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Digitalne izboljģane brezvrviļ ne telekomunikacije (DECT) - Skupni vmesnik (CI) knjiģnica preskuģalnih primerov (TCL) - 7. del: Abstraktni preskuģalni niz (ATS) za omreģno plast (NWK) - prenosna radijska zaključļ itev (PT)

Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Test Case Library (TCL); Part 7: Abstract Test Suite (ATS) for Network (NWK) layer- Portable radio Termination (PT)

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Contents

Foreword

This European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

The DECT Test Specification multipart ETS comprises nine parts, as follows:

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

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

Part 3: "Part 3: Abstract Test Suite (ATS) for Medium Access Control (MAC) layer - Fixed radio Termination (FT)".

Part 4: "Part 4: Test Suite Structure (TSS) and Test Purposes (TP) - Data Link Control (DLC) layer".

Part 5: "Part 5: Abstract Test Suite (ATS) - Data Link Control (DLC) layer".

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

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

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

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

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Date of adoption of this ETS:	16 August 1996
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1 Scope

This European Telecommunication Standard (ETS) contains the Abstract Test Suite (ATS) to test the Network (NWK) layer, Portable radio Termination (PT).

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. Part 7 of this test specification contains the Abstract Test Suite for testing of the NWK layer at the PT.

The ISO standard for the methodology of conformance testing (ISO/IEC 9646) as well as the ETSI rules for conformance testing (protocol and profile conformance testing specifications, standardization methodology ETS 300 406) are used as basis for the test methodology.

Test specifications for the Physical Layer (PHL) are provided in other DECT standards.

Annex B provides the Partial PIXIT Proforma.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 175-1 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 1: Overview".

[2] ETS 300 175-2 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 2: Physical layer".

[3] ETS 300 175-3 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 3: Medium access control layer".

[4] ETS 300 175-4 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 4: Data link control layer".

[5] ETS 300 175-5 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 5: Network layer".

[6] ETS 300 175-6 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 6: Identities and addressing".

[7] ETS 300 175-7 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 7: Security features".

[8] ETS 300 175-8 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 8: Speech coding and transmission".

[9] ETS 300 175-9 (1992): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Part 9: Public access profile".

[10] ETS 300 444: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[11] ETS 300 370: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications/Global System for Mobile communications (DECT/GSM) inter-working profile; Access and mapping (Protocol/procedure description for 3,1 kHz speech service)".

[12] ETS 300 434: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) and Integrated Services Digital Network (ISDN) inter-working for end system configuration".

[13] ETS 300 331: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); DECT Authentication Module (DAM)".

[14] CCITT Recommendation G.726 (1991): "40, 32, 24, 16 kbit/s adaptive differential pulse code modulation (ADPCM)".

[15..20] Reserved values.

[21] 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)).

[22] 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)).

[23] ISO/IEC 9646-3 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The tree and tabular combined notation". (See also CCITT Recommendation X.292 (1992)).

[24] ISO/IEC 9646-4 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realisation". (See also CCITT Recommendation X.292 (1992)).

[25] ISO/IEC 9646-5 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 5: Requirements on test laboratories and clients for the conformance assessment process". (See also CCITT Recommendation X.292 (1992)).

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

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

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

[29] ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[30] 91/263/EEC: "Council Directive of 29 April 1991 on the approximation of the laws of the Member states concerning telecommunications terminal equipment, including the mutual recognition of their conformity. (Terminal Directive)".

[31..40] Reserved values.

[41] I-ETS 300 176: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Approval test specification".

[42] TBR 6: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); General terminal attachment requirements".

[43] TBR 10: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); General terminal attachment requirements: Telephony applications".

[44] TBR 11 (1992): "Radio Equipment and Systems (RES); Attachment requirements for terminal equipment for Digital European Cordless Telecommunications (DECT) Public Access Profile (PAP) applications".

[45] ETS 300 323 (1994): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Public Access Profile (PAP) test specification".

[46] ETS 300 476: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Protocol Implementation Conformance Statement (PICS) proforma".

[47] ETS 300 497: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI) Test Case Library (TCL)".

[48] ETS 300 474: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP); Profile requirement list and profile specific Implementation Conformance Statement (ICS) proforma".

[49] ETS 300 494: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP); Profile Test Specification (PTS)".

[50] TBR 22: "Radio Equipment and Systems (RES); Attachment requirements for terminal equipment for Digital Enhanced Cordless Telecommunications (DECT) Generic Access Profile (GAP) applications".

