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Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1:
Radio

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Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1: Radio

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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
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Contents

Intellectual Property Rights	9
Foreword.....	9
1 Scope	10
2 References	11
3 Definitions, symbols and abbreviations	12
3.1 Definitions	12
3.2 Symbols.....	14
3.3 Abbreviations	14
4 General	15
4.1 Document layout	15
4.1.1 Test suites	15
4.1.2 Test groups.....	16
4.1.3 Test cases	16
4.2 Presentation of equipment for testing purposes.....	17
4.2.1 Choice of model for type examination (if applicable)	17
4.2.2 Description of equipment.....	17
4.2.2.1 Protocol Implementation Conformance Statement (PICS)	17
4.2.2.2 Protocol Implementation Extra Information for Testing (PIXIT)	17
4.2.2.3 Environmental test conditions	17
4.2.3 Host connected equipment	17
4.2.4 Applicants' declaration.....	17
4.3 Applicability of type tests.....	18
4.3.1 Equipment that includes only a DECT RF receiver.....	18
4.3.2 Equipment that includes a radio transmitter	18
4.3.3 CTAs.....	18
4.3.4 Equipment with a synchronization port.....	18
4.3.5 Equipment incorporating the IPEI (PPs only).....	18
4.3.6 All FP equipment	18
4.3.7 PPs with direct PP to PP communication option	18
4.3.8 Installation related issues	18
4.3.9 Equipment with combined FT and PT functionality.....	19
4.3.9.1 Wireless Relay Station	19
4.3.9.2 Direct PP to PP communication	19
4.3.9.3 Distributed communications	19
4.3.10 Provision of 4 Mbit/s services. Equipment that is capable of using 4-level, 8-level, 16-level and/or 64-level modulation	19
4.3.11 Equipment supporting additional carriers	19
4.4 Interpretation of the measurement results	20
5 General test requirements.....	20
5.1 Test philosophy	20
5.2 Test site	21
5.2.1 Open air test site	21
5.2.1.1 Description	21
5.2.1.2 Calibration.....	22
5.2.2 Anechoic chamber	23
5.2.2.1 General	23
5.2.2.2 Description	23
5.2.2.3 Influence of parasitic reflections	25
5.2.2.4 Calibration and mode of use.....	25
5.2.3 Stripline coupler.....	25
5.2.3.1 Description	25
5.2.3.2 Calibration.....	25
5.2.3.3 Mode of use.....	25

