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Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS) Test Case Library (TCL); Part 5: Abstract Test Suite (ATS) - Data Link Control (DLC) layer - Portable radio Termination (PT)

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**Digital Enhanced Cordless Telecommunications (DECT);
DECT Packet Radio Service (DPRS) Test Case Library (TCL);
Part 5: Abstract Test Suite (ATS) -
Data Link Control (DLC) layer -
Portable radio Termination (PT)**

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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT).

The present document is part 5 of a multi-part deliverable covering the Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS) Test Case Library (TCL), as identified below:

- Part 1: "Test Suite Structure (TSS) and Test Purposes (TP) - Medium Access Control (MAC) layer";
- Part 2: "Abstract Test Suite (ATS) - Medium Access Control (MAC) layer - Portable radio Termination (PT)";
- Part 3: "Abstract Test Suite (ATS) - Medium Access Control (MAC) layer - Fixed radio Termination (FT)";
- Part 4: "Test Suite Structure (TSS) and Test Purposes (TP) - Data Link Control (DLC) layer";
- Part 5: "Abstract Test Suite (ATS) - Data Link Control (DLC) layer - Portable radio Termination (PT)";**
- Part 6: "Abstract Test Suite (ATS) - Data Link Control (DLC) layer - Fixed radio Termination (FT)";
- Part 7: "Test Suite Structure (TSS) and Test Purposes (TP) - Network (NWK) layer";
- Part 8: "Abstract Test Suite (ATS) - Network (NWK) layer - Portable radio Termination (PT)";
- Part 9: "Abstract Test Suite (ATS) - Network (NWK) layer - Fixed radio Termination (FT)".

National transposition dates

Date of adoption of this EN:	13 October 2000
Date of latest announcement of this EN (doa):	31 January 2001
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Date of withdrawal of any conflicting National Standard (dow):	31 July 2001

1 Scope

The present document contains the Abstract Test Suite (ATS) specification to test the DECT Packet Radio Service (DPRS) Data Link Control (DLC) layer at the Portable radio Termination (PT).

The objective of this test specification is to provide a basis for conformance tests for DECT equipment giving a high probability of air interface inter-operability between different manufacturer's DECT 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.

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

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

Annex C provides the Protocol Conformance Test Report (PCTR) Proforma of this 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.

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- [1] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".
 - [2] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".
 - [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". (See also ITU-T Recommendation X.290).
 - [5] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification". (See also ITU-T Recommendation X.291).
 - [6] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The tree and tabular combined notation". (See also ITU-T Recommendation X.292).
 - [7] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".
 - [8] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation conformance statement".
 - [9] ETSI EN 301 649: "Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Services (DPRS)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

- a) the terms given in ISO/IEC 9646-1 [4]; and
- b) the definitions given in EN 300 175-4 [2].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ISO/IEC 9646-1 [4], ISO/IEC 9646-6 [7], ISO/IEC 9646-7 [8] and EN 300 175-4 [2] apply. In particular, the following abbreviations apply:

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
DLC	Data Link Control
FP	Fixed Part
FT	Fixed radio Termination
IUT	Implementation Under Test
LT	Lower Tester
MAC	Medium Access Control
NWK	Network
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation Extra Information for Testing
PMID	Portable Part MAC Identity
PP	Portable Part
PT	Portable radio Termination
RF	Radio Frequency
RFP	Radio Fixed Part
SAP	Service Access Point
SUT	System Under Test
TC	Test Case
TDMA	Time Division Multiple Access
TP	Test Purposes
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

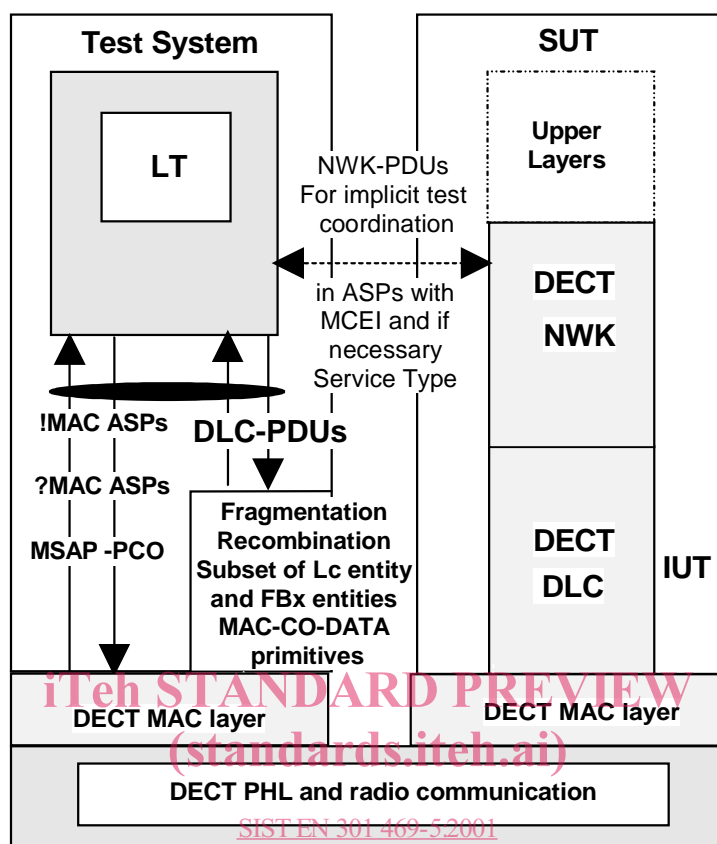
4 Abstract Test Method (ATM)

This clause describes the ATM used for testing the DECT DLC protocol. It is the embedded variant of Remote Single (RSE) layer test method. The RSE test method has been selected, because:

- this test method implies no specific requirements from the IUT;
- the Upper Service Access Point (USAP) of the IUT cannot be directly observed;
- the variety of the possible DECT implementations is a serious technical obstacle for the adoption of a different ATM;

- this test method places the minimum limitations in the realization of conformance testing.

