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Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech and audio coding and transmission

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Contents

Intellectual Property Rights	12
Foreword.....	12
Modal verbs terminology.....	12
1 Scope	13
2 References	13
2.1 Normative references	13
2.2 Informative references.....	15
3 Definitions, symbols and abbreviations	16
3.1 Definitions.....	16
3.2 Symbols and abbreviations.....	17
4 Configurations.....	19
4.1 Reference configuration	19
4.1.1 Basic configuration	19
4.1.2 Portable Part (PP)	20
4.1.2.1 Functional organization.....	20
4.1.2.2 Volume control	21
4.1.3 Fixed Part (FP).....	21
4.1.3.1 Digital interface.....	21
4.1.3.2 Analog interface	22
4.1.3.3 FP adaptive volume control	23
4.2 Test configurations	23
5 Encoding.....	23
5.1 32 kbit/s full term (ADPCM) G.726.....	23
5.1.1 Algorithm.....	23
5.1.2 Bit sequence.....	23
5.1.3 Characteristics of G.726 ADPCM codec	23
5.2 64 kbit/s PCM G.711.....	24
5.2.1 Algorithm.....	24
5.2.2 Bit sequence.....	24
5.2.3 Characteristics of G.711 PCM codec.....	24
5.2.4 Automatic detection of FAX/modem tone and switch to G.711	24
5.3 Wideband speech codec G.722 at 64 kbit/s.....	24
5.3.0 General.....	24
5.3.1 Algorithm.....	24
5.3.2 Bit sequence.....	25
5.3.3 Characteristics of G.722 wideband codec.....	25
5.3.4 Optional Packet Loss Concealment algorithm (PLC)	25
5.4 Wideband speech codec G.729.1 up to 32 kbit/s.....	25
5.4.1 Algorithm.....	25
5.4.2 Bit sequence.....	26
5.4.3 Characteristics of G.729.1 codec	26
5.4.4 Packet Loss Concealment algorithm (PLC).....	26
5.4.5 Supported bit rate in DECT	26
5.5 Super-wideband MPEG-4 speech and audio coding	26
5.5.1 Algorithm.....	26
5.5.2 64 kbit/s, MPEG-4 ER AAC-LD codec.....	27
5.5.3 32 kbit/s, MPEG-4 ER AAC-LD codec.....	27
5.6 Other codings	27
6 Transmission aspects.....	28
6.1 Relative level.....	28
6.2 Acoustic reference level	28
6.3 Volume control.....	28
7 Audio specifications.....	28

7.1	Overall description	28
7.1.1	Introduction to DECT audio specifications	28
7.1.2	Introduction to the audio types	28
7.1.3	List of Audio types	29
7.1.4	Audio types for Portable Parts	30
7.1.5	Audio types for Fixed Parts	31
7.1.6	Complete DECT system	31
7.1.7	Structure of the specification of the audio types	31
7.1.8	Audio Types and codecs	37
7.1.9	Audio Types and physical interfaces	37
7.2	Audio types applicable to Portable Parts	37
7.2.0	General	37
7.2.1	Performance levels of DECT Portable Parts (handsets)	37
7.2.2	Type 0: Reference PP (RePP)	38
7.2.3	PP Type 1a: "Classic" GAP narrowband handset	38
7.2.3.1	Introduction	38
7.2.3.2	Compatible services and codecs	39
7.2.3.3	Specification	39
7.2.4	PP Type 1b: "Improved" GAP narrowband handset	39
7.2.4.1	Introduction	39
7.2.4.2	Compatible services and codecs	39
7.2.4.3	Specification	39
7.2.5	PP Type 1c: HATS-tested "standard" narrowband handset	39
7.2.5.1	Introduction	39
7.2.5.2	Compatible services and codecs	39
7.2.5.3	Specification	40
7.2.6	PP Type 1d: HATS-tested "improved" narrowband handset	40
7.2.6.1	Introduction	40
7.2.6.2	Compatible services and codecs	40
7.2.6.3	Specification	40
7.2.7	PP Type 3a: HATS tested narrowband "standard" loudspeaking handsfree	40
7.2.7.1	Introduction	40
7.2.7.2	Compatible services and codecs	41
7.2.7.3	Specification	41
7.2.8	PP Type 3b: HATS tested narrowband "improved" loudspeaking handsfree	41
7.2.8.1	Introduction	41
7.2.8.2	Compatible services and codecs	41
7.2.8.3	Specification	41
7.2.9	PP Type 2a: P.311-tested wideband handset	41
7.2.9.1	Introduction	41
7.2.9.2	Compatible services and codecs	41
7.2.9.3	Specification	41
7.2.10	PP Type 2b: HATS-tested "standard" wideband handset or headset	42
7.2.10.1	Introduction	42
7.2.10.2	Compatible services and codecs	42
7.2.10.3	Specification	42
7.2.11	PP Type 2c: HATS tested "improved" wideband handset or headset	42
7.2.11.1	Introduction	42
7.2.11.2	Compatible services and codecs	42
7.2.11.3	Specification	42
7.2.12	PP Type 4a: HATS tested wideband "standard" loudspeaking handsfree	43
7.2.12.1	Introduction	43
7.2.12.2	Compatible services and codecs	43
7.2.12.3	Specification	43
7.2.13	PP Type 4b: HATS tested wideband "improved" loudspeaking and handsfree	43
7.2.13.1	Introduction	43
7.2.13.2	Compatible services and codecs	43
7.2.13.3	Specification	43
7.2.14	PP Type 5a: super-wideband 14 kHz handset	44
7.2.14.1	Introduction	44
7.2.14.2	Compatible services and codecs	44
7.2.14.3	Specification	44