5.3	Standard position.....	26
5.4	Test antenna of the LT.....	26
5.5	Substitution antenna.....	26
5.6	Test fixture.....	26
5.6.1	Description.....	26
5.6.1.1	Calibration of the test fixture for the measurement of transmitter characteristics.....	27
5.6.1.2	Calibration of the test fixture for the measurement of receiver characteristics.....	27
5.6.1.3	Mode of use.....	28
5.6.2	Equipment with a temporary or internal permanent antenna connector.....	28
5.6.2.1	Equipment with a temporary antenna connector.....	28
5.7	Indoor test site.....	28
5.7.1	Description.....	29
5.7.2	Test for parasitic reflections.....	29
5.7.3	Calibration and mode of use.....	30
5.8	Lower Tester (LT).....	30
5.8.1	Description.....	30
5.8.2	Connections between the EUT and the LT.....	30
5.8.3	Functions and abilities.....	31
5.8.4	Signal generation uncertainty.....	31
5.8.4.1	Modulated DECT-like carrier.....	31
5.8.4.2	CW interferers.....	31
5.8.4.3	DECT RF signal.....	31
5.8.4.4	Test modulation signals.....	32
5.8.5	Measurement uncertainty.....	32
5.9	Upper Tester (UT).....	32
5.9.1	Description of the UT.....	32
5.9.2	The test standby mode.....	32
5.9.3	Test messages.....	33
5.9.4	Dummy setting when EUT is a RFP and it is in test stand-by mode.....	33
5.10	Description of the lower tester FT and PT.....	33
5.11	General test methods.....	34
5.11.1	General.....	34
5.11.2	Sampling the RF signal.....	34
5.11.2.1	Introduction.....	34
5.11.2.2	Sampling method.....	34
5.11.3	Determining the reference position.....	34
5.11.3.1	Case 1: EUTs that cannot transmit.....	34
5.11.3.2	Case 2: EUTs that can transmit.....	34
5.11.4	Bit Error Rate (BER) and Frame Error Ratio (FER) measurements.....	35
5.12	Test setup.....	35
5.12.1	Test setup 1.....	35
5.12.2	Test setup 2.....	35
5.12.3	Test setup 3.....	36
5.12.4	Test setup 4.....	36
5.12.5	Test setup 5.....	37
5.13	Test arrangements for intermodulation measurements.....	37
5.13.1	PT to PT arrangement.....	37
5.13.2	FT to FT arrangement.....	38
5.13.3	FT to PT arrangement.....	38
6	Test conditions, power sources and ambient temperatures.....	39
6.1	General.....	39
6.2	Nominal test conditions.....	39
6.3	Extreme test conditions.....	40
6.4	Test power source - general requirements.....	41
6.5	Nominal test power source.....	41
6.5.1	Mains voltage.....	41
6.5.2	Regulated lead acid battery power sources.....	41
6.5.3	Nickel cadmium battery.....	41
6.5.4	Other power sources.....	41
6.6	Extreme test power source.....	42
6.6.1	Mains voltage.....	42

6.6.2	Regulated lead acid battery power sources	42
6.6.3	Nickel cadmium battery	42
6.6.4	Other power sources	42
6.7	Testing of host connected equipment and plug-in cards.....	42
6.7.1	Alternative A: composite equipment	42
6.7.2	Alternative B: use of a test jig and three hosts.....	42
7	Accuracy and stability of RF carriers.....	43
7.1	Definition	43
7.2	Test environment.....	43
7.3	Method of measurement	44
7.4	Verdict criteria when the EUT is a RFP	44
7.5	Verdict criteria when the EUT is a PP.....	44
8	Accuracy and stability of timing parameters.....	45
8.1	Slot structure definitions	45
8.2	Definition of the position of p0	46
8.3	Measurement of packet timing jitter.....	46
8.3.1	Test environment	46
8.3.2	Method of measurement	46
8.3.3	Verdict criteria.....	46
8.4	Measurement of the reference timing accuracy of a RFP.....	47
8.4.1	Test environment	47
8.4.2	Method of measurement	47
8.4.3	Verdict criteria.....	47
8.5	Measurement of packet transmission accuracy of a PP.....	47
8.5.1	Test environment	47
8.5.2	Method of measurement	48
8.5.3	Verdict criteria.....	48
9	Transmission burst	48
9.1	Definitions.....	48
9.1.1	Physical packets.....	48
9.1.2	Transmitted power.....	48
9.1.3	Normal Transmitted Power (NTP).....	49
9.1.4	Transmitter attack time	49
9.1.5	Transmitter release time.....	49
9.1.6	Minimum power	49
9.1.7	Maximum power.....	49
9.1.8	Maintenance of transmission after packet end.....	49
9.1.9	Transmitter idle power output.....	49
9.2	Test environment.....	49
9.3	Method of measurement	50
9.4	Verdict criteria.....	50
10	Transmitted power.....	51
10.1	Definitions	51
10.1.1	PP and RFP with an integral antenna.....	51
10.1.2	PP and RFP with external connections for all antennas.....	51
10.1.3	PP and RFP with both integral and external antennas	51
10.2	PP and RFP with an integral antenna	51
10.2.1	Test environment	51
10.2.2	Method of measurement	51
10.2.2.1	Measurement of NTP	51
10.2.2.2	Measurement of antenna gain	51
10.2.3	Verdict criteria for all EUTs	52
10.3	PP and RFP with external antenna connection(s).....	52
10.3.1	Test environment	52
10.3.2	Method of measurement	53
10.3.3	Verdict criteria for all EUTs	53
11	RF carrier modulation	53
11.1	Test environment.....	53
11.2	Method of measurement, parts 1 and 2.....	53

