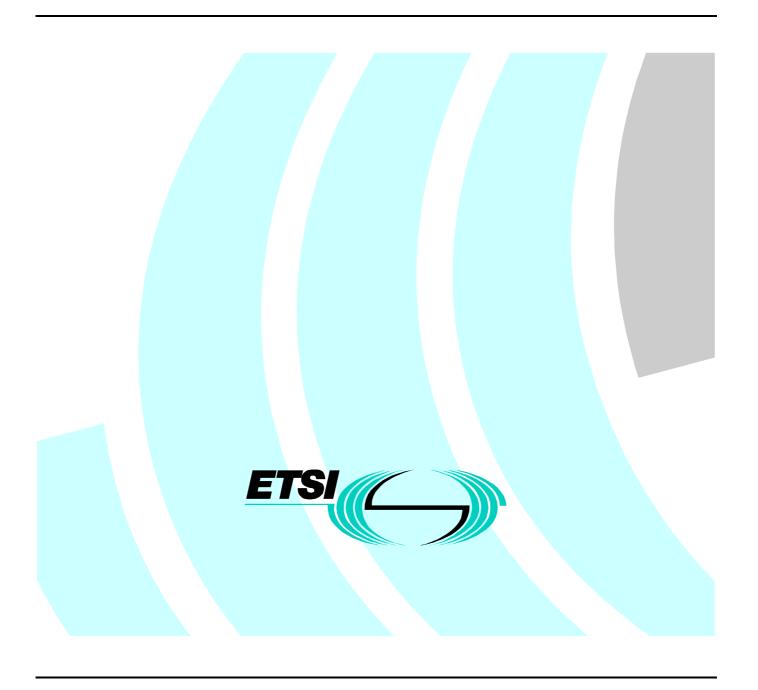Draft **EN 302 091-3** V1.1.1 (1999-07)

European Standard (Telecommunications series)

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); Prenegotiation; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification

ETSI

ETSI

Postal address
F-06921 Sophia Antipolis Cedex - FRANCE

Office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet
secretariat@etsi.fr
Individual copies of this ETSI deliverable
can be downloaded from
http://www.etsi.org
If you find errors in the present document, send your
comment to: editor@etsi.fr

ETSI

Contents

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available **free of charge** from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://www.etsi.org/ipr).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document is part 3 of a multi-part standard covering the Digital Subscriber Signalling System No. 2 (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) protocol specification for Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN) Prenegotiation, as described 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".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1   Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for the Q_B, S_B, T_B and co-incident S_B/T_B reference point (as defined in ITU-T Recommendation I.413 [5]) of implementations conforming to the standards for the Digital Subscriber Signalling System No. 2 (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) protocol specification for Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN) Prenegotiation, EN 302 091-1 [1].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma based on the present document.

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]   EN 302 091-1 (V1.1): "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); Prenegotiation; Part 1: Protocol specification".

[2]   EN 302 091-2 (V1.1): "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); Prenegotiation; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3]   ISO/IEC 9646-1: "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework; Part 1: General Concepts".

[4]   ISO/IEC 9646-2: "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework; Part 2: Abstract Test Suite Specification".

[5]   ITU-T Recommendation I.413 (1993): "B-ISDN user-network interface".

[6]   ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply, in addition to those given in EN 302 091-1 [1]:

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

Abstract Test Method (ATM): refer to ISO/IEC 9646-1 [3].

Abstract Test Suite (ATS): refer to ISO/IEC 9646-1 [3].

Implementation Under Test (IUT): refer to ISO/IEC 9646-1 [3].

lower tester: refer to ISO/IEC 9646-1 [3].

Protocol Implementation Conformance Statement (PICS): refer to ISO/IEC 9646-1 [3].

PICS proforma: refer to ISO/IEC 9646-1 [3].

Protocol Implementation eXtra Information for Testing (PIXIT): refer to ISO/IEC 9646-1 [3].

PIXIT proforma: refer to ISO/IEC 9646-1 [3].

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

3.2 Abbreviations

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

APDU	Application Protocol Data Unit
ATM	Abstract Test Method
ATS	Abstract Test Suite
CC	Call Control
DSS2	Digital Subscriber Signalling System No. two
B-ISDN	Broadband Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TP	Test Purpose
TSS	Test Suite Structure

4 Test Suite Structure (TSS)

- Signalling procedures at an originating or terminating Call Control (CC) entity

- Originating CC entity   (01)

- Terminating CC entity   (02)

- Originating or terminating CC entity

  - Initiator   (03)

  - Responder   (04)

Figure 1: Test suite structure

5   Test Purposes (TP)

5.1   Introduction

For each test requirement a TP is defined.

