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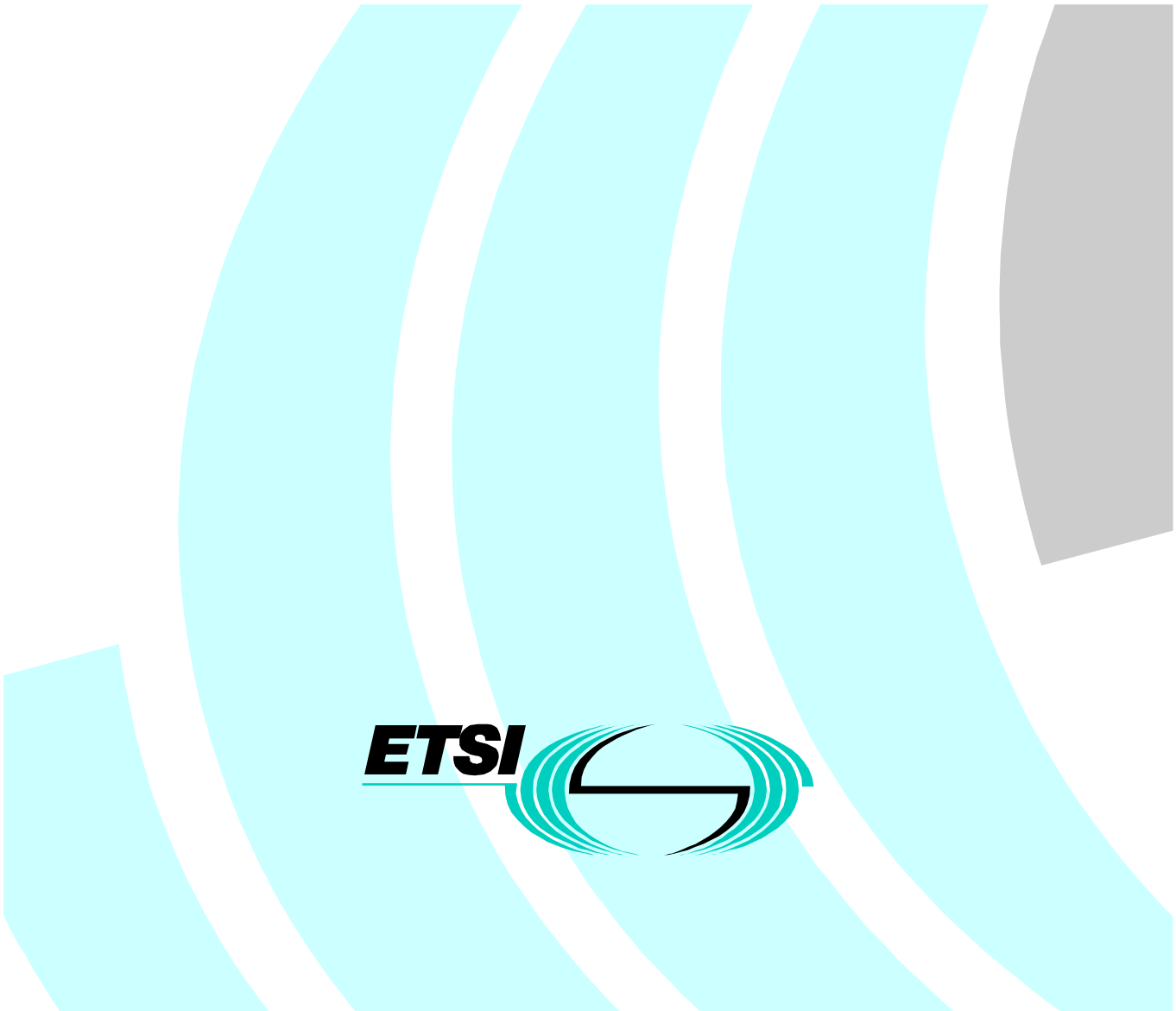
European Standard (Telecommunications series)

**Broadband Radio Access Networks (BRAN);
HIPERLAN Type 2;
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 European Standard (Telecommunications series) has been produced by ETSI Project Broadband Radio Access Networks (BRAN).

The present document is sub-part 2 of a multi-part deliverable covering Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Conformance testing for the packet based convergence layer; Part 1: Common part, as identified below:

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) specification".