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11.2.1	Part 1.....	53
11.2.2	Part 2.....	54
11.3	Method of measurement, parts 3 and 4.....	54
11.3.1	Part 3.....	54
11.3.2	Part 4.....	55
11.4	Verdict criteria for part 1.....	55
11.5	Verdict criteria for part 2.....	55
11.6	Verdict criteria for part 3.....	55
11.7	Verdict criteria for part 4.....	55
12	Unwanted RF power radiation	57
12.1	General test conditions	57
12.2	Emissions due to modulation.....	57
12.2.1	Definition.....	57
12.2.2	Test environment	57
12.2.3	Method of measurement	57
12.2.4	Verdict criteria.....	58
12.3	Emissions due to transmitter transients	58
12.3.1	Definition.....	58
12.3.2	Test environment	58
12.3.3	Method of measurement	58
12.3.4	Verdict criteria.....	59
12.4	Emissions due to intermodulation	59
12.4.1	Definition.....	59
12.4.2	Test environment	60
12.4.3	Method of measurement	60
12.4.4	Verdict criteria.....	61
12.5	Spurious emissions when allocated a transmit channel.....	61
12.5.1	Definition.....	61
12.5.2	Radiated emissions	61
12.5.2.1	Test environment.....	61
12.5.2.2	Method of measurement.....	61
12.5.2.3	Verdict criteria.....	62
12.5.3	Conducted spurious emissions	63
12.5.3.1	Test environment.....	63
12.5.3.2	Method of measurement.....	63
12.5.3.3	Verdict criteria	63
13	Radio receiver testing.....	64
13.1	Radio receiver sensitivity	64
13.1.1	Definition.....	64
13.1.2	Test environment	64
13.1.3	Method of measurement	64
13.1.4	Verdict criteria.....	64
13.2	Radio receiver reference BER and FER	64
13.2.1	Definition.....	64
13.2.2	Test environment	65
13.2.3	Method of measurement	65
13.2.4	Verdict criteria.....	65
13.3	Radio receiver interference performance.....	65
13.3.1	Definition.....	65
13.3.2	Test environment	65
13.3.3	Method of measurement	65
13.3.4	Verdict criteria.....	66
13.4	Radio receiver blocking case 1: owing to signals occurring at the same time but on other frequencies	66
13.4.1	Definition.....	66
13.4.2	Test environment	66
13.4.3	Method of measurement	66
13.4.4	Verdict criteria.....	67
13.5	Radio receiver blocking case 2: owing to signals occurring at a different time	68
13.5.1	Definition.....	68
13.5.2	Test environment	68