3 Definitions, symbols and abbreviations

3.1 DECT definitions

For the purposes of this ETS, the definitions given in ISO/IEC 9646-1 [21], ISO/IEC 9646-2 [22], ETS 300 175-1 [1], ETS 300 175-5 [5], ETS 300 175-6 [6] and ETS 300 175-7 [7] apply.

3.2 DECT abbreviations

For the purposes of this ETS, the NWK layer abbreviations defined in ETS 300 175-5 [5] and the following abbreviations apply:

AC	Authentication Code
AR	Access Rights
AU	Authentication
CA	Capability
CC	Call Control
CCSM	Call Control State Machine
CI	Call Information
CH	Ciphering
CR	Call Release
CTS	Conformance Testing Services
DECT	Digital Enhanced Cordless Telecommunication
DLC	Data Link Control layer
ETSI	European Telecommunications Standards Institute
FT	Fixed radio termination

GAP	Generic Access Profile
IC	Incoming Call
ID	Identification
IPUI	International Portable User Identity
IPEI	International Portable Equipment Identity
KA	Key Allocation
LC	Link Control entity
LE	Connection oriented Link Establishment
LL	ConnectionLess Link control
LO	Location
LR	Connection oriented Link Release
LS	Connection oriented Link Suspend and resume
MAC	Medium Access Control layer
ME	Management Entity
ML	ConnectionLess Message Services
MM	Mobility Management
MO	Connection Oriented Message Services
NWK	Network layer
OC	Outgoing Call
PAP	Public Access Profile
PARK	Portable Access Rights Key
PM	Packet Mode
PR	Parameter Retrieval
PT	Portable radio termination
RPN	Radio Fixed Part Number
RS	Call Related Supplementary Services
SC	Service Change
UAK	User Authentication KeY

3.3 ISO 9646 definitions

For the purposes of this ETS, the following ISO 9646 definitions apply:

Implementation Under Test (IUT)
System Under Test (SUT)
Abstract Test Suite (ATS)
Point of Control and Observation (PCO)
Protocol Implementation Conformance Statement (PICS)
Protocol Implementation eXtra Information for Testing (PIXIT)
Lower Tester (LT)
Upper Tester (UT)

3.4 ISO 9646 abbreviations

For the purposes of this ETS, the following ISO 9646 abbreviations apply:

ATS	Abstract Test Suite
ASP	Abstract Service Primitive
BI	Invalid Behaviour
BO	InOpportune Behaviour
BV	Valid Behaviour
CA	Capability tests
ETS	European Telecommunication Standard
ISO	International Organisation for Standardisation
IUT	Implementation Under Test
IWU	InterWorking Unit
LT	Lower Tester
PDU	Protocol Data Unit
PHL	Physical Layer
PICS	Protocol Implementation Conformance Statements
PIXIT	Protocol Implementation eXtra Information for Testing
SUT	System Under Test
TP	Test Purpose

TSO	Test Suite Operation
TSP	Test Suite Parameter
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UT	Upper Tester

4 Abstract Test Method (ATM)

This clause describes the ATM, the Point of Control and Observation (PCO) used to test the NWK layer of the PT.

