

ETSI EN 300 175-4 V2.2.2 (2009-02)

European Standard (Telecommunications series)

Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/e0c2378d-fcb1-469b-9a21-cc8b04b2aad/etsi-en-300-175-4-v2.2.2-2009-02>



Reference

REN/DECT-000248-4a

Keywords

DECT, IMT-2000, mobility, radio, TDD, TDMA

ETSI

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
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document 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 shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

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 2009.
All rights reserved.

DECTTM, **PLUGTESTS**TM, **UMTS**TM, **TIPHON**TM, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPPTM is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

LTETM is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM[®] and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	11
Foreword.....	11
1 Scope	12
2 References	13
2.1 Normative references	13
2.2 Informative references.....	14
3 Definitions, symbols and abbreviations	14
3.1 Definitions.....	14
3.2 Symbols and abbreviations.....	14
4 Data Link Control (DLC) layer overview	16
4.1 General	16
4.2 C-plane services	17
4.3 U-plane services	18
4.4 Lower Layer Management Entity (LLME)	20
5 C-plane service characteristics	20
5.1 Data link service (LAPC+Lc).....	20
5.1.1 General.....	20
5.1.2 LAPC types of operation	21
5.1.3 Establishment of information transfer modes.....	21
5.1.3.1 Data Link Identifier (DLI)	21
5.1.3.2 LAPC states.....	21
5.2 Broadcast service (Lb).....	22
6 Frame structures for C-plane services.....	23
6.1 Data link service frame structure.....	23
6.1.1 General frame structure	23
6.1.2 Lc frame delimiting and transparency	24
6.1.3 Transmission order	24
6.1.4 Routing to logical channels.....	24
6.1.4.1 C_F/CL_F logical channel.....	24
6.1.4.2 C_S/CL_S logical channel.....	25
6.1.5 Invalid frames	25
6.2 Broadcast service frame structure.....	26
6.2.1 Standard frame structure	26
6.2.2 Extended frame structure	26
7 Elements of procedures and formats of fields for C-plane peer-to-peer communication.....	27
7.1 General	27
7.2 Address field formats	27
7.3 Address field parameters	27
7.3.1 REServed bit (RES).....	27
7.3.2 Command Response (C/R) bit	27
7.3.3 SAPI field	27
7.3.4 New Link Flag (NLF) bit.....	28
7.3.5 LLN-field.....	28
7.3.6 Data Link Identifiers (DLI).....	28
7.4 Control field formats	29
7.5 Control field parameters	29
7.5.1 Poll/Final (P/F) bit	29
7.5.2 Multiple frame operation variables and sequence numbers	29
7.5.2.1 Modulus	29
7.5.2.2 Send state Variable V(S).....	29
7.5.2.3 Acknowledge state Variable V(A)	30
7.5.2.4 Send sequence Number N(S)	30