13.5.3	Method of measurement	68
13.5.4	Verdict criteria	69
13.6	Receiver intermodulation performance	69
13.6.1	Definition	69
13.6.2	Test environment	69
13.6.3	Method of measurement	69
13.6.4	Verdict criteria	70
13.7	Spurious emissions when the PP has no allocated transmit channel	70
13.7.1	Definition	70
13.7.2	Test environment	70
13.7.3	Method of measurement	70
13.7.4	Verdict criteria (outside the DECT band)	70
13.7.5	Verdict criteria (inside the DECT band)	70
14	Intersystem synchronization (FP only)	71
14.1	Description	71
14.2	Test environment	71
14.3	Wired synchronization ports	71
14.3.1	FP as a master	71
14.3.1.1	Method of measurement	71
14.3.1.2	Verdict criteria	72
14.3.2	FP as a slave	72
14.3.2.1	Method of measurement	72
14.3.2.2	Verdict criteria	72
14.4	GPS synchronization	73
14.4.1	FP with integrated Global Positioning System (GPS) synchronization	73
14.4.1.1	Method of measurement	73
14.4.1.2	Verdict criteria	73
14.4.2	External GPS synchronization device	73
14.4.2.1	Method of measurement	73
14.4.2.2	Verdict criteria	74
15	EMC	74
16	Equipment identity testing	74
16.1	PP	74
16.2	FP	74
17	Efficient use of the radio spectrum	74
17.1	Channel selection	74
17.2	Channel confirmation	75
17.2.1	For the PT	75
17.2.2	For the FT	75
17.3	Channel release	75
17.4	General	75
18	WRS testing	76
18.1	Testing as a PP	76
18.2	Testing as an RFP	76
18.3	Applicants declarations	77
19	Requirements for PPs with direct PP to PP communication mode	77
19.1	Setting the EUT in direct communications mode	77
19.2	When the EUT has not initiated a call	78
19.3	When the EUT initiates a call	78
19.4	Applicants declarations	78
20	Distributed communications	78
20.1	Testing as a PP	79
20.2	Testing as an RFP	79
20.3	Applicants declaration	79
21	Higher level modulation options	80
21.1	Activation of higher level modulations when EUT is in test stand-by mode	80
21.2	Applicants declaration	81

Annex A (informative): Justification for requirements	82
Annex B (normative): Procedures for test fixture calibration and for measurement of radiated spurious emissions.....	84
B.1 Calibration of test fixture for receiver measurements	84
B.1.1 Method of measurement	84
B.2 Radiated measurements.....	86
B.2.1 General	86
B.2.2 Radiated spurious emissions.....	86
B.2.2.1 Definition.....	86
B.2.2.2 Method of measurement	87
B.2.3 Cabinet radiation	88
B.2.3.1 Definition.....	88
B.2.3.2 Method of measurement	89
Annex C (normative): Procedure for measurement of conducted spurious emissions	90
C.1 Conducted spurious emissions	90
C.1.1 Definition	90
C.1.2 Method of measurement	90
Annex D (normative): Test Support Profile (TSP).....	91
D.1 Introduction	91
D.2 Standardized symbols for the status column	91
D.3 Capabilities of PP (EUT) under test.....	92
D.3.1 Services	92
D.3.2 Messages	92
D.3.3 Message parameters	94
D.3.4 Procedure support.....	95
D.3.5 CSF multiplexing functions.....	96
D.3.6 Timer and counter support.....	96
D.4 Capabilities of FP (EUT) under test	97
D.4.1 Services	97
D.4.2 Messages	97
D.4.3 Message parameters	99
D.4.4 Procedure support.....	100
D.4.5 CSF multiplexing functions.....	101
D.4.6 Timer and counter support.....	101
Annex E (normative): Measurement of BER and FER.....	102
Annex F (informative): Procedures for the measurement of synchronization loss at the EUT by the LT	103
F.1 Description	103
F.2 Method	103
Annex G (informative): Guide lines for installation related issues	104
G.1 Antennas with directivity	104
G.2 DECT frame synchronization.....	104
G.2.1 Guidance for installation of frame synchronized DECT systems.....	105
G.2.1.1 GPS synchronization.....	105
G.2.1.2 Wired synch port synchronization	105
G.2.1.3 Requirements for DECT air synchronization.....	106
Annex H (informative): Bibliography.....	107
History	108

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT).

The present document contains text pertaining to testing of the Digital Enhanced Cordless Telecommunications (DECT) Common Interface. Such text should be considered as guidance to approval (or licensing) authorities.

Details of the DECT Common Interface may be found in EN 300 175. Further details of the DECT system may be found in the ETSI Technical Reports, TR 101 178 [18] and ETR 043 [19].

The present document is part 1 of a multi-part deliverable covering the test specification for Digital Enhanced Cordless Telecommunications (DECT), as identified below:

Part 1: "Radio";

Part 2: "Speech".

