

# ETSI TS 101 811-4-2 V1.2.1 (2003-07)

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*Technical Specification*

**Broadband Radio Access Networks (BRAN);  
HIPERLAN Type 2;  
Conformance testing for the packet based convergence layer;  
Part 4: IEEE 1394 Bridge Layer;  
Sub-part 2: Test Suite Structure and  
Test Purposes (TSS&TP) specification**

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Reference

RTS/BRAN-0024TA4-4-2

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Keywords

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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 4, sub-part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1, sub-part 1 [8].

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# 1 Scope

The present document contains the Test Suite Structure (TSS) and Test Purposes (TP) to test TS 101 493-4 [2].

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 manufacturers BRAN HIPERLAN type 2 equipment.

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [4] and ISO/IEC 9646-2 [5]) as well as the ETSI rules for conformance testing (ETS 300 406 [3]) are used as a basis for the test methodology.

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# 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 101 493-1 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Packet based Convergence Layer; Part 1: Common Part".
- [2] ETSI TS 101 493-4 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Packet based Convergence Layer; Part 4: IEEE 1394 Bridge Specific Functions sub-layer for restricted topology".
- [3] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [4] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [5] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [6] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".
- [7] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statement".
- [8] ETSI TS 101 811-1-1: "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Conformance testing for the packet based convergence layer; Part 1: Common part; Sub-part 1: Protocol Implementation Conformance Statement (PICS) proforma".

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# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in ISO/IEC 9646-7 [7] and TS 101 493-4 [2] apply.

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in ISO/IEC 9646-1 [4], ISO/IEC 9646-6 [6], ISO/IEC 9646-7 [7], TS 101 493-4 [2] and the following apply:

AP	Access Point
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
CC	Central Controller
DLC	Data Link Control
IUT	Implementation Under Test
MAC	Medium Access Control
MT	Mobile Terminal
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
TP	Test Purposes
TSS	Test Suite Structure

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## 4 Test suite structure

### 4.1 Structure

Figure 1 shows the IEEE 1394 Bridge layer Test Suite Structure (TSS) including its subgroups defined for the conformance testing.

Test Suite	Protocol group	Protocol subgroup	Test group			
			CA	BV	BI	BO
IEB-AP/ IEB-MT	IEEE 1394 bridge procedures	Sender	x			
		Receiver	x			
	Unrestricted bridge	WCM election	x			
	Restricted bridge	WCM election	x			

**Figure 1: TSS for Hiperlan 2 Common part PBCL**

The test suite is structured as a tree with a first level defined as IEB-AP or IEB-MT representing the protocol group "IEEE 1394 Bridge layer at the AP side and IEEE 1394 Bridge layer at the MT side".

### 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 IEEE 1394 Bridge layer procedures, the unrestricted bridge procedures and the restricted bridge procedures as defined in TS 101 493-4 [2].

##### 4.2.1.1 Common procedures

The IEEE 1394 Bridge layer procedures group is divided in three functional modules. The first functional module identifies the procedures at the sender side. The second functional module identifies the procedures at the receiver side. The last functional module identifies the procedures for the Wireless cycle master election.

## 4.2.2 Main test groups

The main test groups are the capability group, the valid behaviour group, the invalid behaviour group and the inoportune 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 TS 101 493-4 [2], 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 TS 101 493-4 [2], after receipt of a syntactically invalid PDU.

### 4.2.2.4 Inoportune Behaviour (BO) tests

This test sub group shall verify that the IUT reacts in conformity with TS 101 493-4 [2], 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	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 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).
Initial 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**

<b>Identifier:</b>	<b>TP/&lt;st&gt;/&lt;pg&gt;/&lt;fm&gt;/&lt;x&gt;-&lt;nnn&gt;</b>		
	<st> = side type	AP	Access Point
		MT	Mobile Terminal
	<pg> = protocole group	IBP	IEEE 1394 Bridge layer procedures
		UBP	Unrestricted bridge procedures
		RBP	Restricted bridge procedures
	<fm> = functional module	SS	Sender side
		RS	Receiver side
		WE	Wireless cycle master election
	x = Type of testing	CA	Capability Tests
		BV	Valid Behaviour Tests
		BI	Invalid Behaviour Tests
		BO	Inoportune Behaviour Tests
	<nnn> = sequential number	(000-999)	Test Purpose Number

EXAMPLE: TP/MT/IBP/RS/BV-010 is the tenth purpose for the valid behaviour testing of the procedures at the receiver of the IEEE 1394 Bridge layer procedures implemented at the MT side.

## 5.1.3 Sources of TP definitions

All TPs are specified according to TS 101 493-4 [2].

## 5.2 Test purposes for AP/CC

### 5.2.1 Unrestricted bridge

TP/AP/UBP/WE/CA-000	Reference: TS 101 493-4 [2], clause 9 Initial condition: IUT is the AP/CC and is an unrestricted bridge. LT is acting as WT1. Only for IUT that supports 1394 unrestricted bridge functions. Check, that: when the IUT detects that no WCM is operating on the HL2 Bus, the IUT enables its cycle master function.
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### 5.2.2 Restricted bridge

TP/AP/RBP/WE/CA-000	Reference: TS 101 493-4 [2], clause 9 Initial condition: IUT is the AP/CC and is a restricted bridge. LT is acting as WT1. Only for IUT that supports 1394 restricted bridge functions. Check, that: when the IUT detects that no WCM is operating on the HL2 Bus, the IUT enables its cycle master function.
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## 5.3 Test purposes for MT/WT

### 5.3.1 Unrestricted bridge

TP/MT/UBP/WE/CA-000	Reference: TS 101 493-4 [2], clause 9 Initial condition: IUT is the MT/WT and is an unrestricted bridge. LT is acting as the AP/CC. Only for IUT that supports 1394 unrestricted bridge functions. Check, that: when the IUT detects that no WCM is operating on the HL2 Bus, the IUT enables its cycle master function.
TP/MT/UBP/WE/CA-001	Reference: TS 101 493-4 [2], clause 9 Initial condition: IUT is the MT/WT and is an unrestricted bridge. LT is acting as the AP/CC and as taken the WCM function. Only for IUT that supports 1394 unrestricted bridge functions. Check, that: when the IUT detects that another WCM is operating on the HL2 Bus, the IUT disables its cycle master function.

### 5.3.2 Restricted bridge

TP/MT/RBP/WE/CA-000	Reference: TS 101 493-4 [2], clause 9 Initial condition: IUT is the MT/WT and is a restricted bridge. LT is acting as AP/CC. Only for IUT that supports 1394 restricted bridge functions. Check, that: when the IUT detects that no WCM is operating on the HL2 Bus, the IUT does not enable its cycle master function.
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## History

<b>Document history</b>		
V1.2.1	July 2003	Publication