SLOVENSKI STANDARD
SIST EN 300 497-5 V0.3.0:2003

01-december-2003

Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT) ï Skupni vmesnik (CI) ï Knjiġnica preskuġalnih primerov (TCL) ï 5. del: Abstraktni preskuġalni niz (ATS) ï Plast krmiljenja podatkovnih povezav (DLC)

Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Test Case Library (TCL); Part 5: Abstract Test Suite (ATS) - Data Link Control (DLC) layer

Ta slovenski standard je istoveten z: EN 300 497-5 Version 0.3.0

ICS:

33.070.30	Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT)	Digital Enhanced Cordless Telecommunications (DECT)

SIST EN 300 497-5 V0.3.0:2003 **en**

ETSI EN 300 497-5 V0.3.0 (1999-10)

European Standard (Telecommunications series)

Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Test Case Library (TCL); Part 5: Abstract Test Suite (ATS) - Data Link Control (DLC) layer

Reference
REN/DECT-040131-5 (4lp90100.PDF)

Keywords
ATS, DECT, testing, layer 2, TTCN

ETSI

Postal address
F-06921 Sophia Antipolis Cedex - FRANCE

Office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet
secretariat@etsi.fr
Individual copies of this ETSI deliverable
can be downloaded from
http://www.etsi.org
If you find errors in the present document, send your
comment to: editor@etsi.fr

Important notice

This ETSI deliverable may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference should be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Copyright Notification

Contents

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://www.etsi.org/ipr).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

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 EN covering the Common Interface (CI); Test Case Library (TCL), as identified below:

Part 1: "Test Suite Structure (TSS) and Test Purposes (TP) for Medium Access Control (MAC) layer";

Part 2: "Abstract Test Suite (ATS) for Medium Access Control (MAC) layer - Portable radio Termination (PT)";

Part 3: "Abstract Test Suite (ATS) for 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";

Part 6: "Test Suite Structure (TSS) and Test Purposes (TP) - Network (NWK) layer - Portable radio Termination (PT)";

Part 7: "Abstract Test Suite (ATS) for Network (NWK) layer - Portable radio Termination (PT)";

Part 8: "Test Suite Structure (TSS) and Test Purposes (TP) - Network (NWK) layer - Fixed radio Termination (FT)";

Part 9: "Abstract Test Suite (ATS) for Network (NWK) layer - Fixed radio Termination (FT)".

National transposition dates	
Date of adoption of this EN:	17 September 1999
Date of latest announcement of the present document (doa):	31 December 1999
Date of latest publication of new National Standard or endorsement of the present document (dop/e):	30 June 2000
Date of withdrawal of any conflicting National Standard (dow):	30 June 2000

1 Scope

The present document contains the Abstract Test Suite (ATS) to test the Digital Enhanced Cordless Telecommunications (DECT) Data Link Control (DLC) layer.

The objective of this test specification is to provide a basis for approval 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 [7], ISO/IEC 9646-2 [8], ISO/IEC 9646-3 [9] and ISO/IEC 9646-5 [10]) as well as the ETSI rules for conformance testing (ETS 300 406 [6] and ETR 141 [13]) are used as basis for the test methodology.

Test specifications for the Physical Layer (PHL), Medium Access Control (MAC) layer, and Network (NWK) layer are provided in other the DECT standards.

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.

[1] EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[3] EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[4] EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[5] EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[6] ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[7] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[8] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite Specification".

[9] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

[10] ISO/IEC 9646-5: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 5: Requirements on test laboratories and clients for the Conformance Assessment process".

[11] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol Profile Test Specification".

[12] ISO 7498: "Information Processing Systems - Open Systems Interconnection - Basic Reference model".

[13] ETR 141: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; The Tree and Tabular Combined Notation (TTCN) style guide".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions given in ISO/IEC 9646-1 [7], ISO/IEC 9646-2 [8], ISO/IEC 9646-5 [10], ISO 7498 [12], EN 300 175-1 [1], EN 300 175-4 [3], EN 300 175-6 [4] and EN 300 175-7 [5] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ASP	Abstract Service Primitive
BI	Invalid Behaviour
BO	Inopportune Behaviour
BV	Valid Behaviour
CA	Capability tests
DECT	Digital Enhanced Cordless Telecommunications
DLC	Data Link Control
FP	Fixed Part
FT	Fixed radio Termination
IUT	Implementation Under Test
LT	Lower Tester
MAC	Medium Access Control
MSAP	MAC Service Access Point
NWK	Network
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PHL	Physical Layer
PICS	Protocol Implementation Conformance Statements
PIXIT	Protocol Implementation Extra Information for Testing
PMID	Portable Part MAC Identity
PP	Portable Part
PT	Portable radio Termination
SAP	Service Access Point
SUT	System Under Test
TC	Test Case
TDMA	Time Division Multiple Access
TP	Test Purposes
USAP	Upper Service Access Point
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.