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1 Scope

The present document (part 1) specifies tests applicable to all Digital Enhanced Cordless Telecommunications (DECT) equipment accessing the DECT frequency band 1 880 MHz to 1 900 MHz (including provisions for testing other or extended frequency bands as described in EN 300 175-1 [1] and EN 300 175-2 [2]).

Part 2 of the present multi-part deliverable specifies tests applicable to DECT speech transmission using ITU-T Recommendation G.726 [14] ADPCM speech codec at 32 kbit/s.

The aims of the present document are to ensure:

- efficient use of frequency spectrum;
- no harm done to any connected network and its services;
- no harm done to other radio networks and services;
- no harm done to other DECT equipment or its services;
- interworking of terminal equipment via the public network.

Through testing those provisions of EN 300 175, which are relevant to these aims.

The tests of EN 300 176 are split into two parts:

- part 1 (the present document) covers testing of radio frequency parameters, security elements and those DECT protocols that facilitate the radio frequency tests and efficient use of frequency spectrum;
- part 2 describes testing of DECT 32 kbit/s ADPCM speech requirements between network interface and DECT PT, or between a DECT CI air interface and alternatively a DECT PT or FT. Part 2 is not applicable to terminal equipment specially designed for the disabled (e.g. with amplification of received speech as an aid for the hard-of-hearing).

DECT terminal equipment consists of the following elements:

- a) Fixed Part (FP);
- b) Portable Part (PP);
- c) Cordless Terminal Adapter (CTA);
- d) Wireless Relay Station (WRS) (FP and PP combined).

Part 2 of the present document is structured to allow testing of either:

- a) the FP and PP together; or
- b) the FP and PP as separate items.

Additional tests apply for equipment implementing ETSI-defined profiles (e.g. GAP, DECT-GSM, DECT-ISDN). These tests are found in related ENs and may supersede the requirements of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- 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.
- For a non-specific reference, the latest version applies.

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

- [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] Void. <https://standards.iteh.ai/catalog/standards/sist/44c1fa74-444a-4770-9c02-ef70351ae4ca/sist-en-300-176-1-v1-5-1-2003>
- [9] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts". (See also ITU-T Recommendation X.290).
- [10] ITU-T Recommendation V.11: "Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s".
- [11] ITU-T Recommendation O.153: "Basic parameters for the measurement of error performance at bit rates below the primary rate".
- [12] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).
- [13] EN 55022: "Limits and methods of measurement of radio disturbance characteristics of information technology equipment".
- [14] ITU-T Recommendation G.726 (12/90): "40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM)".
- [15] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.
- [16] ETSI EN 300 700: "Digital Enhanced Cordless Telecommunications (DECT); Wireless Relay Station (WRS)".
- [17] ETSI EN 301 406: "Digital Enhanced Cordless Telecommunications (DECT); Harmonized EN for Digital Enhanced Cordless Telecommunications (DECT) covering essential requirements under article 3.2 of the R&TTE Directive; Generic radio".

- [18] ETSI TR 101 178: "Digital Enhanced Cordless Telecommunications (DECT); A High Level Guide to the DECT Standardization".
- [19] ETSI ETR 043: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Services and facilities requirements specification".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

antenna diversity: antenna diversity implies that the Radio Fixed Part (RFP) for each bearer independently can select different antenna properties such as gain, polarization, coverage patterns, and other features that may effect the practical coverage

NOTE: A typical example is space diversity, provided by two vertically polarized antennas separated by 10 cm to 20 cm.

bearer handover: internal handover process provided by the Medium Access Control (MAC) layer, whereby one MAC connection can modify its underlying bearers while maintaining the service provided to the Data Link Control (DLC) layer

NOTE: Bearer handover is slot based.

cell: domain served by a single antenna system (including a leaky feeder) of one FP

NOTE: A cell may include more than one source of radiated Radio Frequency energy (i.e. more than one Radio End Point).