7.2.15	PP Type 5b: super-wideband 14 kHz loudspeaking handsfree	44
7.2.15.1	Introduction	44
7.2.15.2	Compatible services and codecs	44
7.2.15.3	Specification	44
7.2.16	PP Type 6: PPs with external 2 wire, 3,1 kHz telephony interface	44
7.2.16.1	Introduction	44
7.2.16.2	Compatible services and codecs	44
7.2.16.3	Specification	44
7.3	Audio transmission types applicable to Fixed Parts	44
7.3.0	General	44
7.3.1	FP Type 0: Reference FP (ReFP)	45
7.3.2	FP Type 1a: "classical" Fixed Part for ISDN Network	45
7.3.2.1	Introduction	45
7.3.2.2	Compatible services and codecs	46
7.3.2.3	Specifications	46
7.3.2.3.1	Transcoding and equalization	46
7.3.2.3.2	PP type detection	46
7.3.2.3.3	Activation of audio processing functions	46
7.3.2.3.4	Transmission specification	46
7.3.3	FP Type 1b: "new" Fixed Part for ISDN Network	47
7.3.3.1	Introduction	47
7.3.3.2	Compatible services and codecs	47
7.3.3.3	Specification	47
7.3.3.3.1	Transcoding and equalization	47
7.3.3.3.2	PP type detection	47
7.3.3.3.3	Activation of audio processing functions	48
7.3.3.3.4	Transmission specification	48
7.3.4	FP Type 2: FP with analog 2-wire interface, 3,1 kHz service	48
7.3.4.1	Introduction	48
7.3.4.2	Compatible services, physical interfaces and codecs	48
7.3.4.3	Specification	49
7.3.4.3.1	Transcoding, equalization and conversion	49
7.3.4.3.2	PP type detection and activation of audio processing functions	49
7.3.4.3.3	Transmission specification	49
7.3.5	FP Type 3: VoIP narrowband Fixed Part	49
7.3.5.1	Introduction	49
7.3.5.2	Compatible services, physical interfaces and codecs	49
7.3.5.3	Specification	50
7.3.5.3.1	Transcoding and equalization	50
7.3.5.3.2	PP type detection	50
7.3.5.3.3	Activation of audio processing functions	50
7.3.5.3.4	Transmission specification	51
7.3.6	FP Type 4: ISDN wideband Fixed Part	51
7.3.6.1	Introduction	51
7.3.6.2	Compatible services and codecs	51
7.3.6.3	Specification	51
7.3.6.3.1	Transcoding and equalization	51
7.3.6.3.2	PP type detection	52
7.3.6.3.3	Activation of audio processing functions	52
7.3.6.3.4	Transmission specification	52
7.3.7	FP Type 5: VoIP wideband Fixed Part	52
7.3.7.1	Introduction	52
7.3.7.2	Compatible services, physical interfaces and codecs	53
7.3.7.3	Specification	53
7.3.7.3.1	Transcoding and equalization	53
7.3.7.3.2	PP type detection	53
7.3.7.3.3	Activation of audio processing functions	54
7.3.7.3.4	Transmission specification	54
7.3.8	FP Type 6a: FP handling an Internal call inside a DECT FP (any service)	54
7.3.8.1	Introduction	54
7.3.8.2	Compatible services, physical interfaces and codecs	54
7.3.8.3	Specification	54

