



SLOVENSKI STANDARD

DSIST ETS 300 651:1999

01-jUbi Ur-1999

8][]HUbY]nVc`ýUbY'VfYnj f j] bYHYY_ca i b]_UWYYfB 97 HÉ! DfcZ dcXUh_cj b]_
għcf]Hj fB GDŁ!'; YbYf] bUgħcf]Hj dcXUh_cj bYdcj YnUj Yfġħcf]Hj 'HdU7 žfUhfYX &L

Digital Enhanced Cordless Telecommunications (DECT); Data Services Profile (DSP);
Generic data link service (service type C, class 2)

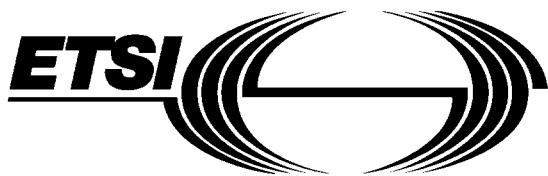
Ta slovenski standard je istoveten z: ETS 300 651 E1.% - * !\$-

ICS:

33.020	Telekomunikacije na splošno	Telecommunications in general
33.070.30	Öð ãæð ^ Á ã[bæ ã^ à ^: c çã } ^ Á ^{\ { ` } à ãæ ã ØÓÓVD	Digital Enhanced Cordless Telecommunications (DECT)

DSIST ETS 300 651:1999

en



**EUROPEAN
TELECOMMUNICATION
STANDARD**

ETS 300 651

September 1996

Source: ETSI TC-RES

Reference: DE/RES-03036

ICS: 30.020, 30.060.50

Key words: DECT, data, layer 2, mobility, profile, radio

**Radio Equipment and Systems (RES);
Digital Enhanced Cordless Telecommunications (DECT);
Data Services Profile (DSP);
Generic data link service;
Service type C, class 2**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

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

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1996. All rights reserved.

Contents

Foreword	9
1 Scope	11
2 Normative references.....	11
3 Definitions and abbreviations	13
3.1 Definitions	13
3.2 Abbreviations	13
4 Description of services	15
4.1 Reference configuration.....	15
4.2 Service objectives.....	17
5 PHL requirements	17
6 MAC layer requirements.....	17
7 DLC layer requirements	17
7.1 C-plane requirements	17
7.2 U-plane requirements	17
8 NWK layer requirements	18
9 Management entity requirements.....	19
9.1 Link resource management	19
10 Generic interworking conventions and procedures	20
10.1 PAD functionality for character oriented user data	20
10.1.1 Character formatting	20
10.1.2 PAD operation	21
10.1.2.1 Transmission over DECT air interface	21
10.1.2.1.1 Data forwarding conditions	21
10.1.2.1.2 Transmission buffering and flow- control	21
10.1.2.2 Reception over DECT air interface	21
10.1.2.2.1 Data reception.....	21
10.1.2.2.2 Receive buffering and flow control.....	21
10.2 PAD functionality for bit oriented user data.....	22
10.2.1 The character formatting	22
10.2.2 BPAD operation.....	22
10.2.2.1 Transmission over DECT air interface	22
10.2.2.1.1 Data forwarding conditions	22
10.2.2.1.2 Transmission buffering and flow- control	23
10.2.2.2 Reception over DECT air interface	23
10.2.2.2.1 Data reception.....	23
10.2.2.2.2 Receive buffering and flow control.....	23
10.2.3 Selection of BPAD functionality	23
10.3 Control frame for V.24 interworking	23
10.4 Control frame for voice band modem interworking	25
10.5 Data-compression.....	25
10.6 In-call Service Change.....	26
10.6.1 Service Change Scope.....	26
10.6.2 <<CONNECTION-ATTRIBUTES>> Service Change	26
10.6.3 <<IWU-ATTRIBUTES>> Service Change.....	26

