



SLOVENSKI STANDARD

SIST EN 50665:2018

01-januar-2018

Splošni standard za oceno elektronske in električne opreme glede omejevanja izpostavljenosti ljudi elektromagnetnemu sevanju (0 Hz–300 GHz)

Product standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

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Ta slovenski standard je istoveten z: ^{SIST EN 50665:2018} **EN 50665:2017**
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EUROPEAN STANDARD

EN 50665

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2017

ICS 13.280

English Version

Generic standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

Norme de produit relative à l'évaluation des équipements électroniques et électriques en relation avec les restrictions d'exposition humaine aux champs électromagnétiques (0 Hz - 300 GHz)

Fachgrundnorm für die Beurteilung von elektronischen und elektrischen Geräten in Bezug auf Begrenzungen der Exposition von Personen gegenüber elektromagnetischen Feldern (0 Hz bis 300 GHz)

This European Standard was approved by CENELEC on 2017-09-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

[SIST EN 50665:2018](#)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 50665:2017) has been prepared by the Technical Committee CENELEC/TC 106X "Electromagnetic fields in the human environment".

The following dates are fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-09-11
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2020-09-11

This European Standard has to be read in conjunction with EN 62311:2008 "*Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)*".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and, and supports essential requirements of the Radio Equipment Directive 2014/53/EU (M/536) and the Low Voltage Directive 2014/35/EU (M/511).

For relationships with EU Directives, see informative Annexes ZZA and ZZB, which are an integral part of this document.

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EN 50665:2017 (E)

1 Scope

This European Standard applies to electronic and electrical equipment for which no dedicated harmonized product- or product family standard, or standard relating to low power equipment, regarding human exposure to electromagnetic fields exists. If such a standard does exist then it shall be used and this standard shall not. Annex A lists such harmonized standards available at the time of writing This list may change with time. The current list of standards harmonized under each Directive should be consulted at the time of use of this standard.

The object of this generic standard is to provide a route for evaluation of such equipment against limits on human exposure to electric, magnetic and electromagnetic fields, and induced and contact current.

The frequency range covered is 0 Hz to 300 GHz.

This standard is intended to cover both intentional and non-intentional radiators.

NOTE 1 Other standards can apply to products covered by this document. In particular, this document is not designed to evaluate the electromagnetic compatibility with other equipment; nor does it reflect any product safety requirements other than those specifically related to human exposure to electromagnetic fields.

NOTE 2 This standard addresses only human exposure from the specific equipment under evaluation. There is an applicable putting-into service/*in situ* standard for equipment used by workers when at work:

EN 50664:2017. *Generic standard to demonstrate the compliance of equipment intended for use only by workers with limits on human exposure to electromagnetic fields (0 Hz - 300 GHz), when put into service or in situ.*

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 62311:2008, *Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)*

Council Recommendation 1999/519/EC of 12 July 1999, *on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)*, Official Journal, L199, of 1999-7-30, p.59-70

Directive 2013/35/EU of 26 June 2013, *on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields)*. Official Journal, L179, of 2013-6-29, p. 1–21

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

action levels

levels provided for practical exposure assessment purposes. They are derived from exposure limit values. Respect of the action level will ensure respect of the relevant exposure limit value. If the action level is exceeded, it does not necessarily follow that the exposure limit value will be exceeded

3.2

basic restrictions

restrictions on exposure of the general public to electric, magnetic and electromagnetic fields that are based directly on established health effects and biological considerations

3.3

exposure limit values

restrictions on exposure of workers to electric, magnetic and electromagnetic fields that are based directly on established health effects and biological considerations

3.4**reference levels (or derived reference levels)**

levels provided for practical exposure assessment purposes. They are derived from basic restrictions. Respect of the reference level will ensure respect of the relevant basic restriction. If the reference level is exceeded, it does not necessarily follow that the basic restriction will be exceeded

4 Exposure conditions

Equipment which meets the limits for general public exposure as given in this document (Clause 5) will automatically meet the limits for workers without further testing.

Equipment which meets the limits for workers will not necessarily meet the limits for the general public and, unless intended only for workers' use when at work, equipment shall also be tested against general public limits.

Equipment intended only for use by workers when at work shall have this condition clearly identified in the user instructions. This use condition shall be identified in the test report.

All intended operating conditions as well as the reasonably foreseeable conditions of human exposure from the equipment shall be taken into account in the evaluation.

The reasonably foreseeable conditions of exposure should be based on realistic exposure and/or installation parameters representative of all readily-predictable human and system behaviour such as the duration of exposure, time varying of transmitted power, simultaneously operated frequency bands and time averaging as defined in normative limits.

5 Normative limits

For equipment intended for use by the general public the relevant exposure restrictions in Council Recommendation 1999/519/EC shall be applied. For equipment intended only for use by workers when at work, the relevant exposure restrictions in Directive 2013/35/EU shall be applied, with a statement as to whether the limit chosen provides protection against health effects or sensory effects or both.

Details of where limits are to be found in Directive 2013/35/EU and how they relate to test methods, are given in 6.3.