4.1 ATM

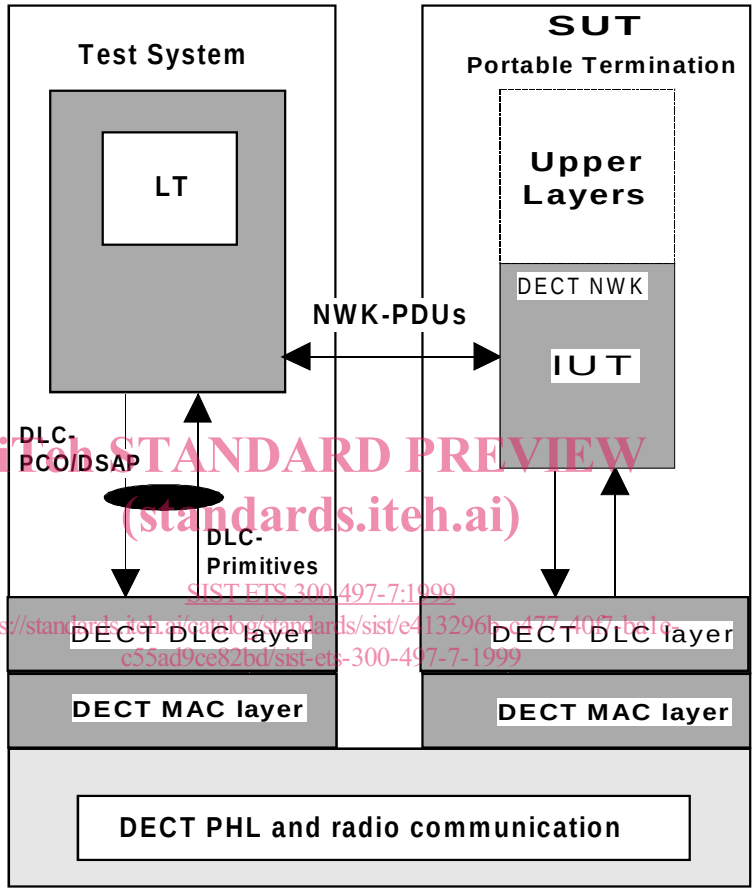

Figure 1: Remote Single Layer Test Method Embedded variant

LT1: a lower tester (LT1) is located in a remote DECT test system. It controls and observes the behaviour of the IUT.

DSAP: a unique DLC SAP is defined at the DECT interface and used to exchange service data of the NWK protocol.

PCO: the PCO for Network Layer testing is located on the DSAP. All test events at the PCO are specified in terms of DLC ASPs and NWK PDUs.

Upper layers/tester: no explicit Upper Tester (UT) exists in the test system. However, the SUT needs to carry out some UL functions to achieve some effects of test co-ordination procedures. Designing ATS, the capability of the IWU, such as PSTN, ISDN or GSM IWUs might be taken into account. An example of such controls could be to provoke restarting of the IUT through the Q interface.

4.2 DLC primitives

In this subclause the DSAP primitives are defined according to ETS 300 175-4 [4], subclause 8.3.2 (S-SAP primitives) and ETS 300 175-4 [4], subclause 8.3.3 (B-SAP primitives).

4.2.1 S-SAP primitives

Table 1: DL_DATA_IND primitive

ASP Declaration		
ASP NAME DL_DATA_IND	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.3
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6
message_unit	PDU	ETS 300 175-4 [5], subclause 8.3.1

Table 2: DL_DATA_REQ primitive

ASP Declaration		
ASP NAME DL_DATA_REQ	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.3
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6
message_unit	PDU	ETS 300 175-4 [5], subclause 8.3.1

Table 3: DL_ENCRYPT_CNF primitive

ASP Declaration		
ASP NAME DL_ENCRYPT_CNF	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.8
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6
encription_status	CIPHER_STATUS (INTEGER(0,1))	ETS 300 175-4 [5], subclause 8.3.1

Table 4: DL_ENCRYPT_IND primitive

ASP Declaration		
ASP NAME DL_ENCRYPT_IND	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.8
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6
connection_identities	CONNECTION_IDENTITIES (OCTETSTRING)	ETS 300 175-4 [5], subclause 8.3.1
encription_status	CIPHER_STATUS (INTEGER(0,1)	ETS 300 175-4 [5], subclause 8.3.1

Table 5: DL_ENCRYPT_REQ primitive

ASP Declaration		
ASP NAME DL_ENCRYPT_REQ	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.8
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6
connection_identities	CONNECTION_IDENTITIES (OCTETSTRING)	ETS 300 175-4 [5], subclause 8.3.1
encription_status	CIPHER_STATUS (INTEGER(0,1)	ETS 300 175-4 [5], subclause 8.3.1

Table 6: DL_ENC_KEY_REQ primitive

ASP Declaration		
ASP NAME DL_ENC_KEY_REQ	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.7
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], 7.3.6
connection_identities	CONNECTION_IDENTITIES (OCTETSTRING)	ETS 300 175-4 [5], 8.3.1
encription_key	ENCRYPTION_KEY (BITSTRING[64])	ETS 300 175-4 [5], 8.3.1

Table 7: DL_ESTABLISH_CNF primitive

ASP Declaration		
ASP NAME DL_ESTABLISH_CNF	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.1
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6

Table 8: DL_ESTABLISH_IND primitive

ASP Declaration		
ASP NAME DL_ESTABLISH_IND	PCO TYPE S-SAP	COMMENTS ETS 300 175-4 [5], subclause 8.3.2.1
Service control information		
Parameter name	**Type**	**Comments**
data_link_endpoint_identifier	DATA_LINK_ENDPOINT_IDENTIFIER (INTEGER)	ETS 300 175-4 [5], subclause 7.3.6
establish_mode	ESTABLISH_MODE (INTEGER(0,1,2)	ETS 300 175-4 [5], subclause 8.3.1
radio_fixed_part_number	RADIO_FIXED_PART_NUMBER (INTEGER)	ETS 300 175-4 [5], subclause 8.3.1
message_unit	PDU	ETS 300 175-4 [5], subclause 8.3.1