5.1.1   TP naming convention

TPs are numbered, starting at 01, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite (see table 1).

Table 1: TP identifier naming convention scheme

Identifier: <**suite_id**>_<**group**>_<**nnn**>
<suite_id>   =   layer + type of IUT: "L3PR" for **L**ayer **3 PR**enegotiation
<group> =   group number: two character field representing the group reference according to TSS
<nn>   =   sequential number: (01-99)

5.1.2   Source of TP definition

The TPs are based on EN 302 091-1 [1].

5.1.3   Test strategy

As the base standard EN 302 091-1 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification EN 302 091-2 [2].

The TPs are only based on conformance requirements related to the externally observable behaviour of the IUT, and are limited to conceivable situations with which a real implementation is likely to be faced (ETS 300 406 [6]).

5.2   TPs for the prenegotiation

Unless specified:

The messages indicated are valid and contain at least the mandatory parameters and possibly optional parameters.

The parameters indicated are valid and contain at least the mandatory fields and possibly optional fields.

5.2.1   Signalling procedures at an originating or terminating CC entity

Test purposes for EN 302 091-1 [1], subclause 9.2.

5.2.1.1   Originating CC entity

L3PR_01_01
Ensure that the IUT in the Idle call control state, to invoke prenegotiation concurrently with the call establishment, sends a preNegotiate invoke Application Protocol Data Unit (APDU) together with the callEstablish invoke APDU.

   Selection: IUT supports prenegotiation together with call establishment as originating CC. PICS: MC1

L3PR_01_02
Ensure that the IUT in the Outgoing Call Proceeding call control state, to invoke prenegotiation,
      sends a preNegotiate invoke APDU.

   Selection: IUT supports prenegotiation after first end-to-end message as originating CC. PICS: MC3

L3PR_01_03
Ensure that the IUT in the Call Ready call control state, to invoke prenegotiation,
      sends a preNegotiate invoke APDU.

   Selection: IUT supports prenegotiation after first end-to-end message as originating CC. PICS: MC3

L3PR_01_04
Ensure that the IUT in the Call Active call control state, to invoke prenegotiation,
      sends a preNegotiate invoke APDU.

   Selection: IUT supports prenegotiation after call establishment. PICS: MC5

5.2.1.2   Terminating CC entity

L3PR_02_01
Ensure that the IUT in the Call Present call control state, to invoke prenegotiation,
      sends a preNegotiate invoke APDU together with the callProceeding invoke APDU.

   Selection: IUT supports prenegotiation together with first end-to-end message as terminating CC. PICS: MC2

L3PR_02_02
Ensure that the IUT in the Await Call Completion call control state, to invoke prenegotiation,
      sends a preNegotiate invoke APDU.

   Selection: IUT supports prenegotiation after first end-to-end message as terminating CC. PICS: MC4

L3PR_02_03
Ensure that the IUT in the Call Active call control state, to invoke prenegotiation,
      sends a preNegotiate invoke APDU.

   Selection: IUT supports prenegotiation after call establishment. PICS: MC5

5.2.1.3   Originating or terminating CC entity

5.2.1.3.1   Initiator

L3PR_03_01
Ensure that the IUT, to invoke prenegotiation and to indicate to the remote user that a particular negotiated bearer
connection shall only be established by the initiator of the prenegotiation request,
      sends a preNegotiate invoke APDU with the bearerEstDirection field in the Proposal parameter of this
      connection set to exclusiveByPrenegInvokingEntity.

L3PR_03_02
Ensure that the IUT, to invoke prenegotiation and to indicate to the remote user that a particular negotiated bearer
connection shall only be established by the responder to the prenegotiation request,
      sends a preNegotiate invoke APDU with the bearerEstDirection field in the Proposal parameter of this
      connection set to exclusiveByPrenegRemoteEntity.

L3PR_03_03
Ensure that the IUT, to invoke prenegotiation and to indicate to the remote user that a particular negotiated bearer
connection is preferably to be established by the responder to the prenegotiation request,
      sends a preNegotiate invoke APDU with the bearerEstDirection field in the Proposal parameter of this
      connection set to preferablyByPrenegRemoteEntity.

L3PR_03_04
Ensure that the IUT, to invoke prenegotiation and to indicate to the remote user to respond positively only for a particular bearer connection, if the proposal can be accepted,
> sends a preNegotiate invoke APDU with the connectionCallRelation field in the ConnectionProposal parameter of this connection set to TRUE.

