SLOVENSKI STANDARD
SIST EN 62493:2015/A1:2022

01-oktober-2022

Ocenjevanje opreme za razsvetljavo z vidika izpostavljenosti ljudi elektromagnetnim poljem - Dopolnilo A1 (IEC 62493:2015/AMD1:2022)

Assessment of lighting equipment related to human exposure to electromagnetic fields (IEC 62493:2015/AMD1:2022)

Beurteilung von Beleuchtungseinrichtungen bezüglich der Exposition von Personen gegenüber elektromagnetischen Feldern (IEC 62493:2015/AMD1:2022)

Évaluation d'un équipement d'éclairage relativement à l'exposition humaine aux champs électromagnétiques (IEC 62493:2015/AMD1:2022)

Ta slovenski standard je istoveten z: **EN 62493:2015/A1:2022**

ICS:

17.220.01	Elektrika. Magnetizem. Splošni vidiki	Electricity. Magnetism. General aspects
91.160.01	Razsvetljava na splošno	Lighting in general

SIST EN 62493:2015/A1:2022 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62493:2015/A1

August 2022

ICS 29.020; 29.140.99

English Version

Assessment of lighting equipment related to human exposure to electromagnetic fields (IEC 62493:2015/AMD1:2022)

Évaluation d'un équipement d'éclairage relativement à l'exposition humaine aux champs électromagnétiques (IEC 62493:2015/AMD1:2022)

Beurteilung von Beleuchtungseinrichtungen bezüglich der Exposition von Personen gegenüber elektromagnetischen Feldern (IEC 62493:2015/AMD1:2022)

This amendment A1 modifies the European Standard EN 62493:2015; it was approved by CENELEC on 2022-07-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, 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: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 34/827/CDV, future IEC 62493/AMD1, prepared by IEC/TC 34 "Lighting" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62493:2015/A1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-04-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-07-20

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 Standardization Request given to CENELEC by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62493:2015/AMD1:2022 was approved by CENELEC as a European Standard without any modification.

IEC 62493

Edition 2.0 2022-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

AMENDMENT 1
AMENDEMENT 1

Assessment of lighting equipment related to human exposure to electromagnetic fields

Évaluation d'un équipement d'éclairage relativement à l'exposition humaine aux champs électromagnétiques

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.020; 29.140.99

ISBN 978-2-8322-3827-1

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

ASSESSMENT OF LIGHTING EQUIPMENT RELATED TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

AMENDMENT 1

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to IEC 62493:2015 has been prepared by IEC technical committee 34: Lighting.

The text of this Amendment is based on the following documents:

Draft	Report on voting
34/827/CDV	34/906/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications/.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Replace the second paragraph of the introduction with the following new paragraph:

This standard is designed to assess, by measurements and/or calculations, electromagnetic (EM) fields and their potential effect on the human body by reference to exposure levels of the general public given by ICNIRP 2020 [1][1], ICNIRP 2010 [2], IEEE C95.1:2005 [3] and IEEE C95.6:2002 [4]. The exposure levels with which to comply are basic restrictions (both ICNIRP- and IEEE-based).

3 Terms, definitions, physical quantities, units and abbreviations

3.1.14
intentional radiator

Add the following Note to entry to terminological entry 3.1.14:

Note 1 to entry: Devices that are designed to only receive electromagnetic fields from other sources are not considered as intentional radiators. For example, near field communication (NFC) transducers are not considered as intentional radiators.

4 Limits

4.1 General

Replace the first paragraph of 4.1 with the following new paragraph and note:

The basic restrictions or reference levels for the general public of either IEEE C95.1-2005 or ICNIRP (ICNIRP 2020 and ICNIRP 2010) are used, see Annex C.

NOTE Reference levels have been taken from ICNIRP publications however, basic restrictions of IEEE and ICNIRP are essentially the same.

6 Measurement procedure for the Van der Hoofden test

6.1 General

Replace the first sentence of 6.1 with the following new sentence:

The assessment method is based on basic restrictions given in both ICNIRP 2020 and ICNIRP 2010, or in IEEE C95.1-2005.

7.2.3 Determination of the low-power exclusion level

Replace the third sentence of 7.2.3 with the following new sentence:

---

1 Numbers in square brackets refer to the Bibliography.

For instance for ICNIRP 2020, general public exposure, the worst case low-power exclusion level is 20 mW for head and trunk.

C.2 ICNIRP

Replace the existing Clause C.2, including its title, with the following new Clause C.2:

C.2 ICNIRP basic restrictions

C.2.1 Basic restrictions - SAR

Table C.1 provides the basic restrictions (SAR) for general public exposure to time varying electric and magnetic fields for frequencies between 100 kHz and 300 GHz (see [1]):

Table C.1 – Basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies between 100 kHz and 300 GHz

Frequency range	Average SAR (whole body) W/kg	Localised SAR (head and trunk) W/kg	Localised SAR (limbs) W/kg
100 kHz to 6 GHz	0,08	2	4
> 6 GHz to 300 GHz	0,08	NA[a]	NA[a]
[a] NA signifies "not applicable" and does not need to be taken into account when determining compliance.			