6 Evaluation of compliance**6.1 General**

The measurements and calculations to demonstrate equipment compliance shall be made according to EN 62311:2008, Clauses 4 and 5. The general considerations as defined in EN 62311:2008, Clauses 4 and 5 shall apply to all equipment.

6.2 Assessment of devices which emit multiple frequencies

In situations where simultaneous exposure to fields of different frequencies occurs, the possibility that these exposures will be additive in their effects shall be considered. Assessment based on such additive effects shall be performed separately for each effect in accordance with Tables 1 and 2 in Clause 6.3 of this standard.

6.3 Correspondence between limits and test procedures

EN 62311:2008 contains procedures for assessing compliance and combining multifrequency exposures in terms of primary exposure restrictions (basic restrictions and exposure limit values) or derived levels (reference levels or action levels). Table 1 gives correspondence between worker limits, test procedures and multifrequency exposure approaches. Table 2 gives correspondence between general public limits, test procedures and multifrequency exposure approaches.

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Table 1 – Correspondence between worker limits and test procedures

Exposure limits	Location in Directive 2013/35/EU	Test procedures	Multiple frequencies
Exposure Limit Values 0 – 1 Hz	Annex II Table A1	EN 62311:2008 Clause 5	Not applicable
Exposure Limit Values 1 Hz - 10 MHz	Annex II Tables A2, A3 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.2
Exposure Limit Values 100 kHz – 300 GHz	Annex III Tables A1, A2, A3 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.3
Action Levels 1 Hz - 10 MHz	Annex II Tables B1, B2, B3, B4 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.2
Action Levels 100 kHz – 300 GHz	Annex III Tables B1, B2 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.3

Table 2 – Correspondence between general public limits and test procedures

Exposure limits	Location in Council Recommendation 1999/519/EC	Test procedures	Multiple frequencies
Basic Restrictions 0 – 1 Hz	Annex II Table 1 and note 4	EN 62311:2008 Clause 5	Not applicable
Basic Restrictions 1 Hz – 10 MHz	Annex II Table 1 and notes 1–3 https://standards.iteh.ai/catalog/standards/sist/7e883c7e-750a-4d47-a010-a6c719a11d95/sist-en-50665-2018	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.2
Basic Restrictions 100 kHz – 300 GHz	Annex II Table 1 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.3
Reference levels 0 – 1 Hz	Annex III Tables 2 and 3 and notes	EN 62311:2008 Clause 5	Not applicable
Reference levels 1 Hz - 10 MHz	Annex III Tables 2 and 3 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.2
Reference levels 100 kHz - 300 GHz	Annex III Tables 2 and 3 and notes	EN 62311:2008 Clause 5	EN 62311:2008 Clause 7.1 and A.1.3

The test procedure and multifrequency exposure approach shall be selected according to Tables 1 and 2 to match the exposure limit selected in Clause 5 of this standard.

7 Assessment uncertainty

The uncertainty of the assessment shall be calculated and used for comparison with limits as defined in EN 62311:2008, Clause 6.

8 Evaluation report

The evaluation report shall be made according to EN 62311:2008, Clause 9.

Annex A (informative) Harmonized product standards

Table A.1 lists dedicated harmonized product or product family standard, and standards relating to low power equipment, applying to electronic and electrical equipment and regarding human exposure to electromagnetic fields which were harmonized under either Directive 2014/35/EU or Directive 2014/53/EU at the time of writing.

This list may change with time. The current list of standards harmonized under each Directive should be consulted at the time of use of this standard.

Table A.1 — Dedicated product- or product family standard, and standards relating to low power equipment, applying to electronic and electrical equipment and regarding human exposure to electromagnetic fields

EN 50360:2017 Product standard to demonstrate the compliance of wireless communication devices, with the restrictions related to human exposure to electromagnetic fields in the frequency range from 300 MHz to 6 GHz: devices used next to the ear.	Directive 2014/53/EU
EN 50364:2017. Product standard for human exposure to electromagnetic fields from devices operating in the frequency range 0 Hz to 300 GHz, used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications.	Directive 2014/35/EU, Directive 2014/53/EU
EN 50385:2017. Product standard to demonstrate the compliance of base station equipment with radiofrequency electromagnetic field exposure limits (110 MHz - 100 GHz), when placed on the market..	Directive 2014/53/EU e883c7e-750a-4d47-a010-65-2018
EN 50401:2017. Product standard to demonstrate the compliance of base station equipment with radiofrequency electromagnetic field exposure limits (110 MHz - 100 GHz), when put into service.	Directive 2014/53/EU
EN 50566:2017. Product standard to demonstrate the compliance of wireless communication devices, with the restrictions related to human exposure to electromagnetic fields in the frequency range from 300 MHz to 6 GHz: hand-held and body mounted devices in close proximity to the human body.	Directive 2014/53/EU
EN 50663:2017. Generic standard for the assessment of low power electronic and electrical equipment related to human exposure to electromagnetic fields (10 MHz to 300 GHz)	Directive 2014/35/EU, Directive 2014/53/EU
EN 50664:2017. Generic standard to demonstrate the compliance of equipment intended for use only by workers with limits on human exposure to electromagnetic fields (0 Hz - 300 GHz), when put into service or <i>in situ</i>	Directive 2014/35/EU, Directive 2014/53/EU