7.3.9	FP Type 6b: FP handling an n-party conference inside a DECT FP (any service).....	54
7.3.9.1	Introduction.....	54
7.3.9.2	Compatible services, physical interfaces and codecs.....	55
7.3.9.3	Specification for the conference bridge.....	55
7.3.10	FP Type 7: DECT Repeater part (REP).....	55
7.3.10.1	Introduction.....	55
7.3.10.2	Compatible services, physical interfaces and codecs.....	55
7.3.10.3	Specification.....	55
7.4	Additional features.....	55
7.4.1	Introduction.....	55
7.4.2	Echo canceller in Fixed Part.....	56
7.4.3	Echo suppressor in Fixed Part.....	56
7.5	Transmission characteristics for Portable Parts.....	57
7.5.1	Transmission characteristics for Portable Part type 1a ("Classic GAP" handset).....	57
7.5.1.1	PP frequency responses.....	57
7.5.1.1.1	Sending.....	57
7.5.1.1.2	Receiving.....	57
7.5.1.2	PP sending and receiving loudness ratings.....	58
7.5.1.2.1	Nominal values.....	58
7.5.1.2.2	User-controlled volume control in PP.....	58
7.5.1.2.3	PP adaptive volume control.....	59
7.5.1.3	Sidetone.....	59
7.5.1.3.1	Talker sidetone.....	59
7.5.1.3.2	Listener sidetone.....	59
7.5.1.4	Terminal coupling loss.....	59
7.5.1.4.1	Weighted Terminal Coupling Loss (TCLw).....	59
7.5.1.4.2	Stability loss.....	60
7.5.1.5	Distortion.....	60
7.5.1.5.1	Sending.....	60
7.5.1.5.2	Receiving.....	60
7.5.1.5.3	Sidetone.....	60
7.5.1.6	Out of band signals.....	60
7.5.1.6.1	Sending (discrimination against out of band input signals).....	60
7.5.1.6.2	Receiving (spurious out of band signals).....	61
7.5.1.7	Noise.....	61
7.5.1.7.1	Sending.....	61
7.5.1.7.2	Band-limited noise.....	61
7.5.1.7.3	Receiving.....	61
7.5.1.7.4	Level of sampling frequency (receiving).....	61
7.5.1.8	Acoustic shock.....	61
7.5.1.8.0	General.....	61
7.5.1.8.1	Continuous signal.....	61
7.5.1.8.2	Peak signal.....	61
7.5.1.9	PP Delay.....	61
7.5.1.10	PP ambient noise rejection.....	61
7.5.2	Additional requirements for PP type 1b ("improved GAP" handset).....	62
7.5.2.1	Terminal coupling loss.....	62
7.5.2.1.1	Weighted Terminal Coupling Loss (TCLw).....	62
7.5.2.2	Attenuation Range in Sending Direction during Double Talk $A_{H,S,dt}$	62
7.5.2.3	Attenuation Range in Receiving Direction during Double Talk $A_{H,R,dt}$	62
7.5.2.4	Activation in Sending Direction.....	63
7.5.2.5	Activation in Receiving Direction.....	63
7.5.3	Transmission characteristics for PP types 1c and 1d (HATS tested, narrowband telephony handsets).....	64
7.5.3.1	PP frequency responses.....	64
7.5.3.1.1	Sending.....	64
7.5.3.1.2	Receiving.....	65
7.5.3.2	PP sending and receiving loudness ratings.....	67
7.5.3.2.1	Nominal values.....	67
7.5.3.2.2	User-controlled volume control in PP.....	67
7.5.3.2.3	PP adaptive volume control.....	68
7.5.3.3	Sidetone.....	68
7.5.3.3.1	Talker sidetone.....	68

