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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 3 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".

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1 Scope

The present document contains the Abstract Test Suite (ATS) to test the BRAN HIPERLAN Type 2; 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 manufacturers' 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.

Annex A provides the Tree and Tabular Combined Notation (TTCN) part of the ATS.

Annex B provides the Partial Protocol Implementation Extra Information for Testing (PIXIT) Proforma of the MT side ATS.

Annex C provides the Partial Protocol Implementation Extra Information for Testing (PIXIT) Proforma of the AP side ATS.

Annex D provides the Protocol Conformance Test Report (PCTR) Proforma of the MT side ATS.

Annex E provides the Protocol Conformance Test Report (PCTR) Proforma of the AP side ATS.

2 References

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The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

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- 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 9646-3 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)". (See also ITU-T Recommendation X.292 (1992)).

[6] ISO/IEC 9646-6 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".

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[7] ISO/IEC 9646-7 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

[8] ETSI TS 101 811-1-2 (V1.1.1): "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".

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 [7]; 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 [6], ISO/IEC 9646-7 [7], the abbreviations defined in TS 101 493-1 [1] apply. In particular, the following abbreviations apply:

AP	Access Point
ARQ	Automatic Repeat Request
ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
ATSP	Abstract Testing Service Primitives
BCH	Broadcast CHannel
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
CC	Central Controller
CL	Convergence Layer
CPCS	Common Part Convergence Sublayer
DCC	DLC user Connection Control
DLC	Data Link Control
DUC	DLC User Connection
EC	Error Control
H/2	HIPERLAN Type 2
IUT	Implementation Under Test
LT	Lower Tester
MAC	Medium Access Control
MAC-ID	MAC IDentifier
MT	Mobile Terminal
MTC	Main Test Component
PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PDU	Protocol Data Unit
PHY	Physical layer
PICS	Protocol Implementation Conformance Statement
RLC	Radio Link Control
SAP	Service Access Point
SAR	Segmentation and Reassembly
SDU	Sevice Data Unit
SSCS	Service Specific Convergence Sublayer
SUT	System Under Test

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TC	Test Cases
TCS	Test Case Selection
TCV	Test Case Variable
TP	Test Purposes
TSO	Test Suite Operations
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
TSP	Test Suite Parameter
TSC	Test Suite Constant
TSV	Test Suite Variable
UT	Upper Tester

4 Abstract Test Method (ATM)

This clause describes the ATM used to test the HIPERLAN 2 Common part PBCL layer at the AP side and at the MT side.

4.1 Test architecture

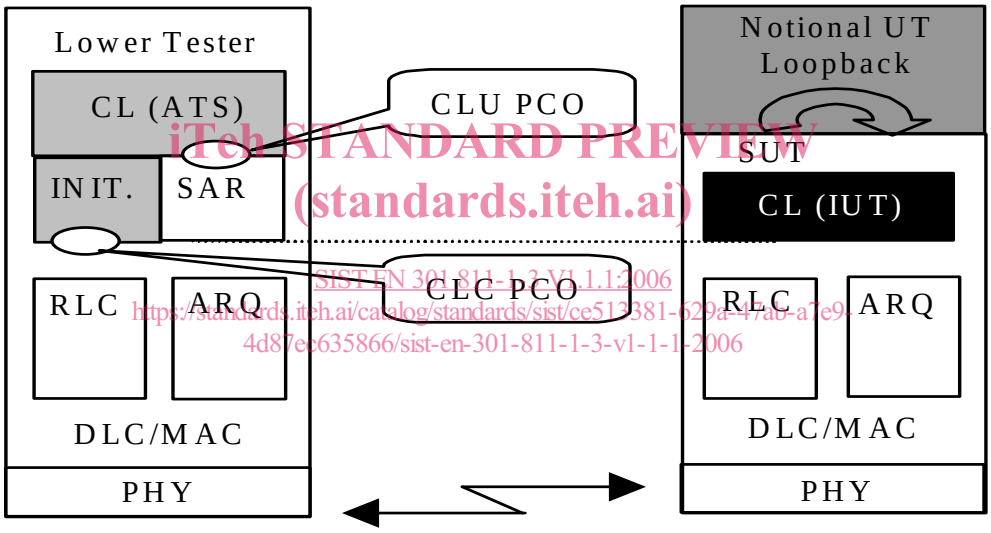

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Figure 1: Test architecture for Packet CL – Common part

A single-party testing concept is used, which consists of the following abstract testing functions:

Lower Tester A Lower Tester (LT) is located in the remote BRAN H/2 test system. It controls and observes the behaviour of the IUT.

CL ATS: A Convergence Layer (CL) Abstract Test Suite (ATS) is located in the remote BRAN H/2 test system. Contains part of SSCS functionalities for establishing a U-plane connection needed for testing CL common part behaviour.

CLU PCO: U-plane. The first Point of Control and Observation (PCO) for Convergence Layer testing is located at a SAR_SAP between the Common Part Convergence Sublayer (CPCS) and the SAR sub-layer. All test events at the PCO are specified in terms of Abstract Testing Service Primitives (ATSP defined in Clause 7) containing complete SAR SDU.

CLC PCO: C-plane. The second Point of Control and Observation (PCO) for Convergence Layer testing is located at a SAP between the Service Specific Convergence Sublayer (SSCS) and the DLC layer. All test events at the PCO are specified in terms of Abstract Testing Service Primitives (ATSP defined in Clause 7) containing complete DLC SDU. To avoid the complexity of data fragmentation and recombination testing, the SAP is defined below these functions.

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SAR: The Segmentation and Reassembly sub-layer of the Convergence layer - Common Part is implemented in the test system outside the ATS. This allows implicit testing of the IUT's SAR entity without any internal requirement of its implementation.

INIT: Part of a generic SSCS has to be simulated as an initialization process by the ATS to provide the establishment of the U-plane needed for convergence layer testing.

Notional UT: No explicit upper tester (UT) exists in the system under test. Nevertheless, some specific actions to cover implicit send events and to obtain feedback information are necessary for the need of the test procedures. A black box covering these requirements is used in the SUT as a notional UT as defined in ISO 9646 ([3] to [7]). This notional UT is part of the test system.

4.2 Test Configurations

4.2.1 Test Configurations for MT

Two configurations are defined for MT testing.

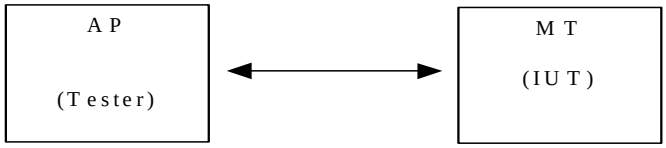

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Figure 2: Normal configuration for MT

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The normal configuration is defined and used for functionality that requires only interaction between the tested MT and one AP.

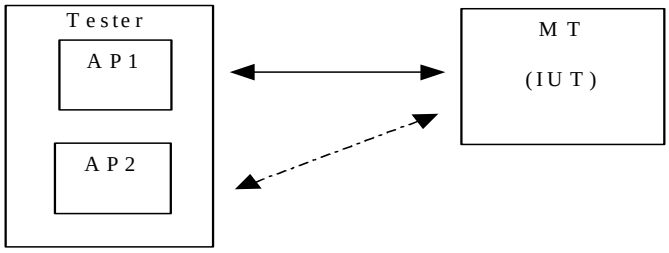

Figure 3: Handover configuration for MT

The handover configuration is used when the MT has to interact with two AP. In that case, the two simulated AP are configurable to be either a multi-sector AP or two separate AP. The concurrent TTCN facilities are used in this configuration.