C.2.2 Basic restrictions – Internal electric field

Table C.2 provides the basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies up to 10 MHz (see [1], [2]):

Table C.2 – Basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies up to 10 MHz

Exposure characteristic	Frequency range	Internal electric field V/m
CNS tissue of the head	1 Hz to 10 Hz	$0{,}1/f$
	10 Hz to 25 Hz	0,01
	25 Hz to 1 kHz	$4 \times 10^{-4} f$
	1 kHz to 3 kHz	0,4
	3 kHz to 10 MHz	$1{,}35 \times 10^{-4} f$
All other tissues (head and body)	1 Hz to 3 kHz	0,4
	3 kHz to 10 MHz	$1{,}35 \times 10^{-4} f$
f is the frequency in Hz. All values are RMS.		

C.2.3 Changes introduced by ICNIRP 2020 with respect to ICNIRP 1998 and ICNIRP 2010

Changes for the basic restrictions (SAR) from ICNIRP 1998 to ICNIRP 2020 have been made by (i) extending the considered spectrum up to 100 GHz, while (ii) between 100 kHz and 6 GHz limits remain unchanged and (iii) for frequencies above 6 GHz it has been found that they do not need to be taken into account when determining compliance.

For the basic restrictions (internal electric field) ICNIRP 2010 remains applicable for frequencies below 100 kHz, while those above have been replaced by ICNIRP 2020. In ICNIRP 2020 up to 10 MHz a general limit of $1{,}35 \times 10^{-4} \times f$ is applicable, without differentiation between central nervous system (CNS) tissue of the head and other.

As a result, products found compliant with the basic restrictions of ICNIRP 1998 and ICNIRP 2010 are compliant with the basic restrictions of ICNIRP 2020, given that no changes have been introduced in the lighting equipment relevant frequency ranges (SAR: 20 kHz to 10 MHz and 100 kHz to 300 MHz for the internal electric field).

Figure D.4 – Induced internal electric field and associated limit levels

*Replace in the key to Figure D.4, "*ICNIRP2010 limit CNS tissue head from table" *with* "ICNIRP 2010/ICRIRP 2020 limit CNS tissue head from table" *as follows:*

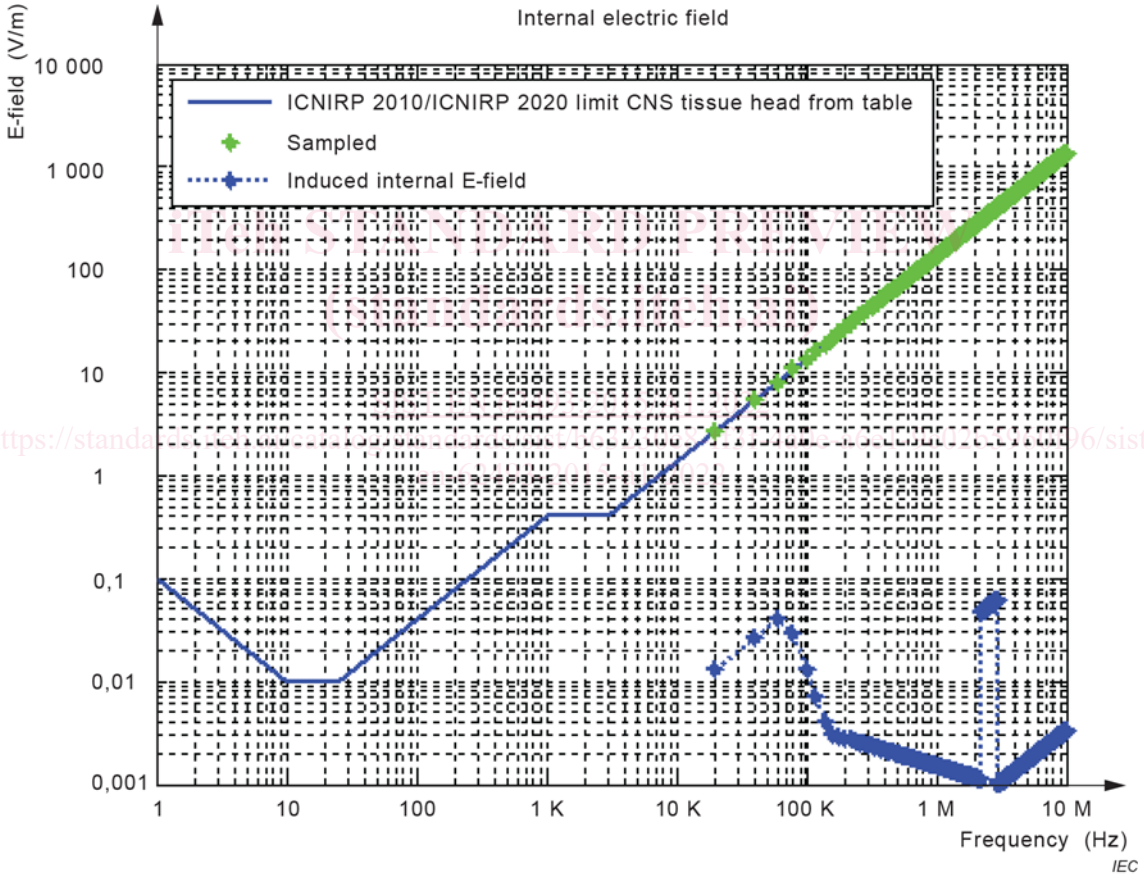

Figure D.4 – Induced internal electric field and associated limit levels

I.3 Properties of antennas in lighting applications

Replace in the seventh paragraph beginning with "Figure I.4 shows the electric field...", the sixth sentence beginning with "When looking at the impact..." with the following new sentence:

When looking at the impact of various power levels one can see that an input power of 20 mW always gives field levels well below the ICNIRP 2020 worst-case reference of 28 V/m.