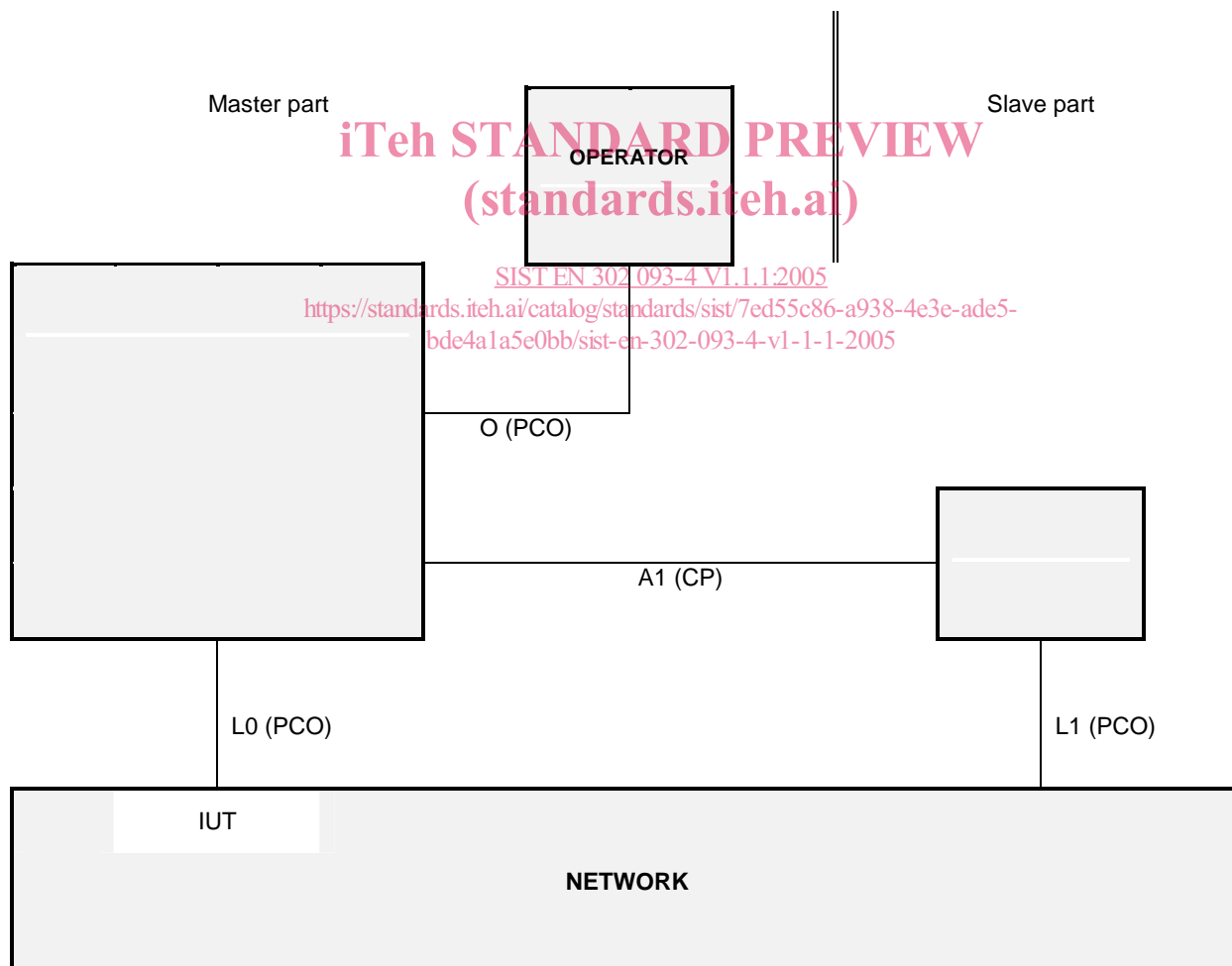


Figure 1: Multi-party test method

In a master/slave arrangement, the MTC is considered to be the master while the PTCs are the slaves. The "slave" testers are only an explicit description of how to deal with the remote interfaces during the testing process, i.e. "how to make the IUT send the required message".