7.5.3.3.2	D Factor	68
7.5.3.3.3	Sidetone delay	68
7.5.3.4	Terminal coupling loss	69
7.5.3.4.1	TCLw of Portable Part.....	69
7.5.3.4.2	Stability loss	69
7.5.3.5	Distortion	69
7.5.3.5.1	Sending Distortion.....	69
7.5.3.5.2	Receiving Distortion.....	69
7.5.3.6	Out of band signals.....	70
7.5.3.6.1	Out-of-band Signals in Send direction	70
7.5.3.6.2	Out-of-band signals in receiving direction	70
7.5.3.7	Noise	70
7.5.3.7.1	Sending.....	70
7.5.3.7.2	Receiving.....	71
7.5.3.8	Acoustic shock.....	71
7.5.3.8.0	General	71
7.5.3.8.1	Continuous signal	71
7.5.3.8.2	Peak signal.....	71
7.5.3.9	Delay.....	71
7.5.3.10	Variation of gain with input level-sending.....	71
7.5.3.11	Double Talk Performance	72
7.5.3.11.0	General	72
7.5.3.11.1	Attenuation Range in Sending Direction during Double Talk $A_{H,S,dt}$	72
7.5.3.11.2	Attenuation Range in Receiving Direction during Double Talk $A_{H,S,dt}$	73
7.5.3.11.3	Detection of Echo Components during Double Talk.....	73
7.5.3.11.4	Minimum activation level and sensitivity of double talk detection	73
7.5.3.12	Switching characteristics.....	73
7.5.3.12.0	General	73
7.5.3.12.1	Activation in Sending Direction	74
7.5.3.12.2	Activation in Receiving Direction	74
7.5.3.12.3	Silence Suppression and Comfort Noise Generation.....	74
7.5.3.12.4	Performance in sending direction in the presence of background noise.....	74
7.5.3.12.5	Speech Quality in the Presence of Background Noise.....	75
7.5.3.12.6	Quality of Background Noise Transmission (with Far End Speech).....	75
7.5.3.12.7	Quality of background noise transmission (with Near End Speech)	75
7.5.3.13	Quality of echo cancellation.....	75
7.5.3.13.0	General	75
7.5.3.13.1	Temporal echo effects	75
7.5.3.13.2	Spectral Echo Attenuation	75
7.5.4	Transmission characteristics for PP types 3a and 3b (narrowband loudspeaking and handsfree devices).....	76
7.5.4.1	Sending sensitivity/frequency response	76
7.5.4.2	Receive sensitivity/frequency response.....	77
7.5.4.3	Sending loudness rating	80
7.5.4.4	Receive loudness rating.....	80
7.5.4.5	Sending distortion	81
7.5.4.6	Receiving distortion	81
7.5.4.7	Out-of-band signals in sending direction	81
7.5.4.8	Out-of-band signals in receiving direction.....	82
7.5.4.9	Sending noise	82
7.5.4.10	Receiving noise	82
7.5.4.11	Terminal Coupling Loss of PP	82
7.5.4.12	Stability Loss of PP.....	83
7.5.4.13	Double Talk Performance	83
7.5.4.13.0	General	83
7.5.4.13.1	Attenuation Range in Sending Direction during Double Talk $A_{H,S,dt}$	83
7.5.4.13.2	Attenuation Range in Receiving Direction during Double Talk $A_{H,R,dt}$	84
7.5.4.13.3	Detection of Echo Components during Double Talk.....	84
7.5.4.13.4	Minimum activation level and sensitivity of double talk detection	84
7.5.4.14	Switching characteristics.....	84
7.5.4.14.0	General	84
7.5.4.14.1	Activation in Sending Direction	85

