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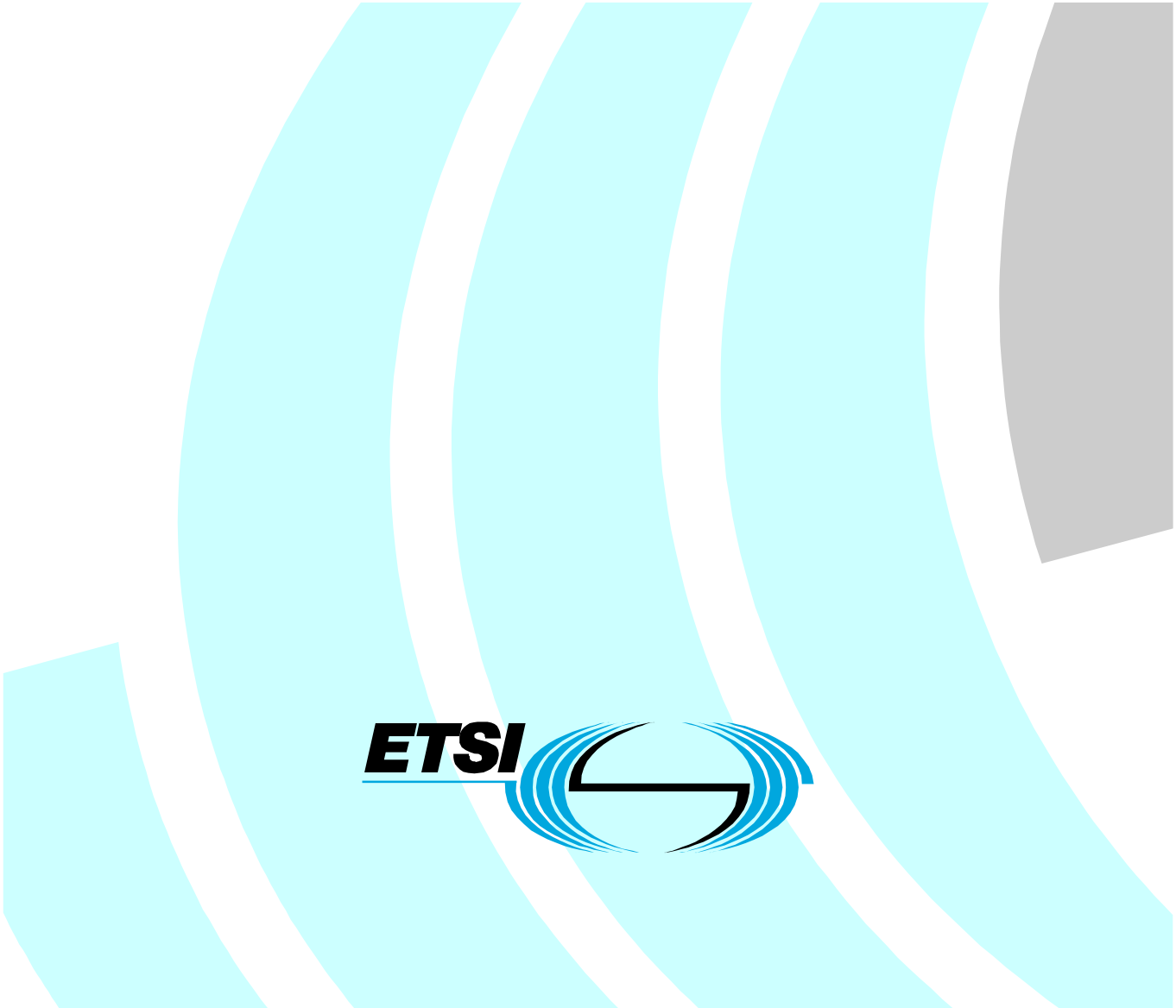
Technical Specification

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



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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 [7].

1 Scope

The present document contains the Test Suite Structure and Test Purposes (TSS&TP) to test the BRAN HIPERACCESS; Cell 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 standards 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 102 115-1 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERACCESS; Cell 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 Statements".