National transposition dates	
Date of adoption of this EN:	19 January 2001
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1 Scope

The present document contains the Test Suite Structure (TSS) and Test Purposes (TP) to test the BRAN HIPERLAN Type 2; Conformance testing for the packet based convergence layer; Part 1: Common part.

The objective of the present document is to provide a basis for conformance tests for HIPERLAN Type 2 equipment giving a high probability of air interface inter-operability between different manufacturer's HIPERLAN Type 2 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, 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] ETSI TS 101 493-1 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Packet based Convergence Layer; Part 1: Common Part".

[2] ETSI ETS 300 406 (1995): "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".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

a) The terms defined in ISO/IEC 9646-7 [6]; and

b) The definitions in TS 101 493-1 [1].

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] and the abbreviations defined in TS 101 493-1 [1] apply. In particular, the following abbreviations apply:

BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
IUT	Implementation Under Test
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
TSS	Test Suite Structure
TP	Test Purposes
AP	Access Point
BCH	Broadcast CHannel
CL	Convergence Layer
CC	Central Controller
CPCS	Common Part Convergence Layer
DCCH	Dedicated Control CHannel
DLC	Data Link Control
DUC	DLC User Connection
DCC	DLC user Connection Control
EC	Error Control
MAC	Medium Access Control
MT	Mobile Terminal
PBCL	Packet Based Convergence Layer
PDU	Protocol Data Unit
SSCS	Service Specific Convergence Sublayer

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-MT	Common procedures	Sender	x			
		Receiver	x			

Figure 1: TSS for Hiperlan 2 Common part PBCL

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

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 101 493-1 [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 ensure 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 present document, 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 present document, 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 present document, 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
		MT	Mobile Terminal
	<pg> = protocole 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/MT/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 MT side.

5.1.3 Sources of TP definitions

All TPs are specified according to TS 101 493-1 [1].

5.2 Test purposes for AP

5.2.1 Procedures at the sender

TP/AP/CPP/SS/CA-000	Reference: TS 101 493-1 - 5.3.4.2 Initial condition: DUC_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/CA-001	Reference: TS 101 493-1 - 5.3.4.2 Initial condition: DUC_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/CA-002	Reference: TS 101 493-1 - 5.3.4.2 Initial condition: DUC_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 (near the <Maximum Transmission Unit> value).

5.2.2 Procedures at the receiver

TP/AP/CPP/RS/CA-000	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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, if the calculated PAD field is longer than 47 octets.
TP/AP/CPP/RS/CA-001	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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, if the value of the extracted Length field is zero.
TP/AP/CPP/RS/CA-002	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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, if the value of the extracted Length field is higher than the value of the <Maximum Transmission Unit> parameter.
TP/AP/CPP/RS/CA-003	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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/CA-004	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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/CA-005	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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/CA-006	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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 amount of received SAR_UNITDATA.

5.3 Test purposes for MT

5.3.1 Procedures at the sender

TP/MT/CPP/SS/CA-000	Reference: TS 101 493-1 - 5.3.4.2 Initial condition: DUC_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/MT/CPP/SS/CA-001	Reference: TS 101 493-1 - 5.3.4.2 Initial condition: DUC_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/MT/CPP/SS/CA-002	Reference: TS 101 493-1 - 5.3.4.2 Initial condition: DUC_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 (near the <Maximum Transmission Unit> value).

5.3.2 Procedures at the receiver

TP/MT/CPP/RS/CA-000	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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, if the calculated PAD field is longer than 47 octets.
TP/MT/CPP/RS/CA-001	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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, if the value of the extracted Length field is zero.
TP/MT/CPP/RS/CA-002	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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, if the value of the extracted Length field is higher than the value of the <Maximum Transmission Unit> parameter.
TP/MT/CPP/RS/CA-003	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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/MT/CPP/RS/CA-004	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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/MT/CPP/RS/CA-005	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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/MT/CPP/RS/CA-006	Reference: TS 101 493-1 - 5.3.4.3 Initial condition: DUC_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 amount of received SAR_UNITDATA.

History

Document history		
V1.1.1	September 2000	Publication as TS 101 811-1-1
V1.1.1	September 2000	One-step Approval Procedure OAP 20010119: 2000-09-20 to 2001-01-19
V1.1.1	January 2001	Publication