



SLOVENSKI STANDARD

SIST EN 50385:2018

01-januar-2018

Nadomešča:

SIST EN 50384:2003

SIST EN 50385:2003

Produktni standard za prikaz skladnosti opreme baznih postaj z mejnimi vrednostmi v povezavi z izpostavljenostjo elektromagnetnim sevanjem (110 MHz - 100 GHz), ko je dana na trg

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

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Produktnorm zur Konformitätsüberprüfung von Mobilfunk-Basisstationen und stationären Teilnehmergeräten für schnurlose Telekommunikationsanlagen im Hinblick auf die Basisgrenz- und Referenzwerte bezüglich der Exposition von Personen gegenüber elektromagnetischen Feldern (110 MHz bis 40 GHz) - Allgemeinbevölkerung

Norme de produit pour démontrer la conformité des équipements de station de base aux limites d'exposition aux champs électromagnétiques radiofréquences (110 MHz - 100 GHz), lors de leur mise sur le marché (110 MHz - 100 GHz)

Ta slovenski standard je istoveten z: EN 50385:2017

ICS:

13.280	Varstvo pred sevanjem	Radiation protection
33.120.40	Antene	Aerials

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en

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EUROPEAN STANDARD

EN 50385

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2017

ICS 33.120.40

Supersedes EN 50385:2002

English Version

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

Norme de produit pour démontrer la conformité des équipements de station de base aux limites d'exposition aux champs électromagnétiques radiofréquences (110 MHz - 100 GHz), lors de leur mise sur le marché (110 MHz - 100 GHz)

Produktnorm zum Nachweis der Übereinstimmung von Einrichtungen für Basisstationen bei ihrer Inverkehrbringung mit Grenzwerten für die Exposition von Personen gegenüber hochfrequenten elektromagnetischen Feldern (110 MHz bis 100 GHz)

This European Standard was approved by CENELEC on 2017-07-24. 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.

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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 50385:2017) has been prepared by CLC/TC 106X "Electromagnetic fields in the human environment".

The following dates are fixed:

- latest date by which this document has to be (dop) 2018-07-24 implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2020-07-24 with this document have to be withdrawn

This document supersedes EN 50385:2002.

EN 50385:2017 includes the following significant technical changes with respect to EN 50385:2002:

- 1) the standard requires that the assessment has to take into account all reasonably foreseeable operating conditions (Clause 4);
- 2) the standard covers equipment intended for use only by workers as well as equipment intended for use by the general public and different limits are given for each case (Clause 5).

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 EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

EN 50385:2017 (E)**1 Scope**

This product standard is related to human exposure to radiofrequency electromagnetic fields transmitted by base station equipment in the frequency range 110 MHz to 100 GHz.

The object is to assess the compliance of such equipment with the general public basic restrictions (directly or indirectly via compliance with reference levels) and the workers' exposure limit values (directly or indirectly via compliance with action levels), when it is placed on the market.

For low power devices the applicable product standard is EN 50663:2017.

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 62232:2017, *Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure (IEC 62232:2017)*

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 L 199, 30.6.1999, p. 59-70)*

Directive 2013/35/EU of the European Parliament and of the Council 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) (20th individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) and repealing Directive 2004/40/EC (Official Journal L 179, 29.6.2013, p. 1–21)*

3 Terms and definitions

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

3.1**action levels**

levels which are provided for practical exposure assessment purposes and which are 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 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**base station****BS**

fixed equipment including the radio transmitter and associated antenna(s) as used in wireless telecommunications networks

Note 1 to entry: A base station comprises the hardware, including transceivers, necessary to transmit and receive radio signals. Base stations with integrated antennas, base stations with connectors for external antennas and base stations intended for use with external antennas not supplied by the same manufacturer are covered.

Note 2 to entry: Examples of BS equipment include base stations for mobile communications, radio-relays, wireless local area network access points, base stations for cordless telephony, etc. that are not normally used in close proximity (i.e. within 20 cm) to the human body.