[7] ETSI TS 102 147-1-1: "Broadband Radio Access Networks (BRAN); HIPERACCESS; Conformance testing for the Cell 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 102 115-1 [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 102 115-1 [1] and the following apply:

AP	Access Point
AT	Access Terminal
ATM	Asynchronous Transfer Mode
CA	CApability tests
CBCL	Cell Based Convergence Layer
CCL	Cell based Convergence Layer
CPCS	Common Part Convergence Sublayer
IB	Invalid Behaviour
IUT	Implementation Under Test
LAN	Local Area Network
OB	inOpportune Behaviour
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
SSCS	Service Specific Convergence Sublayer
TP	Test Purposes
TSS	Test Suite Structure
UNI	User Network Interface
VB	Valid Behaviour
VCI	Virtual Channel Identifier
VPI	Virtual Path Identifier

4 Test suite structure

4.1 Structure

Figure 1 shows the Common CBCL Test Suite Structure (TSS) including its subgroups defined for the conformance testing.

Test Suite	Protocol group	Protocol subgroup	Test group			
			CA	VB	IB	OB
CCL-AP/ CCL-AT	Common procedures	Sender	x			
		Receiver	x			

Figure 1: TSS for Hiperaccess Common part CBCL

The test suite is structured as a tree with a first level defined as CCL-AP or CCL-AT representing the protocol group "Common part CBCL for AP and Common part CBCL 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, VB, IB and OB.

4.2.1 Protocol groups

The protocol groups identify the common part procedures as defined in TS 102 115-1 [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 (VB) 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 (IB) 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 (OB) 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	CCP	Cell 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/CCP/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 102 115-1 [1].

5.2 Test purposes for AP

5.2.1 Procedures at the sender

TP/AP/CCP/SS/BV-000	Reference: TS 102 115-1, clause 5.3.3.3. 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/CCP/SS/BV-001	Reference: TS 102 115-1, clause 5.3.3.3. 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/CCP/SS/BV-002	Reference: TS 102 115-1, clause 5.3.3.3. 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 the mapping between the ATM connection identifiers (VPI, VCI) and the CID / VCI for each active CID.
TP/AP/CCP/SS/BV-003	Reference: TS 102 115-1, clause 5.3.3.3. 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 sends a CPCS-PDU only if the mapping for the VPI, VCI exists.

5.2.2 Procedures at the receiver

TP/AP/CCP/RS/BV-000	Reference: TS 102 115-1, clause 5.3.3.2. 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 discards a received CPCS PDU, in case of a non-configured mapping for the CID and the VCI field.
TP/AP/CCP/RS/BV-001	Reference: TS 102 115-1, clause 5.3.3.2. 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/CCP/RS/BV-002	Reference: TS 102 115-1, clause 5.3.3.2. 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.

5.3 Test purposes for AT

5.3.1 Procedures at the sender

TP/AT/CCP/SS/BV-000	Reference: TS 102 115-1, clause 5.3.3.3. 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/CCP/SS/BV-001	Reference: TS 102 115-1, clause 5.3.3.3. 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/CCP/SS/BV-002	Reference: TS 102 115-1, clause 5.3.3.3. 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 the mapping between the ATM connection identifiers (VPI, VCI) and the CID / VCI for each active CID.
TP/AT/CCP/SS/BV-003	Reference: TS 102 115-1, clause 5.3.3.3. 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 sends a CPCS-PDU only if the mapping for the VPI, VCI exists.

5.3.2 Procedures at the receiver

TP/AT/CCP/RS/BV-000	Reference: TS 102 115-1, clause 5.3.3.2. 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 discards a received CPCS PDU, in case of a non-configured mapping for the CID and the VCI field.
TP/AT/CCP/RS/BV-001	Reference: TS 102 115-1, clause 5.3.3.2. 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/CCP/RS/BV-002	Reference: TS 102 115-1, clause 5.3.3.2. 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.

History

Document history		
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