This means, in particular, that the verdict will only be assigned from the protocol aspects observed on *the* interface under test (i.e. by the "master" tester), as it would be observed by a terminal connected to this interface. A failure in the correlation between the protocol at the different interfaces to which the different testers are connected, i.e. in the mechanism of the functional service itself, will not cause a FAIL verdict. For instance, if the IUT fails to send a message on the tested interface after another interface has received the proper stimulus, the verdict will be INCONCLUSIVE.

The MTC MTCA has two functions in this configuration. Firstly, it has the MTC function of controlling the one or more PTCs. Thus it is responsible for starting the PTCs and afterwards co-ordinates activities by exchanging Co-ordination Messages (CM) with the PTCs. Secondly it is responsible for the behaviour of the Lower Tester (LT) at PCO L0.

A combination of the remote and multi-party test methods is applied. As can be seen from figure 1, several PCOs are used. All PCOs reside at the service access points between layers 2 and 3.

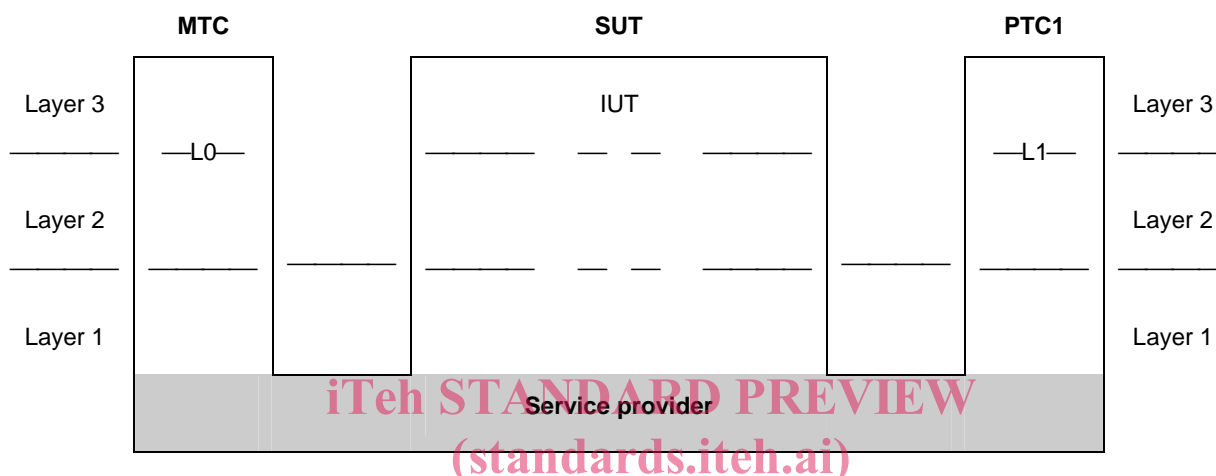


Figure 2: Combination of the remote and multi-party test methods

The MTC PCO is named "L0" ("L" for Lower) and "O". The L0 PCO is used to control and observe the behaviour of the IUT and test case verdicts are assigned depending on the behaviour observed at this PCO. ISO/IEC 9646-2 [5] allows the informal expression of Test Co-ordination Procedures (TCP) between the System Under Test (SUT) upper layer(s) and the Lower Tester (LT). In the ATS contained in annex C, TCP is achieved by use of a second "informal" PCO, called "O" (for Operator). This PCO is used to specify control but not observation above the IUT and consequently, events at this PCO are never used to generate test case verdicts. The use of this O PCO is regarded as a preferred alternative to the use of the implicit send event, in that it allows the ATS to specify in a clear and meaningful way what actions are required to be performed on the IUT. As an alternative of L1, the O PCO is used for an end CC entity.

The PTC PTC1 uses PCOs L1. These PCO is used to control and, in a limited way, observe the behaviour of the network equipment at interface other than the one under test. No verdicts are assigned at this PCO.

As stated in a previous paragraph, the non-receipt of network generated messages at L0, which are stimulated by events at the L1, will result in INCONCLUSIVE rather than FAIL verdicts being assigned.

In test cases which verify that the IUT rejects invalid or unacceptable SETUP messages and in the majority of the test cases for the restart procedures, no PTC is activated at all, as these procedures are considered local to the access between IUT and MTC.

5 Untestable test purposes

There are no untestable test purposes associated with this ATS.