# Final draft ETSI EN 300 175-4 V2.2.0 (2008-06)

*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/63010747-ae72-488f-b29a-00f01404f94b/etsi-en-300-175-4-v2.2.1-2008-11

Reference

REN/DECT-000248-4

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/c3b10747-ae72-4881-b29a-40f64404f94f/etsi-en-300-175-4-v2.2.1-2008-11

***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/chaircor/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 2008.
All rights reserved.

**DECT**™, **PLUGTESTS**™, **UMTS**™, **TIPHON**™, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
**3GPP**™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

# Contents

Intellectual Property Rights ..... 11

Foreword ..... 11

1 Scope ..... 12

2 References ..... 12
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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/630107d7-ae72-488f-b29a-00b014d4f54b/etsi-en-300-175-4-v2.2.1-2008-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-ae72-488f-b29a-00f01404f94b/etsi-en-300-175-4-v2.2.1-2008-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-ae72-488f-b29a-00f01464f94b/etsi-en-300-175-4-v2.2.1-2008-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-ae72-488f-b29a-00f0f404f94b/etsi-en-300-175-4-v2.2.1-2008-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-ae72-488f-b29a-00f01404f94b/etsi-en-300-175-4-v2.2.1-2008-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/630f0747-ae72-488f-b29a-d0f0140d94b/etsi-en-300-175-4-v2.2.1-2008-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-ae72-488f-b29a-00f01404f94b/etsi-en-300-175-4-v2.2.0-2008-11

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 ..... 157
E.1.2 Operations ..... 159
E.1.2.1 Encoder bit rate ..... 159
E.1.2.2 Protection against random errors ..... 159

**Annex F (informative): Bibliography ..... 160**

**Annex G (informative): Change history ..... 161**

History ..... 162

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/6301074a-ae72-488f-b29a-00f0140f4f94b/etsi-en-300-175-4-v2.2.1-2008-06

# 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 Project Digital Enhanced Cordless Telecommunications (DECT), and is now submitted for the ETSI standards One-step Approval Procedure.

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 [17] and ETR 043 [18].

| Proposed national transposition dates | |
|---|---|
| Date of latest announcement of this EN (doa): | 3 months after ETSI publication |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 6 months after doa |
| Date of withdrawal of any conflicting National Standard (dow): | 6 months after doa |

iTeh STANDARD PREVIEW
iTeh Standards (https://standards.iteh.ai)
Document Preview
ETSI EN 300 175-4 V2.2.1 (2008-11)
https://standards.iteh.ai/catalog/standards/sist/63b19747-ae72-488f-b29a-00f01404f94b/etsi-en-300-175-4-v2.2.1-2008-11

# 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.

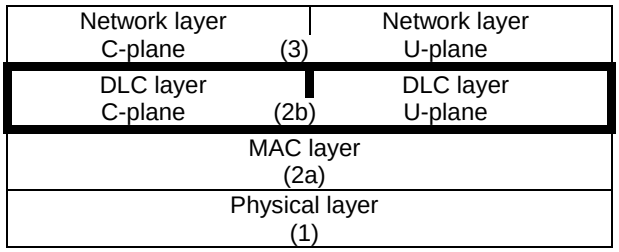


**Figure 1.1**

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-a472-4988-b29a-0f0f4404f94b/etsi-en-300-175-4-v2.2.1-2008-06

For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

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".

[15] ITU-T Recommendation X.210: "Information technology - Open Systems Interconnection - Basic Reference Model: Conventions for the definition of OSI services".

[16] ISO/IEC 8073: "Information technology - Open Systems Interconnection - Protocol for providing the connection-mode transport service".


iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/63010747-ae72-488f-b29a-0f01404f9fb/etsi-en-300-175-4-v2.2.1-2008-11