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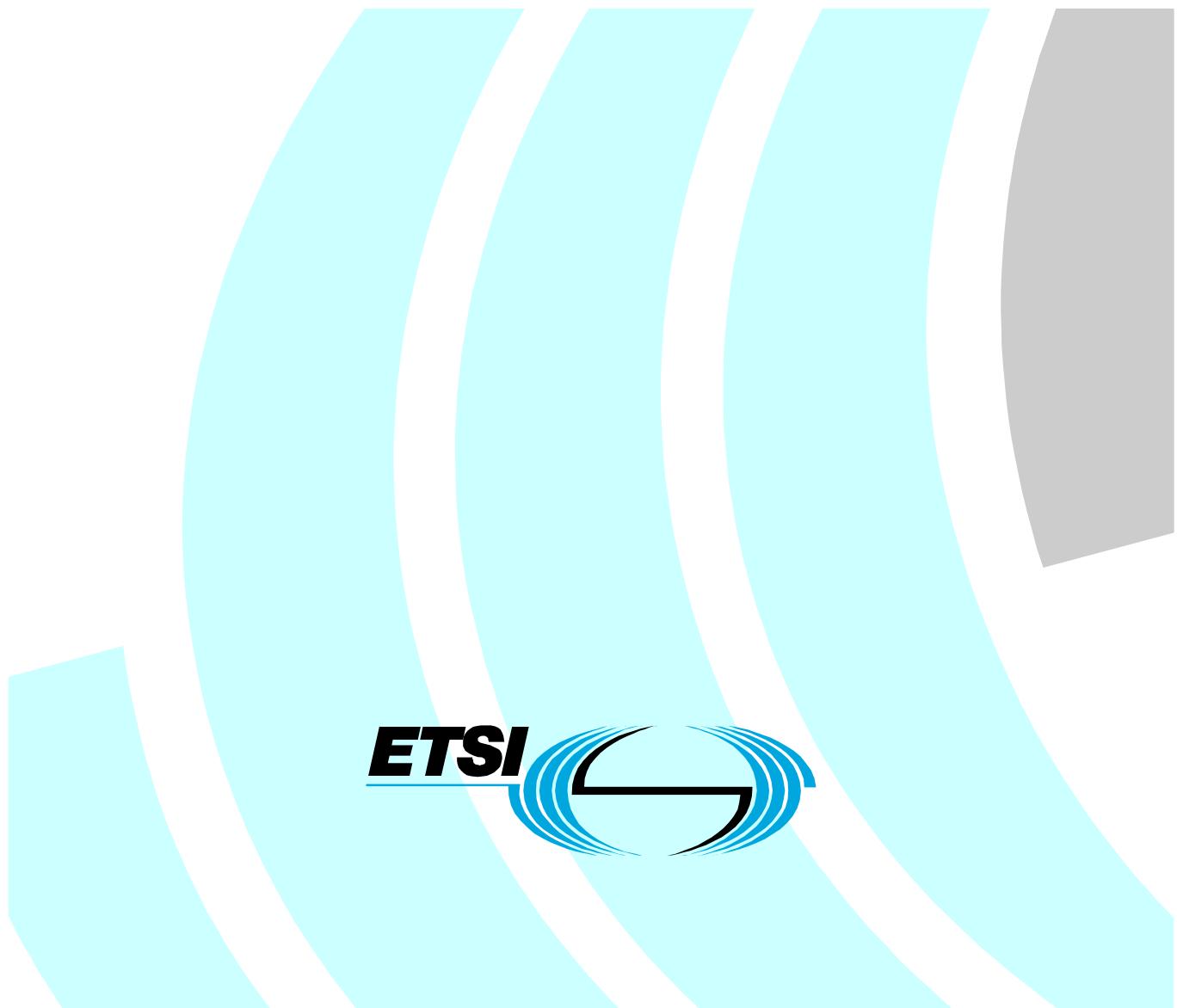
Technical Specification

Broadband Radio Access Networks (BRAN);
HIPERACCESS;
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

Reference

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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 2, 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 (TSS) and Test Purposes (TP) to test the BRAN HIPERACCESS; 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 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 102 117-2 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERACCESS; Packet based Convergence Layer; Part 2: Ethernet Service Specific Convergence Sublayer".

[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 102 148-1-1 (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".

[8]   RFC 2684: "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

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 in
TS 102 117-2 [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 102 117-2 [1] and the following apply:

AP	Access Point
AT	Access Terminal
ATM	Asynchronous Transfer Mode
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
ESP	Ethernet Service Specific procedures
IUT	Implementation Under Test
PBCL	Packet Based Convergence Layers
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
SSCS	Service Specific Convergence Sublayer
TP	Test Purposes
TS	Technical Specification
TSS	Test Suite Structure

4   Test Suite Structure (TSS)

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-AT	Ethernet SSCS procedures	RFC 2684 [8]	x			

Figure 1: TSS for HIPERACCESS Ethernet SSCS

The test suite is structured as a tree with a first level defined as ESS-AP or ESS-AT representing the protocol group
"Ethernet SSCS for AP and Ethernet SSCS 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 Ethernet Service Specific PBCL procedures as defined in TS 102 117-2 [1].

4.2.1.1 Ethernet SSCS procedures

The Ethernet SSCS procedures group is divided in one functional module. The functional module identifies the RFC 2684 [8] procedures.

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 102 117-2 [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 102 117-2 [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, 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	ESP	Ethernet Service Specific procedures
	<fm> = functional module	RF	RFC 2684 [8]
	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/ESP/RF/BV-010 is the tenth purpose for the valid behaviour testing of the RFC 2684 [8] procedures of the Ethernet SSCS implemented at AT side.

5.1.3   Sources of TP definitions

All TPs are specified according to TS 102 117-2 [1].

5.2   Test purposes for AP

TP/AP/ESP/RF/BV-000	Reference: TS 102 117-2 [1], clause 7.1.4 Initial condition: AT and AP initialized. Check that: when the IUT (AP) wishes to establish a PBCL connection, it sends the **RlcConnectionAdditionSetup** message, which includes the MultiplexingMethod parameter as part of the ConnectionCIParameters field.

5.3   Test purposes for AT

TP/AT/ESP/RF/BV-000	Reference: TS 102 117-2 [1], clause 7.1.4 Initial condition: AT and AP initialized. Check that: when the IUT (AT) wishes to establish a PBCL connection, it sends the **RlcConnectionAdditionInit** message, which includes the MultiplexingMethod parameter as part of the ConnectionCIParameters field.

History

Document history		
V1.1.1	November 2002	Publication