7.5.4.14.2	Activation in Receiving Direction	85
7.5.4.14.3	Silence Suppression and Comfort Noise Generation.....	85
7.5.4.14.4	Performance in sending direction in the presence of background noise	85
7.5.4.14.5	Speech Quality in the Presence of Background Noise.....	86
7.5.4.14.6	Quality of Background Noise Transmission (with Far End Speech).....	86
7.5.4.14.7	Quality of background noise transmission (with Near End Speech)	86
7.5.4.15	Quality of echo cancellation.....	86
7.5.4.15.0	General	86
7.5.4.15.1	Temporal echo effects	86
7.5.4.15.2	Spectral Echo Attenuation	86
7.5.5	Transmission characteristics for PP type 2a (P.311 tested, wideband handset)	87
7.5.5.0	General	87
7.5.5.1	Sending characteristics.....	87
7.5.5.1.1	Loudness rating	87
7.5.5.1.2	Sensitivity/frequency characteristics	87
7.5.5.1.3	Noise.....	87
7.5.5.1.4	Distortion.....	87
7.5.5.1.5	Discrimination against out-of-band input signals	88
7.5.5.2	Receiving characteristics.....	88
7.5.5.2.1	Loudness rating	88
7.5.5.2.2	Sensitivity/frequency characteristics	88
7.5.5.2.3	Noise.....	88
7.5.5.2.4	Distortion.....	88
7.5.5.2.5	Spurious out-of-band receiving signals	88
7.5.5.3	Sidetone characteristics	89
7.5.5.3.1	Talker sidetone	89
7.5.5.3.2	Sidetone distortion.....	89
7.5.5.4	Echo path loss characteristics.....	89
7.5.5.4.1	Weighted terminal coupling loss	89
7.5.5.4.2	Stability loss	89
7.5.6	Transmission characteristics for PP type 2b and 2c (HATS tested wideband handsets)	89
7.5.6.1	PP frequency responses.....	89
7.5.6.1.1	Sending.....	89
7.5.6.1.2	Receiving.....	90
7.5.6.2	PP send and receive loudness ratings	93
7.5.6.2.1	Nominal values.....	93
7.5.6.2.2	User-controlled volume control in PP	93
7.5.6.2.3	PP adaptive volume control.....	94
7.5.6.3	Sidetone.....	94
7.5.6.3.1	Talker sidetone	94
7.5.6.3.2	D Factor	94
7.5.6.3.3	Sidetone delay	94
7.5.6.4	Terminal coupling loss.....	94
7.5.6.4.1	Weighted Terminal Coupling Loss (TCLw).....	94
7.5.6.4.2	Stability loss	95
7.5.6.5	Distortion	95
7.5.6.5.1	Sending Distortion.....	95
7.5.6.5.2	Receiving Distortion.....	95
7.5.6.6	Noise	95
7.5.6.6.1	Sending.....	95
7.5.6.6.2	Receiving.....	96
7.5.6.7	Acoustic shock	96
7.5.6.7.0	General	96
7.5.6.7.1	Continuous signal	96
7.5.6.7.2	Peak signal.....	96
7.5.6.8	Delay.....	96
7.5.6.9	Variation of gain with input level-sending	96
7.5.6.10	Double talk Performance.....	97
7.5.6.10.0	General	97
7.5.6.10.1	Attenuation Range in Sending Direction during Double Talk $A_{H,S,dt}$	97
7.5.6.10.2	Attenuation Range in Receiving Direction during Double Talk $A_{H,R,dt}$	98
7.5.6.10.3	Detection of Echo Components during Double Talk.....	98

7.5.6.10.4	Minimum activation level and sensitivity of double talk detection	98
7.5.6.11	Switching characteristics	98
7.5.6.11.0	General	98
7.5.6.11.1	Activation in Sending Direction	99
7.5.6.11.2	Activation in Receiving Direction	99
7.5.6.11.3	Silence Suppression and Comfort Noise Generation	99
7.5.6.11.4	Performance in Sending in the Presence of Background Noise	99
7.5.6.11.5	Speech Quality in the Presence of Background Noise	100
7.5.6.11.6	Quality of Background Noise Transmission (with Far End Speech)	100
7.5.6.11.7	Quality of background noise transmission (with Near End Speech)	100
7.5.6.12	Quality of echo cancellation	100
7.5.6.12.0	General	100
7.5.6.12.1	Temporal echo effects	100
7.5.6.12.2	Spectral Echo Attenuation	101
7.5.7	Transmission characteristics for PP types 4a and 4b (HATS Tested wideband loudspeaking and handsfree devices)	101
7.5.7.1	Sending sensitivity/frequency response	101
7.5.7.2	Receive sensitivity/frequency response	102
7.5.7.3	Sending loudness rating	105
7.5.7.4	Receive loudness rating	105
7.5.7.5	Sending distortion	106
7.5.7.6	Receiving distortion	106
7.5.7.7	Out-of-band signals in sending direction	107
7.5.7.8	Out-of-band signals in receiving direction	107
7.5.7.9	Sending noise	107
7.5.7.10	Receiving noise	107
7.5.7.11	Terminal Coupling Loss	108
7.5.7.12	Stability Loss	108
7.5.7.13	Double Talk Performance	108
7.5.7.13.0	General	108
7.5.7.13.1	Attenuation Range in Sending Direction during Double Talk $A_{H,S,dt}$	109
7.5.7.13.2	Attenuation Range in Receiving Direction during Double Talk $A_{H,R,dt}$	109
7.5.7.13.3	Detection of Echo Components during Double Talk	109
7.5.7.13.4	Minimum activation level and sensitivity of double talk detection	110
7.5.7.14	Switching characteristics	110
7.5.7.14.0	General	110
7.5.7.14.1	Activation in Sending Direction	110
7.5.7.14.2	Activation in Receiving Direction	110
7.5.7.14.3	Silence Suppression and Comfort Noise Generation	111
7.5.7.14.4	Performance in sending direction in the presence of background noise	111
7.5.7.14.5	Speech Quality in the Presence of Background Noise	111
7.5.7.14.6	Quality of Background Noise Transmission (with Far End Speech)	111
7.5.7.14.7	Quality of background noise transmission (with Near End Speech)	111
7.5.7.15	Quality of echo cancellation	112
7.5.7.15.1	Temporal echo effects	112
7.5.7.15.2	Spectral Echo Attenuation	112
7.6	Transmission characteristics for Fixed Parts	112
7.6.1	Transmission characteristics for FP type 1a ("Classic" Fixed Part with ISDN Network interface, 3,1 kHz service)	112
7.6.1.1	Reduction of echo from PP	112
7.6.1.2	FP Network echo control	113
7.6.1.3	FP adaptive volume control	114
7.6.1.4	FP Delay	114
7.6.2	Transmission characteristics for FP type 1b ("new" Fixed Part with ISDN Network interface, 3,1 kHz service)	114
7.6.2.0	General	114
7.6.2.1	FP Network echo control	114
7.6.2.2	FP adaptive volume control	114
7.6.2.3	FP Delay	115
7.6.3	Transmission characteristics for FP type 2 (Fixed Part with analog 2-wire interface, 3,1 kHz service)	115
7.6.3.1	FP adaptive volume control	115
7.6.3.2	Network echo control	115