Annex A (normative):	Implementation of the LU3 service including LAP-U	27
A.1	U-plane service characteristics.....	27
A.1.1	General.....	27
A.1.2	LAP-U type of operation	27
A.1.3	U-plane Link Identifier (ULI)	27
A.2	Data link service frame structure for LU3	28
A.2.1	General frame structure	28
A.2.2	LU2 frame delimiting and transparency	28
A.2.3	Transmission order	28
A.2.4	Invalid frames	29
A.3	Elements of procedures and formats of fields for U-plane peer to peer communication	29
A.3.1	General.....	29
A.3.2	Address field formats	29
A.3.3	Address field parameters	29
A.3.3.1	Reserved bit (RES)	29
A.3.3.2	Command Response bit (C/R)	29
A.3.3.3	SAPI field	30
A.3.3.4	New Link Flag bit (NLF)	30
A.3.3.5	More data bit; M	30
A.3.3.6	U-plane Link Identifiers	31
A.3.4	Control field formats	31
A.3.5	Checksum field parameters	31
A.3.6	Commands and responses	32
A.3.6.1	Information (I) command	32
A.3.6.2	Receive Ready (RR) command/response	32
A.3.6.3	Receive Not Ready (RNR) command/response	33
A.3.6.4	REject (REJ) command/response	33
A.3.6.5	Set Asynchronous Balanced Mode (SABM) command	33
A.3.6.6	Unnumbered Acknowledgement (UA) response	33
A.4	Primitives for the LU3 service	34
A.5	U-plane peer to peer procedures.....	34
A.5.1	General.....	34
A.5.2	Point to point acknowledged operation	35
A.5.2.1	Procedure for the use of the P/F bit in LAP-U acknowledged information transfer.....	35
A.5.2.2	Establishing LAP-U multiple frame operation	35
A.5.2.2.1	Overview	35
A.5.2.2.2	LAP-U multiple frame establishment procedures	35
A.5.2.3	Link maintenance and information transfer in LAP-U multiple frame operation	36
A.5.2.3.1	Transmitting I-frames	37
A.5.2.3.2	Receiving I-frames	37
A.5.2.3.2.1	P bit set to 1	37
A.5.2.3.2.2	P bit set to 0	37
A.5.2.3.3	Sending and receiving acknowledgements	38
A.5.2.3.3.1	Sending acknowledgements	38
A.5.2.3.3.2	Receiving acknowledgements	38
A.5.2.3.4	Receiving REJ-frames	38
A.5.2.3.5	Receiving RNR-frames	39
A.5.2.3.6	LAP-U own receiver busy condition	41
A.5.2.3.7	Waiting acknowledgement	41
A.5.2.4	Release of LAP-U multiple frame operation	42
A.5.2.5	Re-establishment of LAP-U multiframe operation	42
A.5.2.5.1	Criteria for re-establishment	42
A.5.2.5.2	Re-establishment procedure	42
A.5.2.6	Exception handling	43
A.5.2.6.1	General	43
A.5.2.6.2	LAP-U exception condition reporting and recovery	43

	A.5.2.6.2.1	N(S) sequence error	43
	A.5.2.6.2.2	N(R) sequence error	44
	A.5.2.6.2.3	Timer recovery condition	44
A.6	Management procedures for LAP-U		44
A.6.1	LU3 establishment		44
A.6.2	LU3 release.....		44
Annex B (normative): LU3 parameters.....			45
B.1	LAP-U timer values		45
B.2	Constants		45
Annex C (normative): Specific interworking conventions			46
C.1	Scope of this annex.....		46
C.2	Interworking specific codings		47
C.2.1	IWU-Attribute coding.....		47
C.2.2	IWU attributes implemented		50
C.3	Interworking to V.24 circuits		51
C.3.1	Reference configuration.....		51
C.3.2	Global assumptions		51
C.3.3	Interworking procedures and conventions		52
C.3.3.1	Procedures at the DTE-side-IWF		52
C.3.3.1.1	DTE-Initiated link establishment.....		52
C.3.3.1.2	DCE-Initiated link establishment.....		52
C.3.3.1.3	DTE-Initiated link suspension		52
C.3.3.1.4	DCE-Initiated link suspension.....		52
C.3.3.1.5	DTE-Initiated link resume		52
C.3.3.1.6	DCE-Initiated link resume.....		52
C.3.3.1.7	DTE-Initiated link release		53
C.3.3.1.8	DCE-Initiated link release		53
C.3.3.2	Procedures at the DCE-side-IWF		53
C.3.3.2.1	DCE-Initiated link establishment.....		53
C.3.3.2.2	DTE-Initiated link establishment.....		53
C.3.3.2.3	DCE-Initiated link suspension.....		53
C.3.3.2.4	DTE-Initiated link suspension		53
C.3.3.2.5	DCE-Initiated link resume		54
C.3.3.2.6	DTE-Initiated link resume		54
C.3.3.2.7	DCE-Initiated link release		54
C.3.3.2.8	DTE-Initiated link release		54
C.3.3.3	PAD		54
C.3.3.4	Timing conventions		54
C.3.3.5	Interworking of modem status lines, BREAK condition and PAUSE condition		54
C.3.3.5.1	BREAK condition		54
C.3.3.5.2	PAUSE condition		55
C.3.3.6	Interworking of flow control.....		55
C.3.3.6.1	Flow control across the DTE/DTE-side-IWF interface		55
C.3.3.6.2	Flow control across the DCE-side-IWF/DCE interface.....		55
C.4	Interworking to connection-oriented bearer services		56
C.4.1	Scope.....		56
C.4.2	Reference configuration.....		56
C.4.2.1	PP TAF		57
C.4.2.2	FP IWF		57
C.4.2.3	General Configuration		58
C.4.3	PP Procedures.....		58
C.4.3.1	C-plane procedures.....		58
C.4.3.1.1	Suspend and resume procedures		58

