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Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment

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Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [i.2] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC [i.1] 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 ("the R&TTE Directive") [i.1]).

The present document is part 6 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

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1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of Digital Enhanced Cordless Telecommunications (DECT) equipment, and associated ancillary equipment, in respect of ElectroMagnetic Compatibility (EMC).

Technical specifications related to the antenna port and emissions from the enclosure port of the radio equipment are not included in the present document. Such technical specifications are found in the relevant product standards for the effective use of the radio spectrum.

The present document specifies the applicable test conditions, performance assessment and performance criteria for Digital Enhanced Cordless Telecommunications (DECT) equipment, and associated ancillary equipment.

Definitions of types of cordless telecommunications equipment covered by the present document are given in annex A.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and EN 301 489-1 [1], the provisions of the present document take precedence.

The environmental classification and the emission and immunity requirements used in the present document are as stated in EN 301 489-1 [1], except for any special conditions included in the present document.

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:
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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 301 489-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

[2] ITU-T Recommendation O.153 (1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".

[3] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".

[4] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) Layer".

[5] ETSI EN 300 176: "Digital Enhanced Cordless Telecommunications (DECT); Approval test specification".

2.2 Informative references

[i.1] 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).

[i.2] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 489-1 [1] and the following apply:

bearer: burst of the wanted RF signal used to establish and maintain the communications link for digital modulated and operated cordless telephone and similar radio communications equipment

DECT equipment: Digital Enhanced Cordless Telecommunications apparatus which includes one or more transceivers and/or receivers and/or parts thereof which conform to the requirements of EN 300 175-2 [3]

host equipment: any equipment which has a complete user functionality when not connected to the cordless telephone or similar radio communications equipment, and to which this radio equipment provides additional functionality, and to which connection is necessary for this radio equipment to offer functionality, and in which the transceiver part of the radio equipment is physically installed

non-speech equipment: cordless telephone or similar communications equipment intended for the provision and reception of digital data either originating from or destined to external digital speech processing circuitry or other external equipment

speech equipment: cordless telephone or similar communications equipment containing transducers such as microphones and/or loudspeakers intended for the provision and reception of acoustic audio signals

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BER	Bit Error Ratio
BPF	Band Pass Filter
BW	BandWidth
CF	Carrier Frequency
CFP	Cordless Fixed Part
CPP	Cordless Portable Part
CR	Continuous phenomena applied to cordless telephone or communication Receive-only equipment
CT	Continuous phenomena applied to cordless telephone or communication Transceivers
DECT	Digital Enhanced Cordless Telecommunications
ERP	Ear Reference Point
EUT	Equipment Under Test
MRP	Mouth Reference Point
RF	Radio Frequency

SPL	Sound Pressure Level
TR	Transient phenomena applied to cordless telephone or communication Receive-only equipment
TT	Transient phenomena applied to cordless telephone or communication Transceivers

4 Test conditions

4.1 General

For the purposes of the present document, the test conditions of EN 301 489-1 [1], clause 4, shall apply as appropriate. Further product related test conditions for cordless telephone or communication equipment are specified in the present document, clauses 4.2 to 4.5.

4.2 Arrangements for test signals

The provisions of EN 301 489-1 [1], clause 4.2 shall apply.

4.2.1 Arrangements for test signals at the input of transmitters

The provisions of EN 301 489-1 [1], clause 4.2.1 shall apply with the following modification.

The transmitter part of the particular type of cordless telephone or communications equipment shall be modulated with normal test modulation as specified for that type of equipment (see clause 4.5).

4.2.1.1 Speech equipment

Audio input signals may be provided to the EUT either by a non-metallic acoustic tube or, if provided, electrical connections. The equipment shall not be modified to provide any electrical connection ports for the purposes of EMC tests only. Suitable test arrangements for the acoustic tube are described in EN 300 176 [5].

4.2.1.2 Non-speech equipment

Digital (data) input signals shall be supplied to the EUT by electrical connection to the modulation input port via an appropriate connecting cable, test jig, or host equipment (see clauses 5.2.1 and 5.2.2).

4.2.2 Arrangements for test signals at the output of transmitters

The provisions of EN 301 489-1 [1], clause 4.2.2 shall apply.

4.2.3 Arrangements for test signals at the input of receivers

The provisions of EN 301 489-1 [1], clause 4.2.3 shall apply.

The receiver part or stand alone receiver of the particular type of cordless telephone or communications equipment shall be provided with the appropriate wanted RF signal modulated as specified for that type of equipment (see clause 4.5).

4.2.4 Arrangements for test signals at the output of receivers

The provisions of EN 301 489-1 [1], clause 4.2.4 shall apply.

4.2.5 Arrangements for testing transmitter and receiver together (as a system)

The provisions of EN 301 489-1 [1], clause 4.2.5 shall apply.

The normal test modulation shall be transmitted by the test system and looped back in the radio equipment, as described in EN 300 175-3 [4] and EN 300 176 [5]. Further, the output of the radio equipment under test shall be monitored by the test system.

4.3 Exclusion bands

The provision of EN 301 489-1 [1], clause 4.3 shall apply with the following modifications.

The exclusion band for transmitters, receivers and receiver sections of transceivers is the band of frequencies over which no immunity tests with radiated RF are made.

The exclusion band shall be from 1 781,792 MHz to 1 997,344 MHz (+100 MHz to the upper side; -100 MHz to the lower side are added to the operation band).

4.4 Narrow band responses on receivers or receivers which are part of transceivers

The provision of EN 301 489-1 [1], clause 4.4 shall apply with the following modifications.

No immunity tests shall be carried out on frequencies of identified narrow band responses i.e. spurious responses, of the receiver parts of cordless telephone and similar communications equipment.

For DECT receivers, the identification criteria for narrow band responses are an increase of the speech output signal level for speech equipment, or an increase in the Bit Error Ratio (BER) of the looped back data from the EUT for non-speech equipment.

The nominal frequency offset to be used for the identification of narrowband responses shall be ±2 MHz for the first part of the identification procedure, and ±2,5 MHz for its second part.

4.5 Normal test modulation

The provision of EN 301 489-1 [1], clause 4.5 shall apply with the following modifications.

For all types of DECT equipment the wanted input signal shall be a Radio Frequency (RF) carrier set to the nominal centre frequency of one of the DECT RF channels, using Gaussian shaped frequency-shift keying (BT = 0,5) and modulated with a 1 152 kbit/s bit sequence.

The encoding of the bit sequence shall conform to the encoding specified in EN 300 175-2 [3] and EN 300 175-3 [4].

The parts of the data sequence that shall transmit a bit sequence conforming to the D-M2 pattern as specified in ITU-T Recommendation O.153 [2] are those which are looped back according to the loop back test message described in EN 300 175-3 [4].

The burst timings of this carrier shall conform to the limits specified in EN 300 175-2 [3].