7.6.3.3	Additional requirements for DECT FP provided with a 2-wire PSTN interface.....	116
7.6.3.3.0	Test methods.....	116
7.6.3.3.1	General requirements.....	116
7.6.3.3.2	Speech performance characteristics.....	116
7.6.3.4	FP Delay.....	117
7.6.4	Transmission characteristics for FP type 3 (Fixed Part with VoIP interface, 3,1 kHz service).....	117
7.6.4.1	Send delay.....	117
7.6.4.2	Receive delay.....	117
7.6.4.3	Adaptive volume control.....	117
7.6.5	Transmission characteristics for FP type 4 (Fixed Part with ISDN network interface, wideband service).....	118
7.6.5.1	FP adaptive volume control.....	118
7.6.5.2	FP Delay.....	118
7.6.6	Transmission characteristics for FP type 5 (Fixed Part with VoIP interface, wideband service).....	118
7.6.6.1	Send Delay.....	118
7.6.6.2	Receive delay.....	118
7.6.6.3	FP adaptive volume control.....	118
8	Additional features.....	119
8.1	Loudspeaking hands-free and headset facilities.....	119
8.1.1	Loudspeaking hands-free facility.....	119
8.1.2	Headset facility.....	119
8.2	Tandem with mobile radio network.....	119
8.2.0	General.....	119
8.2.1	Tandem with GSM.....	119
8.2.1.0	Configuration.....	119
8.2.1.1	Network echo control.....	119
8.2.1.2	Terminal coupling loss.....	120
8.2.1.3	The GSM mobile transmitter operates in continuous mode.....	120
8.2.1.4	The GSM mobile transmitter operates in discontinuous mode, DTX.....	120
8.3	DECT connected to the GSM fixed network.....	120
8.3.0	General.....	120
8.3.1	Network echo control.....	120
8.3.2	Terminal coupling loss.....	120
8.4	Wireless Relay Stations (WRS).....	121
8.4.0	General.....	121
8.4.1	Modified FP network echo control requirements for implementation of 2 and 3 CRFP links in cascade.....	121
Annex A (informative): Description of "reference" echo control devices.....		123
A.0	General.....	123
A.1	Handset echo.....	123
A.1.0	Applicability.....	123
A.1.1	Overview.....	123
A.1.1.1	Connection to the PSTN/ISDN.....	123
A.1.1.1.0	General.....	123
A.1.1.1.1	Local and national calls.....	123
A.1.1.1.2	Long distance connections with echo control devices in the PSTN/ISDN, e.g. calls via satellites.....	123
A.1.1.2	Connection to the GSM network.....	124
A.1.2	Implementation of the FP echo control function.....	124
A.1.2.0	General.....	124
A.1.2.1	Suppression threshold.....	125
A.1.2.2	Static characteristics of activation control.....	125
A.1.2.3	Dynamic characteristics of activation control.....	125
A.2	Network echo.....	125
A.2.0	Applicability.....	125
A.2.1	Soft suppressor implementation of requirement 2.....	126
A.2.1.0	General.....	126
A.2.1.1	Static characteristics.....	127
A.2.1.2	Dynamic characteristics.....	127