7.5.2.5	Receive state Variable V(R).....	30
7.5.2.6	Receive sequence Number N(R).....	30
7.5.3	Unacknowledged operation variables and sequence numbers	30
7.5.4	Supervisory and Unnumbered function bits S and U.....	30
7.6	Length indicator field format.....	30
7.7	Length indicator field parameters.....	31
7.7.1	Length indicator field extension bit (N).....	31
7.7.2	More data bit (M).....	31
7.7.3	Length parameter (L _I)	31
7.7.4	Extended length parameter (L _{JJ})	32
7.7.5	Reserved bit (RES)	32
7.8	Fill field format	32
7.9	Checksum field format	32
7.10	Checksum field parameters	32
7.11	Commands and responses	34
7.11.1	Information (I) command.....	34
7.11.2	Receive Ready (RR) command/response.....	34
7.11.3	Receive Not Ready (RNR) command/response.....	35
7.11.4	REJect (REJ) command/response	35
7.11.5	Set Asynchronous Balanced Mode (SABM) command.....	35
7.11.6	Disconnect Mode (DM) response	35
7.11.7	Unnumbered Information (UI) command	35
7.11.8	DISConnect (DISC) command	36
7.11.9	Unnumbered ACK (UA) response	36
8	Primitives	36
8.1	Primitive types.....	36
8.2	Primitives to the MAC layer (lower layer).....	36
8.3	Primitives to the NWK layer (higher layer).....	36
8.3.1	Parameter definitions	37
8.3.2	S-SAP primitives	38
8.3.2.1	DL_ESTABLISH primitive.....	38
8.3.2.2	DL_RELEASE primitive.....	38
8.3.2.3	DL_DATA primitive.....	39
8.3.2.4	DL_UNIT_DATA primitive	39
8.3.2.5	DL_SUSPEND primitive.....	39
8.3.2.6	DL_RESUME primitive.....	39
8.3.2.7	DL_ENC_KEY primitive.....	40
8.3.2.8	DL_ENCRYPT primitive.....	40
8.3.2.9	DL_SERVICE_MOD primitive.....	40
8.3.3	B-SAP primitives.....	40
8.3.3.1	DL_BROADCAST primitive.....	41
8.3.3.2	DL_EXPEDITED primitive.....	41
8.4	Primitives to the interworking unit.....	41
8.4.1	Parameter definitions	41
8.4.2	LU _X -SAP primitives	42
8.4.2.1	DL_U_DATA primitive.....	42
8.4.2.2	DL_U_UNIT_DATA primitive	42
8.4.2.3	DL_U_ERROR primitive.....	42
9	C-plane peer-to-peer procedures	43
9.1	General	43
9.2	Point to point acknowledged operation	43
9.2.1	Procedure for the use of the P/F bit	43
9.2.1.1	Class A acknowledged information transfer	43
9.2.1.2	Class B acknowledged information transfer	44
9.2.2	Use of LLN	44
9.2.2.1	Class A operation.....	44
9.2.2.2	Class B operation	44
9.2.3	Link establishment and information transfer in class A operation.....	44
9.2.3.1	Establishing class A operation	44
9.2.3.2	Class A acknowledged information transfer	45

9.2.3.3	Transmission of class A I-frames.....	45
9.2.3.4	Reception of class A I-frames.....	46
9.2.3.5	Receiving acknowledgements.....	46
9.2.3.6	Waiting for acknowledgement.....	46
9.2.3.7	Release of class A operation.....	47
9.2.3.8	Re-establishment of class A operation.....	47
9.2.4	Establishing class B multiple frame operation.....	47
9.2.4.1	Overview.....	47
9.2.4.2	Class B multiple frame establishment procedures.....	48
9.2.4.3	Class B LLN assignment procedures.....	49
9.2.4.3.1	PT establishment.....	49
9.2.4.3.2	FT establishment.....	50
9.2.5	Link maintenance and information transfer in class B multiple frame operation.....	50
9.2.5.1	Transmitting I-frames.....	50
9.2.5.2	Receiving I-frames.....	51
9.2.5.2.1	P bit set to 1.....	51
9.2.5.2.2	P bit set to 0.....	51
9.2.5.3	Sending and receiving acknowledgements.....	51
9.2.5.3.1	Sending acknowledgements.....	51
9.2.5.3.2	Receiving acknowledgements.....	51
9.2.5.4	Receiving REJ-frames.....	52
9.2.5.5	Receiving RNR-frames.....	53
9.2.5.6	LAPC own receiver busy condition.....	54
9.2.5.7	Waiting acknowledgement.....	54
9.2.5.8	Appropriate supervisory frame.....	55
9.2.6	Release of class B multiple frame operation.....	55
9.2.7	Link suspension and resumption.....	56
9.2.7.1	Link suspension.....	56
9.2.7.1.1	Class B acknowledged suspend.....	56
9.2.7.1.2	Unacknowledged suspend.....	57
9.2.7.2	Class B link resumption.....	58
9.2.7.3	Connection handover.....	59
9.2.7.3.1	Class A connection handover.....	60
9.2.7.3.2	Class B connection handover.....	61
9.2.7.3.3	Expiry of connection handover timer.....	61
9.2.8	Re-establishment of class B multi-frame operation.....	61
9.2.8.1	Criteria for re-establishment.....	61
9.2.8.2	Procedure.....	62
9.2.9	Exception handling.....	62
9.2.9.1	General.....	62
9.2.9.2	Class B exception condition reporting and recovery.....	63
9.2.9.2.1	N(S) sequence error.....	63
9.2.9.2.2	N(R) sequence error.....	63
9.2.9.2.3	Timer recovery condition.....	63
9.2.9.2.4	Collision of identical transmitted and received commands.....	63
9.3	Unacknowledged operation.....	64
9.3.1	Use of LLN for unacknowledged information transfer.....	64
9.3.2	Class U link establishment.....	64
9.3.3	Unacknowledged information transfer.....	64
9.3.3.1	Transmission of unacknowledged information.....	64
9.3.3.2	Reception of unacknowledged information.....	64
9.3.4	Unacknowledged release.....	64
9.4	Broadcast operation.....	65
9.4.1	Normal operation.....	65
9.4.1.1	Procedure in the Fixed radio Termination (FT).....	65
9.4.1.2	Procedure in the Portable radio Termination (PT).....	65
9.4.2	Expedited operation.....	65
9.4.2.1	Procedure in the Fixed radio Termination (FT).....	65
9.4.2.2	Procedure in the Portable radio Termination (PT).....	65
9.5	MAC layer interfaces.....	66
9.5.1	MC-SAP.....	66
9.5.1.1	C-plane overview.....	66