The embedded variant of the remote test method provides sufficient control of the IUT DLC behaviour, through NWK layer messages conveyed by DLC frames.



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Figure 1: RS test Method embedded variant

- LT** A Lower Tester (LT) is located in a remote DECT test system. It controls and observes the behaviour of the IUT.
- MSAP** MAC Service Access Point - A unique MAC SAP is defined at the DECT interface and used to exchange service data of the DLC protocol. To avoid the complexity of data fragmentation and recombination testing, the SAP is defined below this functions of the DLC layer.
- PCO** The PCO for DLC layer testing is located on the MSAP. All test events at the PCO are specified in terms of MAC Abstract Service Primitives (ASPs) and DLC layer Protocol Data Units (PDUs).
- Notional UT** No explicit upper tester (UT) exists in the system under test. Nevertheless, some network messages are sent to the SUT for the need of the co-ordination procedures. The network layer of the SUT is used as a notional UT as defined in ISO 9646.

The MAC primitives are defined according to EN 300 175-3 [1] clause 8 and associated subclauses.

5 Untestable Test Purposes (TP)

Due to the ATM chosen for this ATS or other restrictions, the test purposes in table 1 have been identified as being in the untestable category, and therefore have not been derived into final test case:

Table 0: Untestable TP

Test purpose	Reason

6 ATS Conventions

This clause describes the conventions applied to define the ATS and gives the naming conventions chosen for the different elements of the ATS.

The ATS conventions are intended to give a better understanding of the ATS but they describe also the conventions made for the development of the ATS, thus for any later maintenance purposes or further development of the ATS the conventions described in this clause shall be considered.

The ATS conventions contain two subclauses, the naming conventions and the implementation conventions. The naming conventions describe the structure of the naming of all ATS elements. The implementation conventions describe the functional structure of the ATS.

To define the ATS, the guidelines of ETS 300 406 [3] was considered.

6.1 Naming conventions

6.1.1 Declarations part

This subclause describes the naming conventions chosen for the elements of the ATS declarations part.

6.1.1.1 Test suite type and structured type definitions

The test suite type and test suite structured type identifiers describe the information elements, and are written in uppercase:

EXAMPLE: PROTOCOL_DISCRIMINATOR simple type.
 FILLSTRING structured type.

6.1.1.2 Test suite operations definitions

The test suite operation identifiers are composed of substrings in lowercase letters, except for standard prefix "TSO_". Each substring is separated by an underscore character ("_").

EXAMPLE: TSO_compute_checksum.

6.1.1.3 Test suite parameter declarations

The test suite parameter identifiers are composed of substrings in lowercase letters, except for the standard prefix "TSP_". Each substring is separated by an underscore character ("_").

EXAMPLE: TSP_window_size.

If the test suite parameter references a Protocol Implementation Conformance Statement (PICS) item, the letter "C" is added to the standard prefix.

EXAMPLE: TSPC_pics_item_s23.

If the test suite parameter references a PIXIT item, the letter "X" is added to the standard prefix.

EXAMPLE: TSPX_pixit_item_2.

6.1.1.4 Test case selection expression definitions

The naming conventions for the test case selection expression definitions use free text starting with an uppercase letter. The name of the expression shall explain clearly the selection rule. The test case selection expressions are logical combinations of the test suite parameters definitions.

6.1.1.5 Test suite constant declarations

The test suite constant identifiers are composed of substrings in lowercase letters, except for the prefix "TSC_". Each substring is separated by an underscore character ("_").

EXAMPLE: TSC_retry.

Complete names as defined in the specifications are used.

6.1.1.6 Test suite variable declarations

The test suite variable identifiers are composed of substrings in lowercase letters, except for the prefix "TSV_". Each substring is separated by an underscore character ("_").

EXAMPLE: TSV_count.

Exception: If the test suite variable represents a system parameter or value, the name defined in the specifications is used.

EXAMPLE: VR,VS.

6.1.1.7 Test case variable declarations

The test case variable identifiers are composed of substrings in lowercase letters, except for the prefix "TCV_". Each substring is separated by an underscore character ("_").

EXAMPLE: TCV_cr_value.

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6.1.1.8 PCO declarations

The point of control and observation identifiers are composed of two or four capital letters, beginning with "L", as there are only LTs.

EXAMPLE: LMAC represents a PCO on MAC interface as LT in the test equipment.
 LDLC represents a PCO on DLC interface as LT in the test equipment.

6.1.1.9 Timer declarations

Two kinds of timers can be distinguished:

1) standardized:

Those defined in the standard, e.g. DL_04, use exactly the same name as in the standard, beginning with a capital "T".

As there is a tolerance margin accepted for these timers, three values are needed:

- the maximum value allowed, which will use the suffix "_max";
- the minimum value allowed, which will use the suffix "_min";
- the value actually implemented, with no suffix.

EXAMPLE 1: TDL_04_max, TDL_04_min, and TDL_04.