SLOVENSKI STANDARD
SIST EN 50364:2018

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Nadomešča:
SIST EN 50364:2010

Produktni standard za izpostavljenost ljudi elektromagnetnim sevanjem naprav, ki delujejo v frekvenčnem območju od 0 Hz do 300 GHz in se uporabljajo za elektronski nadzor blaga (EAS), radiofrekvenčno razpoznavanje (RFID) in podobne namene

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

Begrenzung der Exposition von Personen gegenüber elektromagnetischen Feldern von Geräten, die im Frequenzbereich von 0 Hz bis 300 GHz betrieben und in der elektronischen Artikelüberwachung (en: EAS), Hochfrequenz-Identifizierung (en: RFID) und ähnlichen Anwendungen verwendet werden

Norme de produit pour l'exposition humaine aux champs électromagnétiques émis par les dispositifs fonctionnant dans la gamme de fréquences de 0 Hz à 300 GHz, utilisés pour la surveillance électronique des objets (EAS), l'identification par radiofréquence (RFID) et les applications similaires

Ta slovenski standard je istoveten z: **EN 50364:2018**

ICS:

13.280	Varstvo pred sevanjem	Radiation protection
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

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EUROPEAN STANDARD
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English Version

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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.

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

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European foreword

This document (EN 50364:2018) 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)	2018-10-09
–	latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2020-10-09

This document supersedes EN 50364:2010.

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 and the Low Voltage Directive 2014/35/EU.

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

This European Standard is meant to be read in conjunction with prEN 62311:2017 *"Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)".*

1 Scope

This product standard applies to devices operating within the frequency range 0 Hz to 300 GHz, used in electronic article surveillance (EAS), radio frequency identification (RFID) and similar applications, in relation to exposure to electromagnetic fields

The object of this product 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.

NOTE 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.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 62369-1:2009, *Evaluation of human exposure to electromagnetic fields from short range devices (SRDs) in various applications over the frequency range 0 GHz to 300 GHz - Part 1: Fields produced by devices used for electronic article surveillance, radio frequency identification and similar systems (IEC 62369-1:2008)*

prEN 62311:2017, *Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz) (IEC/CDV 62311:201X)]*

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 level
level provided for practical exposure assessment purposes, derived from exposure limit values

Note 1 to entry: 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 restriction
restriction on exposure of the general public to electric, magnetic and electromagnetic fields that is based directly on established health effects and biological considerations

3.3
exposure limit value
restriction on exposure of workers to electric, magnetic and electromagnetic fields that is based directly on established health effects and biological considerations

3.4
reference level
derived reference level
level provided for practical exposure assessment purposes, derived from basic restrictions

Note 1 to entry: 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.

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 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 product 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.

In cases where the reasonably foreseeable exposure conditions for workers are different from the reasonably foreseeable exposure conditions for the general public, then a separate assessment shall be made covering those differences.

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 Assessment of compliance

6.1 General

The device being assessed is deemed to fulfil the requirements of this standard if all the measured and calculated values performed according to Clause 6, are less than or equal to the applicable exposure limits defined in Clause 5

Equipment complying with the requirements for the general public is deemed to comply with the requirements for workers without further testing.

Measurements and calculations to demonstrate equipment compliance shall be made according to EN 62369-1:2009, Clause 4. The general conditions as defined in that clause shall apply to all equipment.

The measuring or calculation distance shall be the closest reasonably foreseeable human exposure distance measured from the edge or face of the equipment nearest to the relevant position of exposure. The chosen measuring or calculation distance, including the values given in EN 62369-1:2009, Table 1 and Figures 3 to 11, if used, shall be justified in the evaluation report as being the closest reasonable foreseeable human exposure distance.

NOTE When using numerical modelling methods, in some cases, the homogeneous hand model in EN 62369-1:2009, Annex B can cause artificial hot-spots to be introduced because of the sharp edges on the model. In order to reduce this possibility the model can be used with radius edges up to a maximum of 2.5mm radius; which is compatible with the finger spacing used in the original model.

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.

The operating nature of equipment covered by this product standard is such that they operate on one or more discrete frequencies with other frequencies suppressed by more than 30 dB. Where this is the case, the exposure assessment shall be made at the declared operating frequency or frequencies without requiring all other frequencies to be assessed. If this is not the case, then the exposure assessment shall be made at all frequencies that are not suppressed by more than 30 dB.