9.5.1.2	C-plane service data procedures.....	66
9.5.1.3	U-plane service data.....	67
9.5.2	MB-SAP	67
9.5.2.1	C-plane service data procedures.....	67
9.5.2.2	U-plane service data.....	67
9.5.3	MA-SAP	68
9.5.3.1	Overview	68
9.5.3.2	Service data procedures.....	68
10	Management procedures.....	68
10.1	Lower Layer Management Entity (LLME)	68
10.2	MAC connection management.....	69
10.2.1	MAC connection set-up	69
10.2.2	MAC connection release.....	69
10.2.3	MAC connection modification	69
10.2.4	MAC connection identifiers.....	70
10.2.4.1	Overview	70
10.2.4.2	Advanced MAC Connection Identifiers (AMCI).....	70
10.2.4.3	Basic MAC Connection Identifiers (BMCI)	71
10.2.4.4	MAC Connection Endpoint Identifier (MCEI)	71
10.2.5	Selection of logical channel (C_S or C_F).....	71
10.3	DLC C-plane (LAPC) management	72
10.3.1	Provision of link signature	72
10.3.2	Routing of connection oriented links	72
10.3.3	Routing of connectionless links	73
10.4	DLC U-plane (LUX) management.....	73
10.4.1	U-plane establishment.....	73
10.4.2	U-plane release	73
10.4.3	U-plane suspend and resume	73
10.5	Connection handover management	74
10.6	Ciphering management.....	74
10.6.1	Ciphering management in cases where the NWK layer executes the ciphering related MM procedure	74
10.6.1.1	Providing a key to the MAC layer	74
10.6.1.2	Starting and stopping the ciphering.....	75
10.6.1.3	Connection handover	75
10.6.2	Ciphering management in cases where the NWK layer does not execute the ciphering related MM procedure	75
10.7	Broadband data link management	75
11	U-plane service characteristics.....	76
11.1	General	76
11.2	LU1 TRansparent UnProtected service (TRUP)	76
11.3	LU2 Frame RELay service (FREL).....	77
11.3.1	General.....	77
11.3.2	Checksum operation	78
11.3.3	Segmentation and transmission class.....	78
11.3.4	Data transmission.....	79
11.3.4.1	Send side procedure	79
11.3.4.2	Receive side procedure	79
11.4	LU3 Frame SWItching service (FSWI).....	80
11.5	LU4 Forward Error Correction (FEC) service.....	80
11.6	LU5 Basic Rate Adaption service (BRAT)	81
11.6.1	Overview	81
11.6.2	Protected service operation.....	82
11.6.2.1	General.....	82
11.6.2.2	Data buffering and initial rate adaptation.....	82
11.6.2.3	Multi-channel set multiplexing	83
11.6.2.4	Segmentation of Multiplexed Data Units (MDU).....	84
11.6.2.5	Frame sequencing and addition of control and fill octets.....	85
11.6.2.6	Frame transmission	86
11.6.3	Unprotected service operation	87
11.6.3.1	General.....	87

