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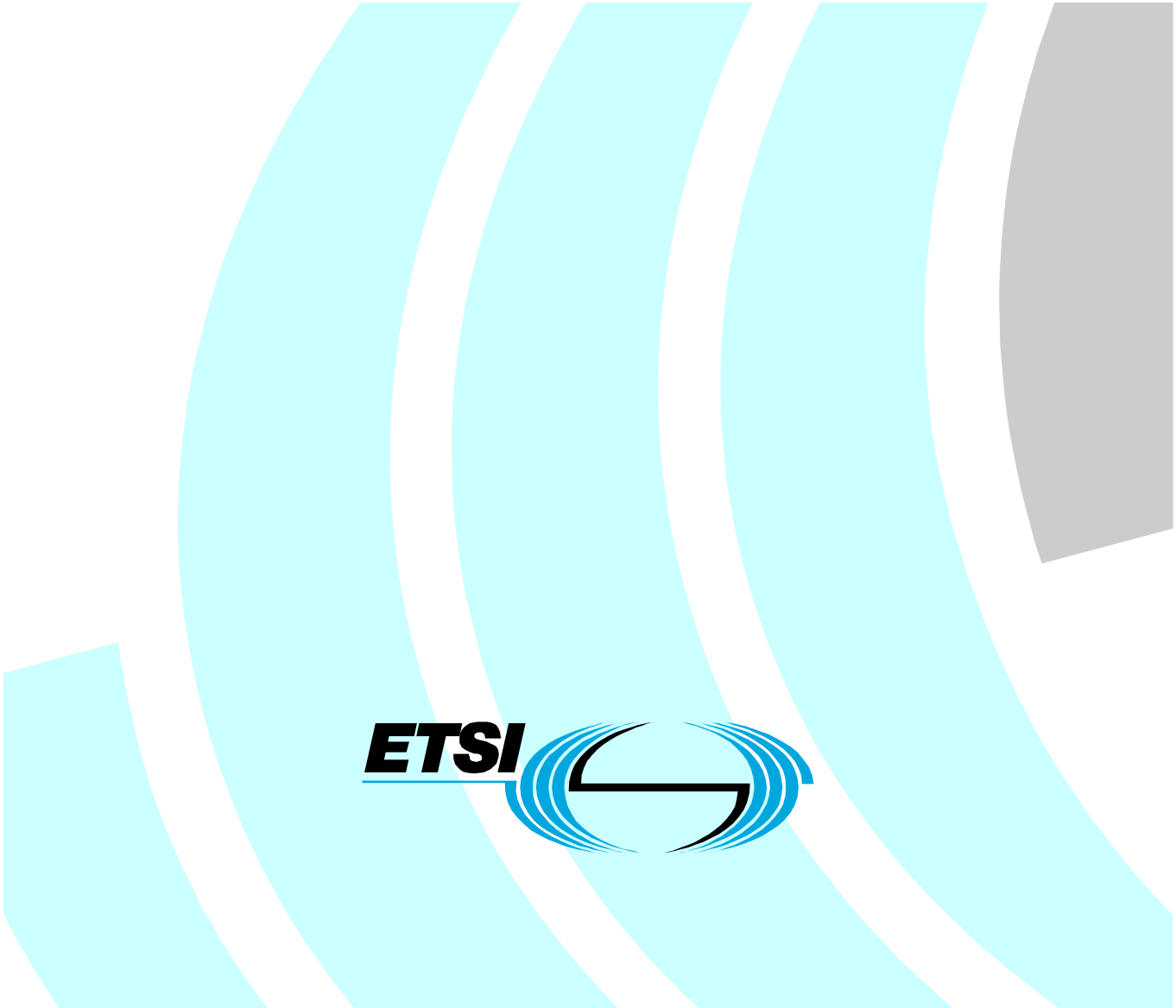
Technical Specification

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



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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 deliverable. Full details of the entire series can be found in part 1, sub-part 1 [8].

1 Scope

The present document contains the Test Suite Structure (TSS) and Test Purposes (TP) to test the BRAN HIPERACCESS; Packet based Convergence Layer; Part 1: Common Part [1].

The objective of the present document is to provide a basis for conformance tests for HIPERACCESS equipment giving a high probability of air interface inter-operability between different manufacturer's 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.

[1] ETSI TS 102 117-1 (V1.1.1): "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 (1991): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".
(See also ITU-T Recommendation X.290 (1991)).

[4] ISO/IEC 9646-2 (1991): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework - Part 2: Abstract test suite specification".
(See also ITU-T Recommendation X.291 (1991)).

[5] ISO/IEC 9646-6 (1991): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 6: Protocol profile test specification".

[6] ISO/IEC 9646-7 (1991): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 7: Implementation conformance statement".

[7] ETSI TS 102 147-1-2: "Broadband Radio Access Networks (BRAN); HIPERACCESS; Conformance testing for the Cell based Convergence Layer; Part 1: Common Part; Sub-part 2: Test Suite Structure and Test Purposes (TSS&TP) specification".

[8] ETSI TS 102 148-1-1 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERACCESS; Conformance testing for the Packet based Convergence Layer; Part 1: Common Part; Sub-part 1: Procotol Implementation Conformance Statement (PICS) proforma".

3 Definitions and abbreviations

3.1 Definitions

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

3.2 Abbreviations

For the purposes of the present document, the abbreviations defined 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:

AAL	ATM Adaptation Layer
AP	Access Point
ATM	Asynchronous Transfer Mode
BI	Invalid Behaviour
BO	inOpportune Behaviour
BV	Valid Behaviour
CA	CApability tests
CL	Convergence Layer
CPCS	Common Part Convergence Sublayer
IUT	Implementation Under Test
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
SSCS	Service Specific Convergence Sublayer
TP	Test Purposes
TSS	Test Suite Structure

4 Test suite structure

4.1 Structure

Figure 1 shows the Common 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

The conformance testing of protocol TS 102 117-1 [1] requires initially the conformance testing of its main components, which are:

- Cell based Convergence layer. Refer to its TSS&TP specification in [7] for a description of the conformance tests.
- AAL5 layer.

In addition, the following test purposes provide the conformance testing of the whole Packet based CL protocol stack.

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	AccessTerminal
	<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: ETSI 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/AP/CPP/SS/BV-001	Reference: ETSI 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/AP/CPP/SS/BV-002	Reference: ETSI 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.

5.2.2 Procedures at the receiver

TP/AP/CPP/RS/BV-000	Reference: ETSI 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/CPP/RS/BV-001	Reference: ETSI 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/CPP/RS/BV-002	Reference: ETSI 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/CPP/RS/BV-003	Reference: ETSI 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/CPP/SS/BV-000	Reference: ETSI 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/CPP/SS/BV-001	Reference: ETSI 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/CPP/SS/BV-002	Reference: ETSI 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/CPP/RS/BV-000	Reference: ETSI 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/CPP/RS/BV-001	Reference: ETSI 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/CPP/RS/BV-002	Reference: ETSI 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/CPP/RS/BV-003	Reference: ETSI 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

History

Document history		
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