6.3 Correspondence between limits and test procedures

EN 62369-1:2009 allows compliance to be assessed against either primary exposure restrictions (basic restrictions for the public, exposure limit values for workers) or derived levels (reference levels for the public, action levels for workers).

prEN 62311:2017 contains procedures for 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.

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 Hz – 1 Hz	Annex II Table A1 and accompanying text	EN 62369–1:2009, Clause 4.4 or 4.5	Not Applicable
Exposure Limit Values 1 Hz - 10 MHz	Annex II Tables A2, A3, with accompanying text and notes	EN 62369–1:2009, Clause 4.4 or 4.5	[prEN 62311:2017, Clause 7.1 and A1.2]
Exposure Limit Values 100 kHz – 300 GHz	Annex III Tables A1, A2, A3, with accompanying text and notes	EN 62369–1:2009, Clause 4.3, 4.4 or 4.5	[prEN 62311:2017, Clause 7.1 and A1.3]
Action Levels (electric and magnetic fields) 1 Hz - 10 MHz	Annex II Tables B1, B2, with accompanying text and notes	EN 62369–1:2009, Clause 4.2	[prEN 62311:2017, Clause 7.1 and A1.2]
Action Levels (electric and magnetic fields) 100 kHz – 300 GHz	Annex III Table B1, with accompanying text and notes	EN 62369–1:2009, Clause 4.2	[prEN 62311:2017, Clause 7.1 and A1.3]
Action Levels (contact current) 0 Hz – 1 Hz	Annex II Table B3, with accompanying text and notes	EN 62369–1:2009, Clause 4.6	Not Applicable
Action Levels (contact current) 1 Hz - 10 MHz	Annex II Table B3, with accompanying text and notes	EN 62369–1:2009, Clause 4.6	[prEN 62311:2017, Clause 7.1 and A1.2]

Exposure limits	Location in Directive 2013/35/EU	Test procedures	Multiple frequencies
Action Levels (contact and limb currents) 10 MHz – 110 MHz	Annex III Table B2, with accompanying text and notes	EN 62369–1:2009, Clause 4.6	[prEN 62311:2017, Clause 7.1 and A1.3]

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 Hz – 1 Hz	Annex II Table 1, with accompanying text and notes	EN 62369–1:2009, Clause 4.4 or 4.5	Not Applicable
Basic Restrictions 1 Hz – 10 MHz	Annex II Table 1, with accompanying text and notes	EN 62369–1:2009, Clause 4.4 or 4.5	[prEN 62311:2017, Clause 7.1 and A1.2]
Basic Restrictions 100 kHz – 300 GHz	Annex II Table 1, with accompanying text and notes	EN 62369–1:2009, Clause 4.3, 4.4 or 4.5	[prEN 62311:2017, Clause 7.1 and A1.3]
Reference levels (electric and magnetic fields) 0 Hz - 1 Hz	Annex III Table 2, with accompanying text and notes	EN 62369–1:2009, Clause 4.2	Not Applicable
Reference levels (electric and magnetic fields) 1 Hz - 10 MHz	Annex III Table 2, with accompanying text and notes	EN 62369–1:2009, Clause 4.2	[prEN 62311:2017, Clause 7.1 and A1.2]
Reference levels (electric and magnetic fields) 100 kHz - 300 GHz	Annex III Table 2, with accompanying text and notes	EN 62369–1:2009, Clause 4.2	[prEN 62311:2017, Clause 7.1 and A1.3]
Reference levels (contact currents) 0 Hz - 1 Hz	Annex III Table 3 and accompanying text	EN 62369–1:2009, Clause 4.6	Not Applicable
Reference levels (contact currents) 1 Hz - 10 MHz	Annex III Table 3 and accompanying text	EN 62369–1:2009, Clause 4.6	[prEN 62311:2017, Clause 7.1 and A1.2]
Reference levels (contact currents) 10 MHz - 110 MHz	Annex III Table 3 and accompanying text	EN 62369–1:2009, Clause 4.6	[prEN 62311:2017, Clause 7.1 and A1.3]
Reference levels (limb currents) 10 MHz - 110 MHz	Annex III, accompanying text to Table 3	EN 62369–1:2009, Clause 4.6	[prEN 62311:2017, Clause 7.1 and A1.3]