Note 3 to entry: Examples of wireless telecommunications networks include those used in mobile telecommunication systems according to ITU-R M.1224–1 "Vocabulary of terms for International Mobile

Telecommunications (IMT)", wireless local area networks, public safety networks and fixed wireless systems (including radio-relay systems, point-to-point communication and point-to-multipoint communication according to ITU-R F.592-4 "Vocabulary of terms for the fixed service" and ITU-R F.1399-1 "Vocabulary of terms for Wireless Access").

Note 4 to entry: Equipment for radar, TV and radio broadcast services is not considered to be a BS.

3.4

compliance boundary

volume outside which any point of investigation is deemed to be compliant

3.5

continuous exposure

exposure for a duration exceeding the averaging time

3.6

equivalent isotropic radiated power

EIRP

product of the radiofrequency input power to an antenna and the absolute gain of the antenna in a given direction

3.7

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

3.8

radio frequency

RF

for purposes of these safety considerations, frequency range of interest going from 110 MHz to 100 GHz

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3.9

reference levels (or derived reference levels)

levels which are provided for practical exposure assessment purposes and which are 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.

3.10

worker

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

4 Exposure conditions

RF exposure from the product 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.

RF exposure from the product which meets the limits for workers will not necessarily meet the limits for the general public and, unless RF exposure conditions are restricted to workers' when at work, equipment shall also be tested against general public limits.

RF exposure conditions restricted to workers' when at work shall have this condition clearly identified in the product documentation. This 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

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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 the assessment of general public exposure from the product, the relevant limits specified as basic restrictions, in Council Recommendation 1999/519/EC Annex II Table 1, or reference levels, in Council Recommendation 1999/519/EC Annex III Table 2, and the accompanying notes to these tables, shall be applied.

For the assessment of worker exposure from the product, the relevant limits specified as exposure limit values, in Directive 2013/35/EU Annex III Tables A.1 and A.3, or action levels in Directive 2013/35/EU Annex III Table B1, and the accompanying notes to these tables, shall be applied.

6 Evaluation of compliance

The evaluation of the compliance boundary of the product shall be performed by calculation and/or measurement in accordance with EN 62232:2017, 6.1 and Clause 8 using the maximum transmitted power for each transmit frequency band of the base station and the applicable normative limits defined in Clause 5.

When applying EN 62232:2017, 6.1 and Clause 8, the base station shall be operating in accordance with the manufacturer's specifications. Radiofrequency exposure evaluation of base stations used with external antennas shall be performed for at least one typical system configuration consisting of a combination of the base station and a representative antenna system.

7 Assessment uncertainty

The uncertainty of the assessment shall be calculated and used for comparison with limits as defined in EN 62232:2017, Clause 9 and 6.1.6. <https://standards.iteh.ai/catalog/standards/sist/a644624-0a11-4088-a495-3dadb2c5e64f/sist-en-50385-2018>

8 Documentation

The legal entity responsible for placing the product on the market shall provide with the base station the following information:

- 1) maximum transmitted power for each transmit frequency band of the base station;
- 2) antenna characteristics (gain, horizontal and vertical beamwidth) for each transmit frequency band, total EIRP, and, if the product is used with external antennas, a detailed description of at least one typical normal configuration, including antenna system (feeders, connectors, combiners, etc.);
- 3) compliance boundaries (if not zero distance) for general public and workers' exposure;
- 4) information related to the radiofrequency exposure evaluation (methods, uncertainties, etc.) according to EN 62232:2017, Clause 10, including the relevant parameters related to reasonably foreseeable conditions of radiofrequency exposure;
- 5) guidelines on how to install the product or the external antennas in order to ensure that the general public is outside the compliance boundaries, including installation class according to EN 62232:2017, Table 2 if applicable;
- 6) guidelines on how to comply with the applicable normative limits defined in Clause 5 for workers during installation, maintenance and repair of the product.

9 Assessment of compliance

The product is deemed to fulfil the requirements of this standard if the documentation as requested in Clause 8 is available and if, when assessing the compliance boundary according to Clause 6, the evaluation results are less than or equal to the applicable normative limits defined in Clause 5. The results of the radiofrequency exposure evaluation as performed in Clause 6 shall be compared directly to the normative limits.

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