A.2.2	Additional echo control for a 2-wire interface of requirement 1	127
A.2.3	Echo canceller used for both requirements 1 and 2	128
Annex B (informative):	Local loop application	129
B.0	General	129
B.1	DECT tethered local loop replacement with 2-wire PP end system.....	129
B.1.0	Configuration	129
B.1.1	TCLw requirements.....	129
B.1.2	Network echo	130
Annex C (informative):	GSM Discontinuous Transmission (DTX), and Voice Activity Detection (VAD).....	131
Annex D (informative):	Speech levels in relation to ambient room noise and examples of adaptive volume control settings	132
Annex E (informative):	Echo related topics.....	133
E.1	Summary table on echo parameters for PPs and FPs	133
E.2	General information about Delay-Echo interaction for DECT terminals.....	139
Annex F (informative):	Guidelines on specific requirements.....	142
F.1	Delay requirements for FPs with VoIP interface	142
F.1.1	Delay requirements for FP type 3 (Fixed Part with VoIP interface, 3,1 kHz service).....	142
F.1.1.0	General.....	142
F.1.1.1	Send delay.....	142
F.1.1.2	Receive delay.....	143
F.1.2	Delay requirements for FP type 5 (Fixed Part with VoIP interface, wideband service).....	144
F.1.2.0	General.....	144
F.1.2.1	Send Delay.....	144
F.1.2.2	Receive delay.....	145
Annex G (informative):	Bibliography.....	147
Annex H (informative):	Change history	148
History		149

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Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Digital Enhanced Cordless Telecommunications (DECT).

The present document is part 8 of a multi-part deliverable ([1] to [7]). Full details of the entire series can be found in part 1 [1].

Further details of the DECT system may be found in ETSI TR 101 178 [i.6] and ETSI ETR 043 [i.7].

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Date of adoption of this EN:	24 July 2015
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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

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

This part of the DECT CI specifies the speech and audio coding and transmission requirements.

In order to ensure satisfactory interworking of different portable and fixed units, it is necessary to specify the transmission performance of the analog information over the digital link. This requires not only use of a common speech algorithm, but also standardization of frequency responses, reference speech levels (or loudness) at the air interface and various other parameters.

The present document applies to DECT equipment which includes all the necessary functions to provide real-time two-way speech conversation. Several speech services are defined in the present document, including conventional 3,1 kHz telephony, wideband 7 kHz voice transmission and super-wideband 14 kHz service. DECT Fixed part providing such services may be connected to the public circuit switched (PSTN/ISDN) network, to private networks or to the Internet.

Tethered fixed point local loop applications are not required to comply with the requirements of the present document.

For the DECT systems which connect to the Public Switched Telephone Network (PSTN) via an analog interface, the additional requirements, which are implemented in the FP, have as much as possible been aligned with ETSI TBR 038 [29].

A summary of the control and the use of the DECT echo control functions, to guide on need for options to manufacturers and installers, is found in annex A.

Information concerning test methods can be found in ETSI EN 300 176-1 [9] and ETSI EN 300 176-2 [10] (previously covered by ETSI TBR 010 [i.5]). The test methods take into account that DECT is a digital system.

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

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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.

The following referenced documents are necessary for the application of the present document.