11.6.3.2	Data buffering and initial rate adaption.....	87
11.6.3.3	Multi-channel set multiplexing	87
11.6.3.4	Segmentation of MDUs.....	89
11.6.3.5	Frame transmission	89
11.7	LU6 Secondary Rate AdapTion (SRAT) service	89
11.7.1	General.....	89
11.8	LU16 ESCape Service (ESC).....	90
11.8.1	General.....	90
11.9	LU7 64 kbit/s data bearer service	91
11.9.1	General.....	91
11.9.2	Physical layer service.....	91
11.9.3	MAC layer service	91
11.9.4	DLC layer service	91
11.9.4.1	Architectural model.....	91
11.9.4.1.1	Transmit (Tx) frame buffering	92
11.9.4.1.2	Receive (Rx) frame buffering	92
11.9.4.2	Automatic-Repeat-Request (ARQ) and Forward Error Control (FEC).....	92
11.9.4.2.1	Control field	93
11.9.4.2.2	Information field.....	95
11.9.4.2.3	ARQ checksum.....	96
11.9.4.3	Procedures for normal operation	96
11.9.4.3.1	Establishment and synchronization procedures	96
11.9.4.3.2	Active phase	98
11.9.4.3.3	Release.....	100
11.9.4.4	Exceptional procedures	100
11.9.4.4.1	Invalid frame condition	100
11.9.4.4.2	Establishment	100
11.9.4.4.3	Transmitting frames.....	100
11.9.4.4.4	Receiving frames	100
11.9.4.4.5	Sending acknowledgements	101
11.9.4.4.6	Forwarding of received data	101
11.9.4.4.7	N(R) sequence error	101
11.9.4.4.8	N(O) sequence error	101
11.9.4.4.9	N(S) sequence error	102
11.9.4.4.10	Format error.....	102
11.9.4.4.11	Abnormal release.....	102
11.9.4.4.12	Implicit reset.....	102
11.9.5	Network layer service	102
11.9.5.1	LCE service.....	102
11.9.5.2	CC service	102
11.10	LU8 service	103
11.10.1	Physical layer service.....	103
11.10.2	MAC layer service	103
11.10.3	DLC layer service	103
11.11	LU9 - Unprotected Rate Adaption for V series Equipment (RAVE) Service	103
11.11.1	Overview	103
11.11.1.1	FU9 frame structure	104
11.11.1.1.1	General frame structure	104
11.11.1.1.2	FU9 buffering procedures.....	104
11.11.1.1.3	Connection handover	104
11.11.1.1.4	Transmission order	105
11.11.2	Alignment signal management	105
11.11.2.1	General	105
11.11.2.2	Procedures	105
11.11.3	V.24 Signalling	106
11.11.3.1	General	106
11.11.3.2	Transmitter procedures.....	107
11.11.3.3	Receiver procedures	107
11.11.4	Rate Coding	107
11.11.4.1	General	107
11.11.4.2	Transmitter procedures.....	108
11.11.4.3	Receiver procedures	108

11.11.5	DECT Independent Clocking (DIC)	109
11.11.5.1	General	109
11.11.5.2	Measurement of phase differences	109
11.11.5.3	Compensation control rules	110
11.11.5.3.1	General	110
11.11.5.3.2	Optimizing error resilience	110
11.11.6	Information field	111
11.11.6.1	General	111
11.11.6.2	User data rates	111
11.11.6.3	Information field filling rule	111
11.11.7	Primitives	112
11.12	LU10 Enhanced Frame RELay (EFREL) service	113
11.12.1	General	113
11.12.2	Segmentation and transmission class	114
11.12.3	Data transmission	114
11.12.3.1	Send side procedures	114
11.12.3.2	Receive side procedure	114
11.13	LU11 service	115
11.13.1	Physical layer service	115
11.13.2	MAC layer service	115
11.13.3	DLC layer service	115
11.14	LU12 UNprotected Framed service (UNF)	115
11.14.1	General	115
11.14.2	DLC layer service	115
11.14.2.1	Segmentation	116
11.14.2.2	Data transmission	117
11.14.2.2.1	Send side procedure	117
11.14.2.2.2	Receive side procedure	118
12	Frame structures for U-plane services	118
12.1	General	118
12.2	FU1 frame structure	118
12.2.1	General frame structure	118
12.2.2	FU1 buffering procedures	120
12.2.3	Minimum delay (speech) operation	120
12.2.4	Connection handover	120
12.2.5	Transmission order	120
12.3	FU2 frame structure	121
12.3.1	General frame structure	121
12.3.2	FU2 buffering procedures	121
12.3.3	Connection handover	121
12.3.4	Transmission order	122
12.4	FU3 frame structure	122
12.4.1	General frame structure	122
12.4.2	FU3 buffering procedures	123
12.4.3	Connection handover	123
12.4.4	Transmission order	123
12.5	FU4 frame structure	123
12.5.1	General frame structure	123
12.5.2	FU4 buffering procedures	124
12.5.3	Connection handover	124
12.5.4	Transmission order	124
12.6	FU5 frame structure	125
12.6.1	General frame structure	125
12.6.2	FU5 buffering procedures	126
12.6.3	Connection handover	126
12.6.4	Transmission order	126
12.7	FU6 frame structure	126
12.7.1	General frame structure	126
12.7.2	FU6 buffering procedures	127
12.7.3	Connection handover	127
12.7.4	Transmission order	127