C.4.4	FP procedures.....	59
	C.4.4.1 C-plane	59
	C.4.4.1.1 Suspend and resume procedures.....	59
C.4.5	Network modem interworking service using V.24 connection.....	59
	C.4.5.1 General	59
	C.4.5.2 Reference configuration.....	60
	C.4.5.3 TAF Interworking to V.24/V25bis	60
	C.4.5.3.1 General	60
	C.4.5.3.2 V.24 interchange circuit handling rules	60
	C.4.5.3.3 Call establishment signalling handling	61
	C.4.5.3.4 V.25bis interworking to DECT CC primitives	61
	C.4.5.3.4.1 PP originated calls.....	62
	C.4.5.3.4.1.1 Call establishment.....	62
	C.4.5.3.4.1.2 Call release	62
	C.4.5.3.4.2 PP terminated calls	62
	C.4.5.3.4.2.1 Call establishment.....	62
	C.4.5.3.4.2.2 Call release	63
	C.4.5.3.5 Flow control.....	63
	C.4.5.3.6 Break signalling procedures.....	63
	C.4.5.3.7 PAUSE condition.....	63
	C.4.5.3.8 Data coding selection.....	64
	C.4.5.3.9 Data transmission	64
	C.4.5.4 DECT FP Interworking procedures.....	64
	C.4.5.4.1 General	64
	C.4.5.4.2 Call establishment signalling handling	64
	C.4.5.4.3 V.24 Interchange circuit handling rules	65
	C.4.5.4.4 Flow control.....	65
	C.4.5.4.5 Break signalling procedures.....	65
	C.4.5.4.6 PAUSE condition.....	66
	C.4.5.4.7 Modem selection	66
	C.4.5.4.8 Data coding selection.....	66
	C.4.5.4.9 Data transmission	67
	Annex D (normative): Service C2: Fixed radio Termination (FT) DLC PICS proforma	69
D.1	Standardized symbols for the status column	69
D.2	Capabilities	70
	D.2.1 Major capabilities.....	70
	D.2.1.1 C-plane capabilities	70
	D.2.1.1.1 C-plane services	70
	D.2.1.1.2 C-plane procedures	70
	D.2.1.1.2.1 Point-to-point acknowledged operation	70
	D.2.1.1.2.1.1 Class A procedures.....	70
	D.2.1.1.2.1.2 Class B procedures	71
	D.2.1.1.2.2 Unacknowledged operation.....	71
	D.2.1.1.2.3 Broadcast operation	72
	D.2.1.2 U-plane capabilities	72
	D.2.1.2.1 U-plane services	72
	D.2.1.2.2 U-plane procedures	72
	D.2.1.2.2.1 LU2 Frame relay services	72
	D.2.1.3 Management procedures.....	74
D.2.2	PDUs	75
	D.2.2.1 C-plane PDUs	75
	D.2.2.1.1 C-plane frame structure	75
	D.2.2.1.2 C-plane messages	75
	D.2.2.2 U-plane PDUs.....	84
	D.2.2.2.1 U-plane frame types.....	84
	D.2.2.2.2 U-plane frame structures	85
	D.2.2.2.3 U-plane frame elements.....	86
D.2.3	Timers	88
	D.2.3.1 C-plane timers	88
	D.2.3.2 U-plane timers	88