- [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] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".
- [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] ETSI EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".
- [8] Void.
- [9] ETSI EN 300 176-1: "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1: Radio".
- [10] ETSI EN 300 176-2: "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 2: Audio and speech".
- [11] Recommendation ITU-T G.701: "Vocabulary of digital transmission and multiplexing, and pulse code modulation (PCM) terms".
- [12] Recommendation ITU-T G.726: "40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM)".
- [13] Recommendation ITU-T G.711 (1988): "Pulse Code Modulation (PCM) of voice frequencies".
- [14] Recommendation ITU-T G.722 (2012): "7 kHz audio-coding within 64 kbit/s".
- [15] Void.
- [16] Void.
- [17] Recommendation ITU-T G.729.1 (2006): "G.729-based Embedded Variable bit-rate coder: An 8-32 kbit/s scalable wideband coder bitstream interoperable with G.729".
- [18] Void.
- [19] ISO/IEC 14496-3:2009: "Information technology -- Coding of audio-visual objects -- Part 3: Audio" (ISO/IEC JTC1/SC29/WG11 (MPEG)).
- [20] Recommendation ITU-T P.311 (2011): "Transmission characteristics for wideband digital handset and headset telephones".
- [21] Recommendation ITU-T P.10: "Vocabulary for performance and quality of service".
- [22] Recommendation ITU-T P.340: "Transmission characteristics and speech quality parameters of hands-free terminals".
- [23] Recommendation ITU-T P.58: "Head and torso simulator for telephonometry".
- [24] Recommendation ITU-T G.111: "Loudness Ratings (LRs) in an international connection".
- [25] Recommendation ITU-T G.1020: "Performance parameter definitions for quality of speech and other voiceband applications utilizing IP networks".
- [26] Recommendation ITU-T P.57: "Artificial ears".
- [27] Recommendation ITU-T P.502: "Objective test methods for speech communication systems using complex test signals".
- [28] Recommendation ITU-T P.51: "Artificial mouth".
- [29] ETSI TBR 038: "Public Switched Telephone Network (PSTN); Attachment requirements for a terminal equipment incorporating an analogue handset function capable of supporting the justified case service when connected to the analogue interface of the PSTN in Europe".
- [30] Recommendation ITU-T G.131: "Talker echo and its control".
- [31] ETSI ETS 300 540: "Digital cellular telecommunications system (Phase 2) (GSM); Transmission planning aspects of the speech service in the GSM Public Land Mobile Network (PLMN) system (GSM 03.50)".

- [32] Recommendation ITU-T O.41: "Psophometer for use on telephone-type circuits".
- [33] Recommendation ITU-T P.360: "Efficiency of devices for preventing the occurrence of excessive acoustic pressure by telephone receivers and assessment of daily noise exposure of telephone users".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] IETF RFC 791 (STD 5): "Internet Protocol".
- [i.2] IETF RFC 768 (STD 6): "User Datagram Protocol".
- [i.3] IETF RFC 3550: "RTP: A Transport Protocol for Real-Time Applications".
- [i.4] ETSI TBR 008 (1998): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals".
- [i.5] ETSI TBR 010: "Digital Enhanced Cordless Telecommunications (DECT); General Terminal Attachment Requirements; Telephony Applications".
- [i.6] ETSI TR 101 178: "Digital Enhanced Cordless Telecommunications (DECT); A High Level Guide to the DECT Standardization".
- [i.7] ETSI ETR 043: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Services and facilities requirements specification".
- [i.8] ETSI ES 202 737: "Speech and multimedia Transmission Quality (STQ); Transmission requirements for narrowband VoIP terminals (handset and headset) from a QoS perspective as perceived by the user".
- [i.9] ETSI ES 202 738: "Speech and multimedia Transmission Quality (STQ); Transmission requirements for narrowband VoIP loudspeaking and handsfree terminals from a QoS perspective as perceived by the user".
- [i.10] ETSI ES 202 739: "Speech and multimedia Transmission Quality (STQ); Transmission requirements for wideband VoIP terminals (handset and headset) from a QoS perspective as perceived by the user".
- [i.11] ETSI ES 202 740: "Speech and multimedia Transmission Quality (STQ); Transmission requirements for wideband VoIP loudspeaking and handsfree terminals from a QoS perspective as perceived by the user".
- [i.12] ETSI I-ETS 300 245-6: "Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals; Part 6: Wideband (7 kHz), loudspeaking and hands free telephony".
- [i.13] Recommendation ITU-T G.113 (2007): "Transmission impairments due to speech processing".
- [i.14] Recommendation ITU-T G.107 (2009): "The E-model: a computational model for use in transmission planning".
- [i.15] Recommendation ITU-T G.108 (1999): "Application of the E-model: A planning guide".
- [i.16] Recommendation ITU-T G.109 (1999): "Definition of categories of speech transmission quality".
- [i.17] Recommendation ITU-T G.729: "Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP)".

- [i.18] Recommendation ITU-T G.101 (2003): "The transmission plan".
- [i.19] Recommendation ITU-T G.164 (1988): "Echo suppressors".
- [i.20] Recommendation ITU-T G.165 (1993): "Echo cancellers".
- [i.21] Recommendation ITU-T G.168 (2009): "Digital network echo cancellers".
- [i.22] IEEE 802.11: "IEEE Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".
- [i.23] IEEE 802.3: "IEEE Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications".
- [i.24] Recommendation ITU-T Y.1541: "Network performance objectives for IP-based services".

koniec náhľadu – text ďalej pokračuje v platenej verzii STN