

ETSI TS 102 148-1-2 V1.2.1 (2004-04)

Technical Specification

**Broadband Radio Access Networks (BRAN);
HIPERACCESS;
Conformance testing for the Packet based Convergence Layer;
Part 1: Common part;
Sub-part 2: Test Suite Structure and
Test Purposes (TSS&TP) specification**



Reference

RTS/BRAN-0034T04-1-2R1

Keywords

access, ATM, broadband, hiperaccess, radio,
testing, TSS&TP

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - 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

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, send your comment to:

editor@etsi.org

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2004.
All rights reserved.

DECT™, **PLUGTESTS™** and **UMTS™** are Trade Marks of ETSI registered for the benefit of its Members.
TIPHON™ and the **TIPHON logo** are Trade Marks currently being registered by ETSI for the benefit of its Members.
3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

Contents

Intellectual Property Rights	4
Foreword.....	4
1 Scope	5
2 References	5
3 Definitions and abbreviations.....	5
3.1 Definitions	5
3.2 Abbreviations	6
4 Test suite structure	6
4.1 Structure	6
4.2 Test groups	6
4.2.1 Protocol groups.....	6
4.2.1.1 Common procedures	7
4.2.2 Main test groups	7
4.2.2.1 Capability (CA) tests.....	7
4.2.2.2 Valid Behaviour (BV) tests	7
4.2.2.3 Invalid Behaviour (BI) tests	7
4.2.2.4 Inopportune Behaviour (BO) tests	7
5 Test Purposes (TP)	7
5.1 Introduction	7
5.1.1 TP definition conventions.....	7
5.1.2 TP naming conventions	8
5.1.3 Sources of TP definitions.....	8
5.2 Test purposes for AP	8
5.2.1 Procedures at the sender	8
5.2.2 Procedures at the receiver	9
5.3 Test purposes for AT	9
5.3.1 Procedures at the sender	9
5.3.2 Procedures at the receiver	9
Annex A (informative): Bibliography.....	10
History	11

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 ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

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 ETSI 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 Technical Specification (TS) has been produced by ETSI Project Broadband Radio Access Networks (BRAN).

The present document is part 1, sub-part 2 of a multi-part covering testing specification for the Packet based Convergence Layer of the BRAN HIPERACCESS system, as identified below:

Part 1: "Common part";

Sub-part 1: "Protocol Implementation Conformance Statement (PICS) proforma";

Sub-part 2: "Test Suite Structure and Test Purposes (TSS&TP) specification";

Sub-part 3: "Abstract Test Suite (ATS)".

Part 2: "Ethernet Service Specific Convergence Sublayer (SSCS)".

1 Scope

The present document contains the Test Suite Structure (TSS) and Test Purposes (TP) to test TS 102 117-1 [1].

The objective of this test specification is to provide a basis for conformance tests for BRAN HIPERACCESS equipment giving a high probability of air interface inter-operability between different manufacturers' BRAN HIPERACCESS equipment.

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [3] and ISO/IEC 9646-2 [4]) as well as the ETSI rules for conformance testing (ETS 300 406 [2]) are used as a basis for the test methodology.

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.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [1] ETSI TS 102 117-1: "Broadband Radio Access Networks (BRAN); HIPERACCESS; Packet based Convergence Layer; Part 1: Common Part".
- [2] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [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] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".
- [6] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation conformance statement".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 102 117-1 [1] and ISO/IEC 9646-7 [6] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ISO/IEC 9646-1 [3], ISO/IEC 9646-6 [5], ISO/IEC 9646-7 [6], TS 102 117-1 [1] and the following apply:

AP	Access Point
ATM	Asynchronous Transfer Mode
BI	Invalid Behaviour
BO	Inopportune Behaviour
BRAN	Broadband Radio Access Networks (Project)
BV	Valid Behaviour
CA	CApability tests
CL	Convergence Layer
CPCS	Common Part Convergence Sublayer
ETSI	European Telecommunications Standards Institute
IUT	Implementation Under Test
PBCL	Packet Based Convergence Layer
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
SSCS	Service Specific Convergence Sublayer
TP	Test Purposes
TS	Technical Specification
TSS	Test Suite Structure
AT	Access Terminal
CPP	Common Part Procedures
SS	Sender Side
RS	Receiver Side

4 Test suite structure

4.1 Structure

Figure 1 shows the Common Packet Based Convergence Layer (PBCL) Test Suite Structure (TSS) including its subgroups defined for the conformance testing.

Test Suite	Protocol group	Protocol subgroup	Test group			
			CA	BV	BI	BO
PCL-AP/ PCL-AT	Common procedures	Sender	x			
		Receiver	x			

Figure 1: TSS for HIPERACCESS Common part PBCL

The test suite is structured as a tree with a first level defined as PCL-AP or PCL-AT representing the protocol group "Common part PBCL for AP and Common part PBCL for AT".

4.2 Test groups

The test groups are organized in three levels. The first level creates one protocol group representing the protocol services. The second level separates the protocol services in functional modules. The last level in each branch contains one or more of the standard ISO subgroups CA, BV, BI and BO.

4.2.1 Protocol groups

The protocol groups identify the common part procedures as defined in TS 102 117-1 [1].

