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Širokopasovna radijska dostopovna omrežja (BRAN) – Zelo zmogljivo radijsko lokalno omrežje (HIPERLAN), tip 2 – Specifikacija za preskušanje skladnosti protokola krmiljenja podatkovnih povezav (DLC) – 2. del: Podplast kontrole radijske povezave (RLC) – 3. poddel: Abstraktni preskušalni niz (ATS) specifikacija

Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Conformance testing for the Data Link Control (DLC) protocol; Part 2: Radio Link Control (RLC) sublayer; Subpart 3: Abstract Test Suite (ATS) specification

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European Standard (Telecommunications series)

**Broadband Radio Access Networks (BRAN);
HIPERLAN Type 2;
Conformance testing for the
Data Link Control (DLC) protocol;
Part 2: Radio Link Control (RLC) sublayer;
Sub-part 3: Abstract Test Suite (ATS) 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 3 of a multi-part deliverable covering Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Conformance testing for the Data Link Control (DLC) protocol; Part 2: Radio Link Control (RLC) sublayer, 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
Date of latest announcement of this EN (doa):	30 April 2001
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Date of withdrawal of any conflicting National Standard (dow):	31 October 2001

1 Scope

The present document contains the Abstract Test Suite (ATS) to test the BRAN HIPERLAN Type 2; Data Link Control (DLC) protocol; Radio Link Control (RLC) sublayer [1].

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

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 101 761-2 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Data Link Control (DLC) Layer; Part 2: Radio Link Control (RLC) 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 CCITT 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 CCITT 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 CCITT 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".

- [7] ISO/IEC 9646-7 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [8] ETSI TS 101 823-2-2 (V1.1.1): "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Conformance testing for the Data Link Control (DLC) protocol; Part 2: Radio Link Control (RLC) sublayer; 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 101 761-2 [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 101 761-2 [1] apply. In particular, the following abbreviations apply:

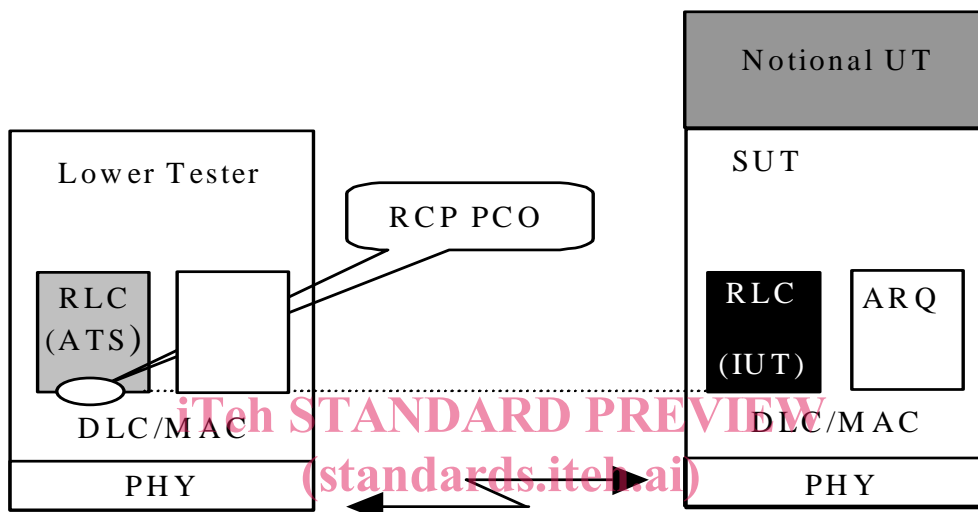
AP	Access Point
ARQ	Automatic Repeat reQuest
ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BCH	Broadcast Channel
BI	Invalid Behaviour
BO	inOpportune Behaviour
BV	Valid Behaviour
CA	CApability tests
CC	Central Controller
CL	Convergence Layer
DCC	DLC user Connection Control
DFS	Dynamic Frequency Selection
DLC	Data Link Control
DM	Direct Mode
DUC	DLC User Connection
EC	Error Control
IUT	Implementation Under Test
LT	Lower Tester
MTC	Main Test Component
MAC	Medium Access Control
MAC-ID	MAC IDentifier
MT	Mobile Terminal
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
RRC	Radio Resource Control
SAP	Service Access Point
SUT	System Under Test
TC	Test Cases
TP	Test Purposes

TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

4 Abstract Test Method (ATM)

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

4.1 Test architecture



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Figure 1: Test architecture for RLC

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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;
- RLC ATS:** a RLC Abstract Test Suite (ATS) is located in the remote BRAN H/2 test system;
- RCP PCO:** the Point of Control and Observation (PCO) for RLC testing is located at a SAP between the RLC layer and the MAC layer. All test events at the PCO are specified in terms of Abstract testing Service Primitives (ATSP defined in Clause 7) containing complete PDU. To avoid the complexity of data fragmentation and recombination testing, the SAP is defined below these functions;
- 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

Three configurations are defined for MT testing.

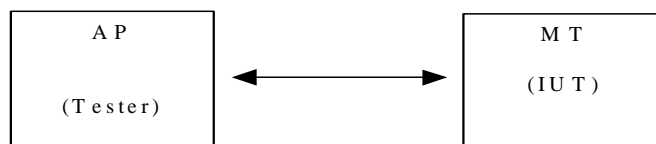


Figure 2: Normal configuration for MT

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

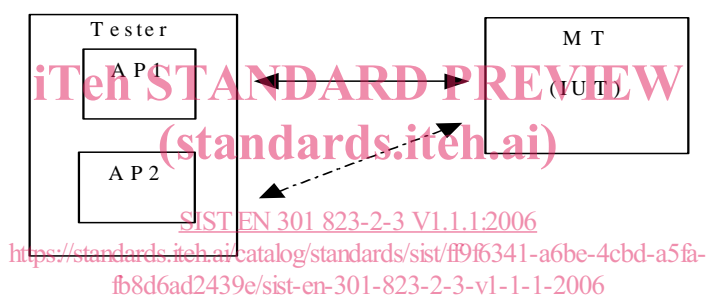


Figure 3: Handover configuration for MT

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.

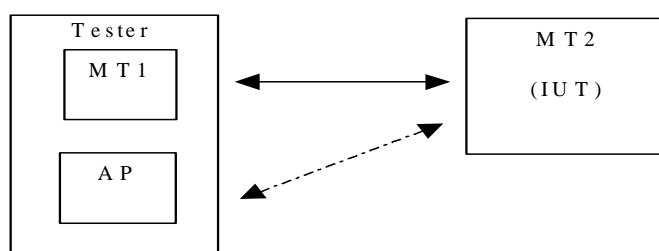


Figure 4: Direct mode configuration for MT

The direct mode configuration is used for direct mode testing. The test system simulates one AP and one MT. The AP part of the test system is used to initialize the direct mode with the tested MT. The MT part of the system is used to verify the communication of the tested MT when the direct mode is active. The concurrent TTCN facilities are used in this configuration.