

# SLOVENSKI STANDARD

## SIST EN 50664:2018

01-januar-2018

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**Splošni standard za prikaz skladnosti opreme, ki jo uporabljajo samo delavci z omejitvami glede izpostavljenosti elektromagnetnim poljem (0 Hz-300 GHz), namenjene za uporabo ali in situ**

Product 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

Produktni standard za elektromagnetno sevanje gospodinjskih in podobnih električnih aparatov, ki jih uporabljajo prebivalci in delavci, z vidika izpostavljenosti ljudi

Product standard for electromagnetic fields from household appliances, and similar electrical apparatus used by the public and workers, with regard to human exposure

**Ta slovenski standard je istoveten z: EN 50664:2017**

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**ICS:**

13.280	Varstvo pred sevanjem	Radiation protection
29.020	Elektrotehnika na splošno	Electrical engineering in general
31.020	Elektronske komponente na splošno	Electronic components in general

**SIST EN 50664:2018**

**en**

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EUROPEAN STANDARD

**EN 50664**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2017

ICS 13.280

English Version

## Generic standard to demonstrate the compliance of equipment used by workers with limits on exposure to electromagnetic fields (0 Hz - 300 GHz), when put into service or in situ

Norme de produit pour démontrer la conformité des équipements, destinés à être utilisés uniquement par des travailleurs, aux limites d'exposition des personnes aux champs électromagnétiques (0 Hz - 300 GHz), au moment de la mise en service ou sur site

Fachgrundnorm für den Nachweis der Übereinstimmung von Geräten, die zur ausschließlichen Nutzung durch Arbeitnehmer vorgesehen sind, bei ihrer Inbetriebnahme oder am Aufstellungsort mit Grenzwerten für die 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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 50664:2017) 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 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 50664:2017 (E)

## 1 Scope

The object of this generic standard is to provide a route for evaluation of equipment used by workers against limits on human exposure to electric, magnetic and electromagnetic fields, and induced and contact current when it is put into service in its operational environment, and also for *in situ* or post-market evaluation of such equipment.

The frequency range covered is 0 Hz to 300 GHz.

This standard applies to equipment for which no dedicated harmonized putting-into-service or *in situ* product standard regarding worker exposure to electromagnetic fields exists. If such a standard does exist then it should be used. At the time of writing there is one applicable standard, for base station equipment, and this should be used for putting-into service or *in situ* assessment of such equipment with respect to worker exposure to electromagnetic fields:

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

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

NOTE Other standards can apply to equipment 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.

## 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 50499:2008, *Procedure for the assessment of the exposure of workers to electromagnetic fields*

EN 62311:2008, *Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz) (IEC 62311:2007)*

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

#### 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

### 3.3

#### worker

person exposed to electromagnetic fields under the conditions defined in Directive 2013/35/EU

## 4 Exposure conditions

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 Limits

The 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 6.2.

## 6 Evaluation of compliance

### 6.1 A priori compliant equipment

The equipment is a priori compliant with the requirements of this standard (either putting into service or *in situ*, or both) if it is listed as a priori compliant in Table 1 of EN 50499:2008, and no further assessment is necessary.

NOTE For item T1.2 of Table 1 of EN 50499:2008, compliance with this standard is only ensured if a harmonized EMF standard has been used for CE marking for general public use. The basis for this is that if equipment meets general public limits then it will meet worker limits and that that will be the case even for simultaneous exposure from multiple pieces of equipment provided they all have been shown to be compliant to general public limits.

### 6.2 General

Unless equipment is a priori compliant as defined in 6.1 of this standard or there exists an equipment-specific basic standard as described in 6.2 of this standard, measurements, calculations and other assessments to demonstrate compliance shall be made according to EN 62311:2008, 5.7, t. EN 62311:2008 contains procedures for assessing compliance and combining multifrequency exposures. Table 1 gives correspondence between limits, test procedures and multifrequency exposure approaches.

Table 1 – correspondence between 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 Clauses 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

The test procedure and multifrequency exposure approach shall be selected according to Table 1 to match the exposure limit.

The exposure conditions described in Clause 4 of this standard shall apply in all cases rather than any conflicting usage or exposure conditions described in the standards listed in Table 1.

### 6.3 Putting into service

When the equipment is put into service in its operational environment and operated in accordance with the manufacturers' specification, it fulfils the requirements of this standard if workers are not, under any reasonably foreseeable conditions, able to encounter any location where the total exposure to electromagnetic fields may exceed the limits chosen in Clause 5, taking account of contributions to exposure from all other electromagnetic field sources in the vicinity in addition to the exposure contribution from the product.

### 6.4 *In situ*

When the equipment is used in its operational environment ("*in situ*") in accordance with the manufacturers' specification, it fulfils the requirements of this standard if workers are not, under any reasonably foreseeable conditions, able to encounter any location where the total exposure to electromagnetic fields may exceed the limits chosen in Clause 5, taking account of contributions to exposure from all other electromagnetic field sources in the vicinity in addition to the exposure contribution from the product.

## 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 ZZA (informative)

### Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered

This European standard has been prepared under a Commission's standardization request relating to harmonized standards in the field of the Low Voltage Directive, M/511, to provide one voluntary means of conforming to safety objectives of Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits [2014 OJ L96].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding safety objectives of that Directive, and associated EFTA regulations.

**Table ZZA.1 — Correspondence between this European standard and Annex I of Directive 2014/35/EU**

Safety objectives of Directive 2014/35/EU	Clause(s) / subclause(s) of this EN	Remarks / Notes
Annex I (2) (a) and (b)	5 Limits	Annex I (2) of Directive 2014/35/EU requires that measures of a technical nature shall be laid down in order to ensure that:
Annex I (2) (a) and (b)	6 Evaluation of compliance	
Annex I (2) (a) and (b)	8 Evaluation Report	
	<a href="https://standards.iteh.ai/catalog/standards/sist/f8633e2e-891e-4481-984f-9be0e368fb05/sist-en-50664-2018">SIST EN 50664:2018</a> <a href="https://standards.iteh.ai/catalog/standards/sist/f8633e2e-891e-4481-984f-9be0e368fb05/sist-en-50664-2018">https://standards.iteh.ai/catalog/standards/sist/f8633e2e-891e-4481-984f-9be0e368fb05/sist-en-50664-2018</a>	<p>(a) persons and domestic animals are adequately protected against the danger of physical injury or other harm which might be caused by direct or indirect contact;</p> <p>(b) temperatures, arcs or radiation which would cause a danger, are not produced;</p> <p>This document only provides health and safety protection against exposure to electromagnetic fields.</p> <p>Compliance with the requirements of this standard provides health and safety protection, in accordance with Annex I (2) (a) and (b) of Directive 2014/35/EU, against exposure to electromagnetic fields only. It does not address any other essential requirement of Directive 2014/53/EU than Annex I (2) (a) and (b) of Directive 2014/35/EU.</p> <p>The degree of the protection of health and safety of persons and of domestic animals and the protection of property provided by this standard is that provided by the limits selected.</p>