12.8	FU7 frame structure.....	127
12.9	FU8 frame structure.....	128
12.10	FU9 frame structure.....	128
12.11	FU10 frame structure.....	128
12.11.1	General frame structure	128
12.11.2	Transmission of FU10c frames	129
12.11.2.1	Insertion of the FU10c frame in an FU10a frame of the opposite link.....	130
12.11.2.2	Transmission of the F10c frame using the G_F channel.....	130
12.11.3	FU10 buffering procedures.....	130
12.11.4	Connection handover	130
12.11.5	Transmission order	131
12.12	FU12 frame structure.....	131
12.12.1	General frame structure	131
12.12.2	FU12 buffering procedures.....	131
12.12.3	Connection handover	132
12.12.4	Transmission order	132
13	Elements of procedures and formats of fields for U-plane peer-to-peer communication	132
13.1	General	132
13.2	Address elements.....	132
13.2.1	Address field format	132
13.2.2	Address field parameters	133
13.3	Length indicator elements	133
13.3.1	Length indicator field format.....	133
13.3.1.1	Length indicator field format for all services except LU10	133
13.3.1.2	Length indicator field format for service LU10	134
13.3.2	Length indicator field parameters	134
13.3.2.1	Length indicator field parameters for all services except LU10.....	134
13.3.2.2	Length indicator field parameters for LU10 service	135
13.3.2.2.1	Meaning of the more (M) bit.....	136
13.4	Sequence number elements	137
13.4.1	Send sequence number format.....	137
13.4.2	Send sequence number parameters.....	137
13.4.3	Receive sequence number format.....	138
13.4.4	Receive sequence number parameters.....	138
13.5	Fill elements - Fill field format	138
14	U-plane peer-to-peer procedures.....	138
14.1	General	138
14.2	Frame transmission principles.....	139
14.2.1	Sequence numbering.....	139
14.2.2	Acknowledgements.....	139
14.2.2.1	Sending acknowledgements	139
14.2.2.2	Receiving acknowledgements.....	139
14.2.3	Transmission classes.....	139
14.2.3.1	Class 0: No LU_X retransmission or sequencing.....	140
14.2.3.2	Class 1: no LU_X retransmission.....	140
14.2.3.3	Class 2: variable throughput, maximum delay LU_X retransmission.....	140
14.2.3.4	Class 3: fixed throughput LU_X retransmission	140
14.2.4	Operation parameter negotiation.....	141
14.3	Frame transmission procedures	141
14.3.1	General.....	141
14.3.2	Class 0 procedures	141
14.3.2.1	Sending side procedure	141
14.3.2.2	Receiving side procedure	142
14.3.3	Class 1 procedures	142
14.3.3.1	Sending side procedure	142
14.3.3.2	Receiving side procedure	142
14.3.4	Class 2 procedures	143
14.3.4.1	Sending side procedure	143
14.3.4.1.1	Synchronization message sending side procedure (LU10).....	144
14.3.4.2	Receiving side procedure	145

