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

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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".

National transposition dates	
Date of adoption of this EN:	3 October 2003
Date of latest announcement of this EN (doa):	31 January 2004
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 2004
Date of withdrawal of any conflicting National Standard (dow):	31 July 2004

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.

[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