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**Standard elektromagnetne združljivosti (EMC) za radijsko opremo in storitve - 6. del: Posebni pogoji za opremo digitalnih izboljšanih brezvrvičnih telekomunikacij (DECT) - Harmonizirani standard, ki zajema bistvene zahteve člena 3.1(b) direktive 2014/53/EU**

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment - Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

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# ETSI EN 301 489-6 V2.2.1 (2019-04)



**ElectroMagnetic Compatibility (EMC)  
standard for radio equipment and services;  
Part 6: Specific conditions for Digital Enhanced Cordless  
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of article 3.1(b) of Directive 2014/53/EU**

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## Foreword

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

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.2] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to [the making available on the market of radio equipment and repealing Directive 1999/5/EC \[i.1\]](https://standards.iteh.ai/catalog/standards/sist/f44aa740-aab1-486a-802e-e6daf98b581/sist-en-301-489-6-v2-2-1-2019).

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

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

National transposition dates	
Date of adoption of this EN:	6 June 2017
Date of latest announcement of this EN (doa):	31 July 2019
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2020
Date of withdrawal of any conflicting National Standard (dow):	31 January 2021

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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).

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# 1 Scope

The present document specifies technical characteristics and methods of measurements for Digital Enhanced Cordless Telecommunications (DECT) equipment, and associated ancillary equipment.

The present document covers the essential requirements of article 3.1(b) of Directive 2014/53/EU [i.1] under the conditions identified in annex A.

Technical specifications related to the antenna port and emissions from the enclosure port of the radio equipment are not included in the present document.

NOTE: Such technical specifications are found in the relevant product standards for the effective use of the radio spectrum.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and ETSI 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 ETSI EN 301 489-1 [1], except for any special conditions included in the present document.

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# 2 References

## 2.1 Normative references

References are specific, identified by date of publication and/or edition number or version number. Only the cited version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://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 301 489-1 (V2.2.0) (03-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU".
- [2] Recommendation ITU-T O.153 (10-1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".
- [3] ETSI EN 300 175-2 (V2.6.1) (07-2015): "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".
- [4] ETSI EN 300 175-3 (V2.6.1) (07-2015): "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) Layer".
- [5] ETSI EN 300 176-1 (V2.2.1) (10-2015): "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1: Radio".
- [6] CENELEC EN 61000-4-3 (2006), A1 (2008) and A2 (2010): "Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test".



## 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 referenced 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] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.2] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.
- [i.3] CENELEC EN 55024 (2010): "Information technology equipment - Immunity characteristics - Limits and methods of measurement".
- [i.4] ETSI EN 301 406 (V2.2.2) (06-2016): "Digital Enhanced Cordless Telecommunications (DECT); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".

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## 3 Definitions and abbreviations

### 3.1 Definitions

[SIST EN 301 489-6 V2.2.1:2019](https://standards.iteh.ai/catalog/standards/sist/f44aa740-aab1-486a-802e-e6dafc98b581/sist-en-301-489-6-v2-2-1-2019)

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For the purposes of the present document, the terms and definitions given in ETSI 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 (DECT) apparatus which includes one or more transceivers and/or receivers and/or parts thereof which conform to the requirements of ETSI 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:

AC	Alternative Current
BER	Bit Error Ratio
BPF	Band Pass Filter

BT	Bandwidth Time product
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
DC	Direct Current
DECT	Digital Enhanced Cordless Telecommunications
EFTA	European Free Trade Association
EM	ElectroMagnetic
EMC	Electro Magnetic Compatibility
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

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## 4 Test conditions

### 4.1 General

For the purposes of the present document, the test conditions of ETSI 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

#### 4.2.1 Arrangements for test signals at the input of transmitters

##### 4.2.1.0 General

The provisions of ETSI 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 CENELEC EN 55024 [i.3], annex A.

##### 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 ETSI 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 ETSI EN 301 489-1 [1], clause 4.2.3 shall apply.

The receiver part or standalone 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 ETSI 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 ETSI 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 ETSI EN 300 175-3 [4] clause 7 and clause 12 and ETSI EN 300 176-1 [5] clause 13. Further, the output of the radio equipment under test shall be monitored by the test system.

## 4.3 RF exclusion band of radio communications equipment

### 4.3.1 Introduction

The provision of ETSI EN 301 489-1 [1], clause 4.3.1 shall apply.

### 4.3.2 Exclusion band for transmitters or the transmitter part of transceivers

#### 4.3.2.1 General

The relevant requirements are based on DECT technology and not on additional technical capabilities of the DECT equipment. The exclusion band for transmitters is directly related to the emissions due to transmitter transient requirement of the DECT system. The relevant requirements and details are found in the harmonised standard ETSI EN 301 406 [i.4], clause 5.3.6.3.

Because the used channel cannot be fixed or predicted during measurements, the transmitter exclusion bands have to be defined at both edges of the allocated frequency band.

#### 4.3.2.2 Channelized Systems

The exclusion band shall be from 1 874,016 MHz to 1 905,320 MHz (+7,776 MHz from the carrier close to the upper band edge and -7,776 MHz from the carrier close to the lower band edge of the allocated band).

NOTE: The value of 7,776 MHz above is derived using the formula in clause 4.3.3.1 of ETSI EN 301 489-1 [1] where the value of  $n$  is 4,5.

### 4.3.3 Exclusion band for receivers or the receiver part of transceivers

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

The following requirements are based on the measurement procedure and the DECT technology but not on additional technical capabilities of the DECT equipment:

- The exclusion band shall be from 1 829 MHz to 1 951 MHz (+51 MHz from the upper band edge and -51 MHz from the lower band edge of the allocated band).