Central Control Fixed Part (CCFP): physical grouping that contains the central elements of a FP. A FP shall contain a maximum of one CCFP

NOTE: A CCFP controls one or more RFPs.

conducted measurements: measurements which are made using a direct connection to the equipment under test

Cordless Terminal Adapter (CTA): physical grouping that contains a DECT portable termination and a line interface

DECT Distributed communications: DECT Distributed communication is regarded as a communication capability of a DECT Local Network that allows a number of DECT terminals (a FP and number of PPs) to co-exists and directly communicate one with another

DECT-like carrier: modulated RF DECT carrier used for interference testing which conforms to the requirements in EN 300 175-2 in terms of frequency and timing and uses a pseudo-random sequence for modulation

Double Slot (SLOT): one-12th of a Time Division Multiple Access (TDMA) frame which is used to support one high-capacity physical channel

duplex bearer: use of two simplex bearers operating in opposite directions on two physical channels

NOTE: These pairs of channels always use the same RF carrier and always use evenly spaced slots (i.e. separated by 0,5 TDMA frame).

Equipment Under Test (EUT): equipment submitted to the test laboratory for type examination

Fixed Part (DECT Fixed Part) (FP): physical grouping that contains all of the elements in the DECT network between the local network and the DECT air interface

NOTE: A DECT FP contains the logical elements of at least one Fixed radio Termination (FT), plus additional implementation specific elements.

Fixed radio Termination (FT): logical group of functions that contains all of the DECT processes and procedures on the fixed side of the DECT air interface

NOTE: A FT only includes elements that are defined in the DECT CI standard. This includes radio transmission elements (layer 1) together with a selection of layer 2 and layer 3 elements.

full slot (slot): one-24th of a TDMA frame which is used to support one physical channel

half slot: one-48th of a TDMA frame which is used to support one physical channel

handover: process of switching a call in progress from one physical channel to another physical channel

NOTE 1: These processes can be internal or external.

NOTE 2: There are two physical forms of handover: intra-cell handover and inter-cell handover. Intra-cell handover is always internal. Inter-cell handover can be internal or external.

host equipment: any equipment which has a complete user functionality when not connected to the DECT radio equipment, and to which the DECT radio equipment provides additional functionality, and to which connection is necessary for the DECT radio equipment to offer functionality

Hybrid Part (HyP): DECT terminal that provides FT, as well as, PT capabilities being capable of communicating directly with FT or PT

inter-cell handover: switching of a call in progress from one cell to another cell

NOTE: This only defines the form of handover, it does not define a specific process.

intra-cell handover: switching of a call in progress from one physical channel of one cell to another physical channel of the same cell

NOTE: This only defines the form of handover, it does not define a specific process.

Lower Tester (LT): logical grouping that contains the test equipment, a functionally equivalent DECT PT, a functionally equivalent DECT FT and a test controller

multiframe: repeating sequence of 16 successive TDMA frames, that allows low rate or sporadic information to be multiplexed (e.g. basic system information or paging)

physical channel (channel): simplex channel that is created by transmitting in one particular slot on one particular RF channel in successive TDMA frames (see also simplex bearer)

NOTE: One physical channel provides a simplex service. Two physical channels are required to provide a duplex service.

Portable Handset (PHS): single physical grouping that contains all of the portable elements that are needed to provide a teleservice to the user

NOTE: PHS is a subset of all possible PPs. This subset includes all physical groupings that combine one PT plus at least one portable application in a single physical box.

Portable Part (PP): physical grouping that contains all elements between the user and the DECT air interface.

NOTE 1: PP is a generic term that may describe one or several physical pieces.

NOTE 2: A PP is logically divided into one PT plus one or more portable applications.

Portable radio Termination (PT): logical group of functions that contains all of the DECT processes and procedures on the portable side of the DECT air interface

NOTE: A PT only includes elements that are defined in the DECT CI standard. This includes radio transmission elements together with a selection of layer 2 and layer 3 elements.

radiated measurements: measurements which involve the absolute measurement of a radiated field