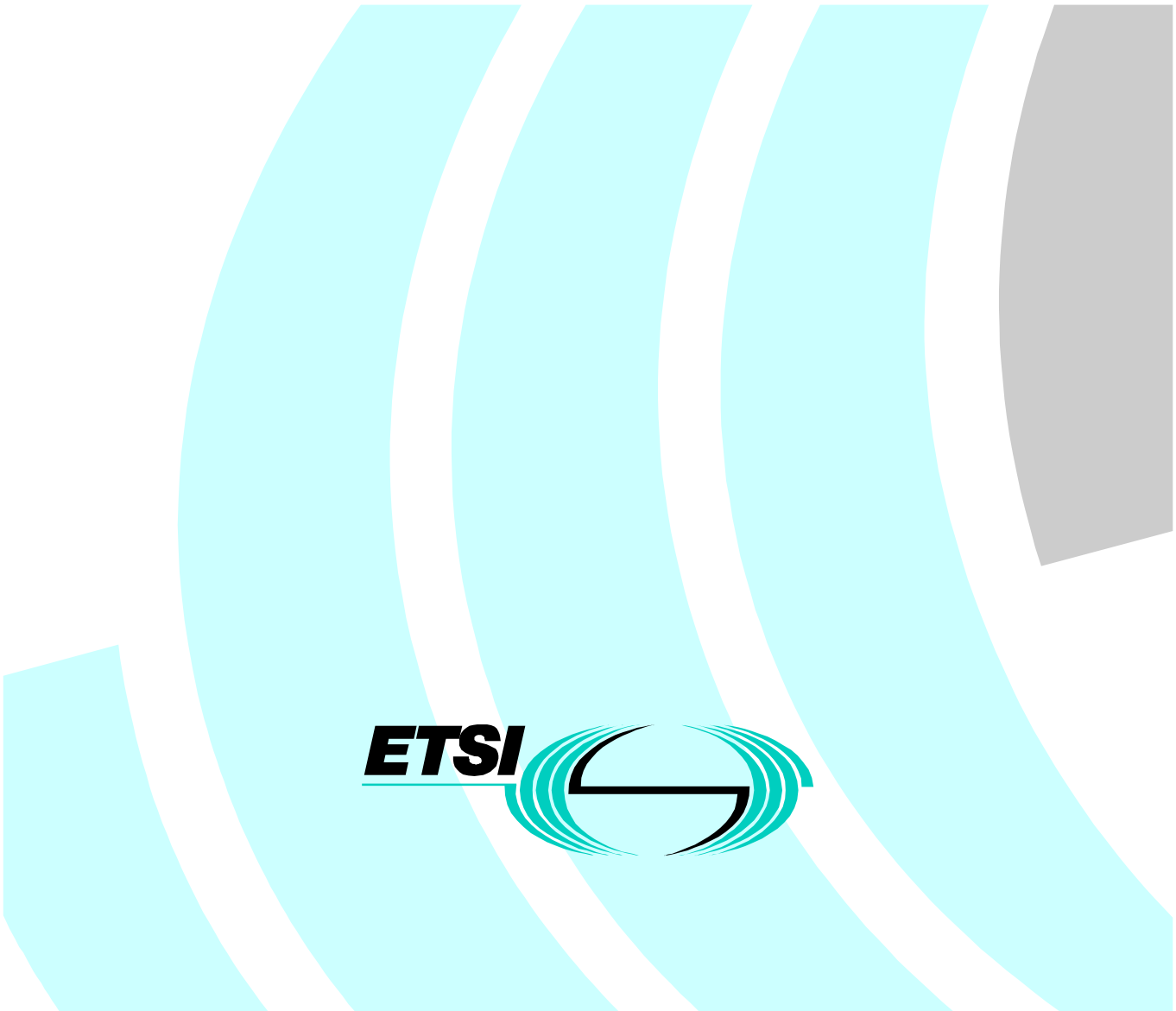
ETSI TS 101 811-2-2 V1.1.1 (2001-12)

Technical Specification

**Broadband Radio Access Networks (BRAN);
HIPERLAN Type 2;
Conformance testing for the
packet based convergence layer;
Part 2: Ethernet Service Specific
Convergence Sublayer (SSCS);
Sub-part 2: Test Suite Structure and
Test Purposes (TSS&TP) specification**



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Contents

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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 2, 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, as identified below:

Part 1: "Common part";

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

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".

Part 3: "IEEE 1394 Service Specific Convergence Sublayer (SSCS)";

Part 4: "IEEE 1394 Bridge Layer".

1 Scope

The present document contains the Test Suite Structure (TSS) and Test Purposes (TP) to test the BRAN HIPERLAN type 2; Packet based Convergence Layer; Part 2: Ethernet Service Specific Convergence Sublayer (SSCS) [1].

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

[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 Statements".