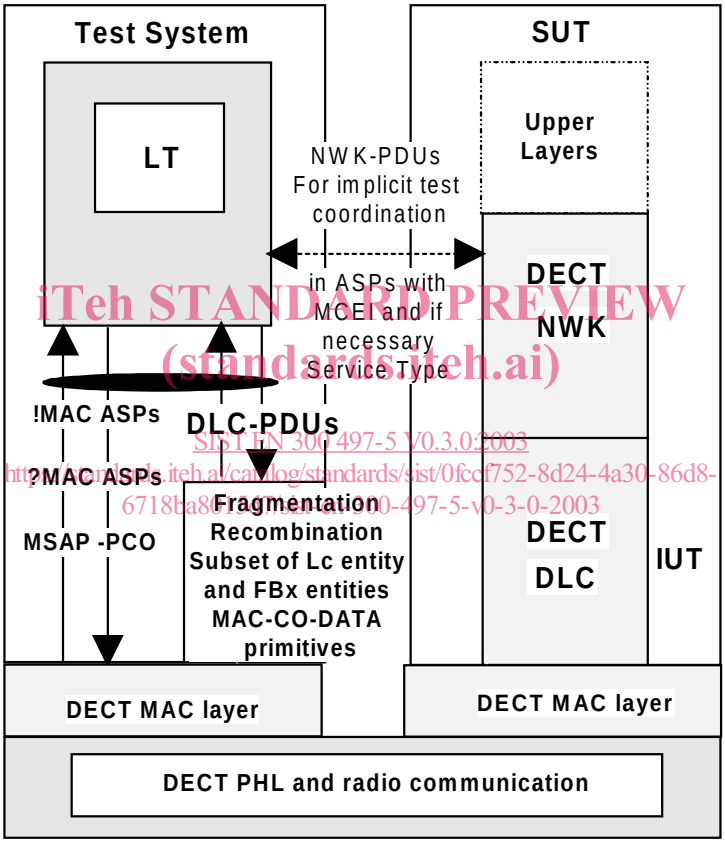

Figure 1: RS test Method embedded variant

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 MSAP 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 Service Access Point (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 MSAP primitives are defined according to EN 300 175-3 [2] clause 8 and associated subclauses.

5 Untestable Test Purposes (TP)

Due to the ATMs 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 1: Untestable TP

Test purpose	Reason
TPUV_000	No procedure can be defined to determine if, after receiving the first UI frame, the IUT considers the class U link as established. It is an internal state of the DLC layer of the IUT.
TPUV_001	No procedure can be defined to determine if, after receiving an upward release, the IUT considers the class U link as released. It is an internal state of the DLC layer of the IUT.
TPLC_002	Prioritized queuing of broadcast message between normal and expedited data is not testable. It is very difficult to define a procedure in the IUT to force it, to transmit normal and expedited data in a sufficient short time. It is, also, very difficult for the tester to transmit normal and expedited data in sufficient short time and to define a procedure to verify the correct order of the reception in the IUT.

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.

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 string in lowercase letters starting by the uppercase string "TSO_".

EXAMPLE: TSO_compute _checksum.

6.1.1.3 Test suite parameter declarations

The test suite parameter identifiers are composed of string in lowercase letters starting by the uppercase string "TSP_".

EXAMPLE 1: TSP_window_size.

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

EXAMPLE 2: TSPC_pics_item_s23.

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

EXAMPLE 3: TSPX_pixit_item_2.

Complete names as defined in the specifications are used.

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.

Certain test cases are selected only when the IUT is a FT part or a PT part. Therefore, to cover all test cases applicable to the implementation, it is necessary to change the relevant test suite parameter for running the desired test cases.

6.1.1.5 Test suite constant declarations

The test suite constant identifiers are composed of string in lowercase letters starting by the uppercase string "TSC_".

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 string in lowercase letters starting by the uppercase string "TSV_".

EXAMPLE 1: TSV_count.

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

EXAMPLE 2: VR,VS.

6.1.1.7 Test case variable declarations

The test case variable identifiers are composed of string in lowercase letters starting by the uppercase string "TCV_".

EXAMPLE: TCV_cr_value.

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.