D.2.4	Protocol error handling.....	88
D.2.4.1	C-plane protocol error handling.....	88
D.2.4.2	U-plane protocol error handling.....	89
Annex E (normative): Service C2: Portable radio Termination (PT) DLC PICS proforma		90
E.1	Standardized symbols for the status column	90
E.2	Capabilities	91
E.2.1	Major capabilities	91
E.2.1.1	C-plane capabilities	91
E.2.1.1.1	C-plane services	91
E.2.1.1.2	C-plane procedures	91
E.2.1.1.2.1	Point to point acknowledged operation	91
E.2.1.1.2.1.1	Class A procedures	91
E.2.1.1.2.1.2	Class B procedures	92
E.2.1.1.2.2	Unacknowledged operation	92
E.2.1.1.2.3	Broadcast operation.....	93
E.2.1.2	U-plane capabilities	93
E.2.1.2.1	U-plane services	93
E.2.1.2.2	U-plane procedures	93
E.2.1.2.2.1	LU2 Frame relay services	93
E.2.1.3	Management procedures	95
E.2.2	PDUs.....	96
E.2.2.1	C-plane PDUs	96
E.2.2.1.1	C-plane frame structure	96
E.2.2.1.2	C-plane messages.....	97
E.2.2.2	U-plane PDUs	106
E.2.2.2.1	U-plane frame types	106
E.2.2.2.2	U-plane frame structures	107
E.2.2.2.3	U-plane frame elements	108
E.2.3	Timers	109
E.2.3.1	C-plane timers	109
E.2.3.2	U-plane timers	109
E.2.4	Protocol error handling.....	109
E.2.4.1	C-plane protocol error handling.....	109
E.2.4.2	U-plane protocol error handling.....	110
Annex F (normative): Service C2: Fixed radio Termination (FT) NWK PICS proforma.....		111
F.1	Standardized symbols for the status column	111
F.2	Capabilities	113
F.2.1	Major capabilities	113
F.2.1.1	Services	113
F.2.1.2	Procedures	113
F.2.2	Protocol parameters	115
F.2.2.1	Timer support	115
F.2.2.2	System wide parameters	116
F.2.2.3	Other parameters	116
F.2.3	Messages.....	117
F.2.3.1	CC messages	117
F.2.3.2	Mobility management messages	122
F.2.3.3	Link control entity messages	133
F.2.4	Information elements	135
F.2.4.1	Fixed length information element support	136
F.2.4.2	Variable length information element support	137
F.2.4.3	B-Format message structure support	147
F.2.5	Protocol error handling.....	149
F.2.6	Negotiation capabilities	150
F.2.7	Multi-layer dependencies	150
Annex G (normative): Service C2: Portable radio Termination (PT) NWK PICS proforma.....		151

G.1	Standardized symbols for the status column	151
G.2	Capabilities	153
G.2.1	Major capabilities.....	153
G.2.1.1	Services	153
G.2.1.2	Procedures	153
G.2.2	Protocol parameters.....	156
G.2.2.1	Timer support	156
G.2.2.2	System wide parameters	157
G.2.2.3	Other parameters	157
G.2.3	Messages	157
G.2.3.1	CC messages	157
G.2.3.2	Mobility management messages	162
G.2.3.3	Link control entity messages	173
G.2.4	Information elements.....	175
G.2.4.1	Fixed length information element support	176
G.2.4.2	Variable length information element support.....	177
G.2.4.3	B-Format message structure support.....	187
G.2.5	Protocol error handling.....	189
G.2.6	Negotiation capabilities	190
G.2.7	Multi-layer dependencies	190
Annex H (normative):	Service C2: Fixed radio Termination (FT): provisions from ETS 300 175-5 (2nd edition) specifically required by this profile	191
Annex I (normative):	Service C2: Portable radio Termination (PT): provisions from ETS 300 175-5 (2nd edition) specifically required by this profile	201
History	211	

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).

Transposition dates	
Date of adoption of this ETS:	23 August 1996
Date of latest announcement of this ETS (doa):	31 December 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 June 1997
Date of withdrawal of any conflicting National Standard (dow):	30 June 1997

Page 10
ETS 300 651: September 1996

Blank page

1 Scope

This European Telecommunication Standard (ETS) defines a profile for Digital Enhanced Cordless Telecommunications (DECT) systems conforming to ETS 300 175, Parts 1 to 9 [1] to [9]. It is part of a family of profiles which build upon and extend each other, aimed at the general connection of terminals supporting non-voice services to a fixed infra-structure, private and public.

This ETS specifies a Link Access Protocol (LAP) service suitable for non-transparent transfer of character-oriented or bit-oriented data streams and intended for use in private and public roaming applications. It builds upon the generic frame relay service offered by the Data Services Profile (DSP) base standard (Type A and Type B services) and adds full Data Link Control (DLC) functionality to the basic service. Annexes to this ETS contain interworking conventions to specific character orientated services.

This ETS defines the Type C Service, Mobility Class 2. The Type C service is fully compatible with both the Type A and Type B services defined in ETS 300 435 [11].

This ETS defines the additional requirements on the Physical Layer (PHL), Medium Access Control (MAC) layer, DLC layer and Network (NWK) layer of DECT. The standard also specifies Management Entity (ME) requirements and generic Interworking Conventions (IC) which ensure the efficient use of the DECT spectrum.

2 Normative references

This ETS incorporates, by dated or 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 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".
- [2] ETS 300 175-2 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical layer".
- [3] ETS 300 175-3 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".
- [4] ETS 300 175-4 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".
- [5] ETS 300 175-5 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".
- [6] ETS 300 175-6 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".
- [7] ETS 300 175-7 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".
- [8] ETS 300 175-8 (1996): "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".