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 101 493-2 [1] 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 101 493-2 [1] and the following apply:

AP	Access Point
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	CApability tests
CL	Convergence Layer
DLC	Data Link Control
IUT	Implementation Under Test
MAC	Medium Access Control
MT	Mobile Terminal
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
RLC	Radio Link Control
TP	Test Purposes
TSS	Test Suite Structure
SSCS	Service Specific Convergence Sublayer

4 Test suite structure

4.1 Structure

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

Test Suite	Protocol group	Protocol subgroup	Test group			
			CA	BV	BI	BO
ESS-AP/ ESS-MT	Ethernet SSCS procedures	Association	x			
		DLC connection	x			
		Handover	x			
		Multicast	x			

Figure 1: TSS for HIPERLAN 2 Ethernet SSCS

The test suite is structured as a tree with a first level defined as ESS-AP or ESS-MT representing the protocol group "Ethernet SSCS for AP and Ethernet SSCS 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 identifies the Ethernet Service Specific PBCL procedures as defined in TS 101 493-2 [1].

4.2.1.1 Ethernet SSCS procedures

The Ethernet SSCS procedures group is divided in four functional modules. The first functional module identifies the procedures for the association functions. The second functional module identifies the procedures for the DLC connection functions. The third functional module identifies the procedures for the handover functions. The last functional module identifies the procedures for the multicast functions.

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 101 493-2 [1], 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 101 493-2 [1], 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 101 493-2 [1], 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 clause 5.1.2.
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	ESP	Ethernet Service Specific procedures
	<fm> = functional module	AS	Association
		DL	DLC connection
		HN	Handover
		ML	Multicast
	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/ESP/AS/BV-010 is the tenth purpose for the valid behaviour testing of the procedures for the association functions of the Ethernet SSCS implemented at MT side.

5.1.3 Sources of TP definitions

All TPs are specified according to TS 101 493-2 [1].

5.2 Test purposes for AP

5.2.1 Association function

TP/AP/ESP/AC/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_disassociated_from_AP Check, that the IUT sends periodically the RBCH_ASSOCIATION message containing the CL-ID identifying the support of the Ethernet SSCS and the CL version number
TP/AP/ESP/AC/CA-001	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: Link_Agreed_or_Encryption_active_or_Authenticated Check, that: after receiving the RLC_INFO message, the IUT replies to the LT with a RLC_INFO_ACK message containing in the <<CL-ATTRIBUTES>> IE, the AP Network Address
TP/AP/ESP/AC/CA-002	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP Check, that: after receiving the RLC_CL_BROADCAST_JOIN message, the IUT replies to the LT with a RLC_CL_BROADCAST_JOIN_ACK message including the MAC ID allocated for Ethernet broadcast

5.2.2 DLC connection function

TP/AP/ESP/DL/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP Check, that: after receiving the RLC_SETUP message, the IUT replies to the LT with a RLC_CONNECT message indicating the number of DLC connections the MT shall use
TP/AP/ESP/DL/CA-001	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP. IUT has sent a RLC_CONNECT message Check, that: after receiving the RLC_CONNECT_ACK message, the IUT considers the DLC user connection as established

5.2.3 Multicast function

TP/AP/ESP/ML/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP Check, that: after receiving the RLC_GROUP_JOIN message, the IUT replies to the LT with a RLC_GROUP_JOIN_ACK message

5.3 Test purposes for MT

5.3.1 Association function

TP/MT/ESP/AC/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: Link_Agreed_or_Encryption_active_or_Authenticated Check, that: after termination of the MT_Id obtain process, the IUT initiates the exchange of higher layer information by sending a RLC_INFO message to the LT containing in the <<CL-ATTRIBUTES>> IE, the IEEE 802 MAC address of the MT
TP/MT/ESP/AC/CA-001	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP Check, that: after receiving the RLC_INFO_ACK message from the LT, the IUT joins the CL_BROADCAST group, by sending a relevant RLC_CL_BROADCAST_JOIN message containing in the <<CL-ATTRIBUTES>> IE, the IEEE 802 MAC broadcast address

5.3.2 DLC connection function

TP/MT/ESP/DL/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP Check, that: after termination of the association process, the IUT initiates the establishment of a DLC user connection, by sending a relevant RLC_SETUP message including the number of connections it wants to use
TP/MT/ESP/DL/CA-001	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP. IUT has sent a RLC_SETUP message Check, that: after receiving the RLC_CONNECT message, the IUT replies to the LT with a RLC_CONNECT_ACK message and considers the DLC user connection as established

5.3.3 Handover function

TP/MT/ESP/HN/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP. Network handover process is pending. The IUT (MT) has terminated the NW signalling process by receiving the relevant message. Check, that: after termination of the NW signalling process, the IUT initiates the exchange of higher layer information by sending a RLC_INFO message to the LT. the RLC_INFO message shall contain the <<CL-ATTRIBUTES>> IE including the IEEE 802 MAC address of the MT and network address of the old AP

5.3.4 Multicast function

TP/MT/ESP/ML/CA-000	Reference: TS 101 493-2 [1], clause 6.4.1 Initial condition: MT_Associated_to_AP Check, that: when the IUT wishes to join a group, it sends a relevant RLC_GROUP_JOIN message containing the <<CL-ATTRIBUTES>> IE including one or more IEEE 802 MAC multicast group address the MT wants to join

History

Document history		
V1.1.1	December 2001	Publication