L3PR_03_05
Ensure that the IUT, to invoke prenegotiation and to indicate to the remote user that the modification of the most preferred proposal for a particular bearer connection is allowed,
> sends a preNegotiate invoke APDU with the modificationPossible field in the MostPreferredProposal parameter of this connection set to TRUE.

L3PR_03_06
Ensure that the IUT, to invoke prenegotiation and to indicate to the remote user that alternative proposals for a particular bearer connection exist,
> sends a preNegotiate invoke APDU including an Alternative parameter for this connection.

5.2.1.3.2 Responder

> NOTE: The preNegotiate invoke APDUs sent in this test group contain only one ConnectionProposal parameter for one particular bearer connection.

L3PR_04_01
Ensure that the IUT, on receipt of a preNegotiate invoke APDU, to indicate that the prenegotiation proposal is being evaluated,
> sends a prenegotiationAlert invoke APDU.

> **Selection:** IUT supports sending of prenegotiationAlert invoke APDUs. PICS: MT2

L3PR_04_02
Ensure that the IUT, on receipt of a preNegotiate invoke APDU, to indicate that the prenegotiation proposal has been accepted,
> sends a preNegotiate return result APDU containing the Accept parameter with the accept field set to TRUE.

L3PR_04_03
Ensure that the IUT, on receipt of a preNegotiate invoke APDU including an Alternative parameter, to indicate that this proposed alternative has been accepted,
> sends a preNegotiate return result APDU containing the Accept parameter with the accept field set to TRUE and the alternativeNo field indicating the number of the accepted alternative.

L3PR_04_04
Ensure that the IUT, on receipt of a preNegotiate invoke APDU with the modificationPossible field in the MostPreferredProposal parameter set to TRUE, to indicate a counterproposal,
> sends a preNegotiate return result APDU containing the Accept parameter with the accept field set to TRUE and containing the Proposal parameter indicating the counterproposal.

L3PR_04_05
Ensure that the IUT, on receipt of a preNegotiate invoke APDU with the connectionCallRelation field in the ConnectionProposal parameter set to FALSE, to indicate that the prenegotiation proposal has been rejected,
> sends a preNegotiate return result APDU containing the Accept parameter with the accept field set to FALSE.

L3PR_04_06
Ensure that the IUT, on receipt of a preNegotiate invoke APDU with the bearerEstDirection field in the Proposal parameter of this connection set to preferablyByPrenegRemoteEntity, to indicate that the prenegotiation proposal is being accepted,
> sends a preNegotiate return result APDU containing the Accept parameter with the accept field set to TRUE and containing the Proposal parameter with the bearerEstDirection field indicating the bearer establishment direction.

L3PR_04_07
Ensure that the IUT, on receipt of a preNegotiate invoke APDU with the connectionCallRelation field in the ConnectionProposal parameter set to TRUE, to indicate that the prenegotiation proposal has been rejected,
> sends a preNegotiate return error APDU.

L3PR_04_08

Ensure that the IUT, on receipt of a preNegotiate invoke APDU with the bearerEstDirection field in the Proposal parameter set to exclusiveByPrenegRemoteEntity, to indicate that it cannot establish such a bearer connection,
    sends a preNegotiate return error APDU.

L3PR_04_09

Ensure that the IUT, on receipt of a preNegotiate invoke APDU, to indicate that the negotiated resources are temporarily unavailable,
    sends a preNegotiate return error APDU.

6 Compliance

An ATS which complies with this TSS&TP specification shall:

    a) consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 5;

    b) use a TSS which is an appropriate subset of the whole of the TSS specified in clause 4;

    c) use the same naming conventions for the test groups and test cases;

    d) maintain the relationship specified in clause 5 between the test groups and TPs and the entries in the PICS proforma to be used for test case deselection;

    e) comply with ISO/IEC 9646-2 [4].

In the case of a) or b) above, a subset shall be used only where a particular Abstract Test Method (ATM) makes some TPs untestable. All testable TPs from clause 5 shall be included in a compliant ATS.

7 Requirements for a comprehensive testing service

As a minimum the Remote test method, as specified in ISO/IEC 9646-2 [4], shall be used by any organization claiming to provide a comprehensive testing service for user equipment claiming conformance to EN 302 091-1 [1].

Bibliography

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

ISO/IEC 9646-3: "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework; Part 3: The Tree and Tabular Combined Notation".

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 specification in a separated call and bearer control environment; Part 1: Protocol specification".

History

Document history				
V1.1.1	July 1999	Public Enquiry	PE 9949:	1999-07-07 to 1999-11-05