4.2.1.1 Common procedures

The common part procedures group is divided in two functional modules. The first functional module identifies the procedures at the sender side. The last functional module identifies the procedures at the receiver side.

4.2.2 Main test groups

The main test groups are the capability group, the valid behaviour group, the invalid behaviour group and the inopportune behaviour group.

4.2.2.1 Capability (CA) tests

This test sub group shall provide limited testing of the major IUT capabilities aiming to insure that the claimed capabilities are correctly supported, according to the PICS.

4.2.2.2 Valid Behaviour (BV) tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after receipt or exchange of valid Protocol Data Units (PDUs). Valid PDUs means that the exchange of messages and the content of the exchanged messages are considered as valid.

4.2.2.3 Invalid Behaviour (BI) tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after receipt of a syntactically invalid PDU.

4.2.2.4 Inopportune Behaviour (BO) tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after receipt of a syntactically correct PDU not expected in the actual message exchange.

5 Test Purposes (TP)

5.1 Introduction

5.1.1 TP definition conventions

The TPs are defined following particular rules as shown in table 1.

Table 1: TP definition rules

TP Id according to the TP naming conventions	Reference. Initial condition. Stimulus. Expected behaviour.
TP Id	The TP Id is a unique identifier it shall be specified according to the TP naming conventions defined in the subclause below.
Reference	The reference should contain the references of the subject to be validated by the actual TP (specification reference, clause, and paragraph).
Condition	The condition defines in which initial state the IUT has to be to apply the actual TP.
Stimulus	The stimulus defines the test event to which the TP is related.
Expected behaviour	Definition of the events that are expected from the IUT to conform to the base specification.

5.1.2 TP naming conventions

The identifier of the TP is built according to table 2.

Table 2: TP naming convention

Identifier:	TP/<st>/<pg>/<fm>/<x>-<nnn>		
	<st> = side type	AP	Access Point
		AT	Access Terminal
	<pg> = protocol group	CPP	Common Part Procedures
	<fm> = functional module	SS	Sender Side
		RS	Receiver Side
	x = Type of testing	CA	CApability tests
		BV	Valid Behaviour tests
		BI	Invalid Behaviour tests
		BO	Inopportune Behaviour tests
	<nnn> = sequential number	(000-999)	Test Purpose number

EXAMPLE: TP/AT/ CPP/RS/BV-010 is the tenth purpose for the valid behaviour testing of the procedures at the receiver of the common part procedures implemented at the AT side.

5.1.3 Sources of TP definitions

All TPs are specified according to TS 102 117-1 [1].

5.2 Test purposes for AP

5.2.1 Procedures at the sender

TP/AP/ CPP/SS/BV-000	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the sender. A loop back mechanism is implemented on top of either CPCS layer or SSSCS layer at the IUT. Check, that: the IUT manages correctly a continuous stream of CPCS PDU to send.
TP/AP/ CPP/SS/BV-001	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the sender. A loop back mechanism is implemented on top of either CPCS layer or SSSCS layer at the IUT. Check, that: the IUT manages correctly a discontinuous flow of CPCS PDU to send.
TP/AP/ CPP/SS/BV-002	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the sender. A loop back mechanism is implemented on top of either CPCS layer or SSSCS layer at the IUT. Check, that: the IUT segments correctly a large CPCS PDU.

5.2.2 Procedures at the receiver

TP/AP/PPP/RS/BV-000	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT delivers the payload of a correctly received CPCS PDU to SSCS higher layer.
TP/AP/PPP/RS/BV-001	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT manages correctly a continuous stream of received CPCS PDU.
TP/AP/PPP/RS/BV-002	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT manages correctly a discontinuous flow of received CPCS PDU.
TP/AP/PPP/RS/BV-003	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT reassembles correctly a large Data Unit

5.3 Test purposes for AT

5.3.1 Procedures at the sender

TP/AT/PPP/SS/BV-000	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the sender. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT manages correctly a continuous stream of CPCS PDU to send.
TP/AT/PPP/SS/BV-001	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the sender. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT manages correctly a discontinuous flow of CPCS PDU to send.
TP/AT/PPP/SS/BV-002	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the sender. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT segments correctly a large CPCS PDU.

5.3.2 Procedures at the receiver

TP/AT/PPP/RS/BV-000	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT delivers the payload of a correctly received CPCS PDU to SSCS higher layer.
TP/AT/PPP/RS/BV-001	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT manages correctly a continuous stream of received CPCS PDU.
TP/AT/PPP/RS/BV-002	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT manages correctly a discontinuous flow of received CPCS PDU.
TP/AT/PPP/RS/BV-003	Reference: TS 102 117-1 [1] Initial condition: Connection established. IUT is the receiver. A loop back mechanism is implemented on top of either CPCS layer or SSCS layer at the IUT. Check, that: the IUT reassembles correctly a large Data Unit

Annex A (informative): Bibliography

- ITU-T Recommendation X.290: "OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications - General concepts".
- ITU-T Recommendation X.291: "OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications - Abstract test suite specification".

History

Document history		
V1.1.1	November 2002	Publication
V1.2.1	April 2004	Publication