14.3.4.2.1	Synchronization message receiver side procedure (LU10).....	146
14.3.5	Class 3 procedures	147
14.3.5.1	Sending side procedure	147
14.3.5.2	Receiving side procedure	148
Annex A (normative):	System parameters.....	149
A.1	LAPC timer values	149
A.2	U-plane timer values	150
A.3	Constants	150
A.3.1	Retransmission counter (N250)	150
A.3.2	Maximum number of CHO attempts (N251)	150
Annex B (normative):	Checksum algorithms.....	151
B.1	Arithmetic conventions	151
B.2	Coding algorithm.....	151
B.3	Decoding algorithm.....	151
B.4	Some examples.....	152
Annex C (informative):	MAC connection states.....	153
Annex D (normative):	Mapping of agreed channel rates to MCS sizes	154
D.1	Protected class operation	154
D.2	Unprotected class operation	155
Annex E (normative):	LU12 applications.....	156
E.1	G.729.1 over 32 kb/s channel.....	156
E.1.1	G.729.1 payload format.....	156
E.1.1.1	G.729.1 payload header coding	156
E.1.2	Operations	158
E.1.2.1	Encoder bit rate.....	158
E.1.2.2	Protection against random errors.....	159
Annex F (informative):	Bibliography.....	160
Annex G (informative):	Change history	161
History		162

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 ETSI 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://webapp.etsi.org/IPR/home.asp>).

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 ETSI 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 Technical Committee Digital Enhanced Cordless Telecommunications (DECT).

The present document is part 4 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

Further details of the DECT system may be found in TR 101 178 [i.1] and ETR 043 [i.2].

National transposition dates	
Date of latest announcement of this EN (doa):	31 May 2009
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2009
Date of withdrawal of any conflicting National Standard (dow):	30 November 2009

1 Scope

The present document is one of the parts of the specification of the Digital Enhanced Cordless Telecommunications (DECT) Common Interface (CI).

The present document specifies the Data Link Control (DLC) layer. The DLC layer is part 4 of the DECT CI standard and layer 2b of the DECT protocol stack.

Network layer C-plane (3)	Network layer U-plane
DLC layer C-plane (2b)	DLC layer U-plane
MAC layer (2a)	
Physical layer (1)	

Figure 1.1

Two planes of operation are specified for this DLC (sub)layer. These planes are called the Control plane (C-plane) and the User plane (U-plane).

The C-plane is mostly concerned with the DECT signalling aspects. It provides a reliable point-to-point service that uses a link access protocol to offer error protected transmission of Network (NWK) layer messages. The C-plane also provides a separate point-to-multipoint (broadcast) service (LB).

The U-plane is only concerned with end-to-end user information. This plane contains most of the application dependent procedures of DECT. Several alternative services (both circuit-mode and packet-mode) are defined as a family of independent entities. Each service provides one or more point-to-point U-plane data links, where the detailed characteristics of those links are determined by the particular needs of each service. The defined services cover a wide range of performance, from "unprotected with low delay" for speech applications to "highly protected with variable delay", for local area network applications.

NOTE: The performance of the DLC services need not be tight to any particular application. For example the "unprotected with low delay" service could also be used for data applications, e.g. if some data protection is provided outside the DECT protocol.

The present document uses the layered model principles and terminology as described in ITU-T Recommendation X.200 [14] and ITU-T Recommendation X.210 [15].

The present document includes New Generation DECT, a further development of the DECT standard introducing wideband speech, improved data services, new slot types and other technical enhancements.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".
- [2] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".
- [3] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".
- [4] Void.
- [5] ETSI EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".
- [6] ETSI EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".
- [7] Void.
- [8] ETSI EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech and audio coding and transmission".
- [9] ETSI TS 144 006: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Stations System (MS - BSS) interface Data Link (DL) layer specification (3GPP TS 44.006)".
- [10] ITU-T Recommendation Q.920: "ISDN user-network interface data link layer - General aspects".
- [11] ITU-T Recommendation Q.921: "ISDN user-network interface - Data link layer specification".
- [12] ITU-T Recommendation V.42: "Error-correcting procedures for DCEs using asynchronous-to-synchronous conversion".
- [13] ITU-T Recommendation V.110: "Support by an ISDN of data terminal equipments with V-Series type interfaces".
- [14] ITU-T Recommendation X.200: "Information technology - Open Systems Interconnection - Basic Reference Model: The basic model".