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VALGUSTUSSEADMETE HINDAMINE INIMESELE TOIMIVA ELEKTROMAGNETVÄLJA JÄRGI

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62493:2015+A1:2022 sisaldab Euroopa standardi EN 62493:2015 ja selle muudatuse A1:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 62493:2015+A1:2022 consists of the English text of the European standard EN 62493:2015 and its amendment A1:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.05.2015, muudatus A1 05.08.2022.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 08.05.2015, for A1 05.08.2022.
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English Version

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

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

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

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 34/222/FDIS, future edition 2 of IEC 62493, prepared by IEC/TC 34 "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62493:2015.

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CISPR 15:2013	NOTE	Harmonized as EN 55015:2013 (not modified).
CISPR 16-1-2	NOTE	Harmonized as EN 55016-1-2.
CISPR 16-4-2:2003	NOTE	Harmonized as EN 55016-4-2:2004 ¹⁾ (not modified).
IEC 62226-2-1:2004	NOTE	Harmonized as EN 62226-2-1:2005 (not modified).

¹⁾ Superseded by EN 55016-4-2:2011 (CISPR 16-4-2:2011).

A1 Amendment A1 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.

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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**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**



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IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
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IEC 62493

Edition 2.1 2022-06
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**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
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CONTENTS

FOREWORD	6
AMENDMENT A1 FOREWORD	8
INTRODUCTION	9
1 Scope	10
2 Normative references	10
3 Terms, definitions, physical quantities, units and abbreviations	11
3.1 Terms and definitions	11
3.2 Physical quantities and units	13
3.3 Abbreviations	14
4 Limits	14
4.1 General	14
4.2 Unintentional radiating part of lighting equipment	14
4.2.1 General	14
4.2.2 Lighting equipment deemed to comply with the Van der Hoofden test without testing	15
4.2.3 Application of limits	15
4.3 Intentional radiating part of lighting equipment	15
5 General requirements Van der Hoofden test	16
5.1 Measurand	16
5.2 Supply voltage and frequency	16
5.3 Measurement frequency range	17
5.4 Ambient temperature	17
5.5 Measurement equipment requirements	17
5.6 Measurement instrumentation uncertainty	18
5.7 Test report	18
5.8 Evaluation of results	19
6 Measurement procedure for the Van der Hoofden test	19
6.1 General	19
6.2 Operating conditions	19
6.2.1 Operating conditions for lighting equipment	19
6.2.2 Operating conditions for specific lighting equipment	19
6.2.3 Operating conditions for lighting equipment with intentional radiators	20
6.3 Measurement distance	20
6.4 Measurement set-up	20
6.4.1 General	20
6.4.2 Measurement set-up for specific lighting equipment	21
6.5 Location of measurement test head	21
6.6 Calculation of the results	21
7 Assessment procedure intentional radiators	21
7.1 General	21
7.2 Low-power exclusion method	21
7.2.1 General	21
7.2.2 Determination of the total radiated power	22
7.2.3 Determination of the low-power exclusion level	22
7.2.4 Summation of multiple transmitters	22

7.3	Application of the EMF product standard for body worn-equipment	22
7.4	Application of the EMF product standard for base stations	22
7.5	Application of another EMF standard	22
Annex A	(normative) Measurement distances	24
Annex B	(informative) Location of measurement test head	25
Annex C	(informative) Exposure limits	30
C.1	General.....	30
C.2	^{A1} ICNIRP basic restrictions	30
C.2.1	Basic restrictions - SAR	30
C.2.2	Basic restrictions – Internal electric field	30
C.2.3	Changes introduced by ICNIRP 2020 with respect to ICNIRP 1998 and ICNIRP 2010 ^{A1}	30
C.3	IEEE	31
Annex D	(informative) Rationale measurement and assessment method	32
D.1	General.....	32
D.2	Induced internal electric field	32
D.2.1	General	32
D.2.2	Induced electric field due to the magnetic field; $E_{\text{eddy}}(f_i, d_{\text{loop}})$	34
D.2.3	Induced electric field due to the electric field; $E_{\text{cap}}(f_i, d)$	39
D.3	Thermal effects from 100 kHz to 300 GHz	42
D.3.1	General	42
D.3.2	The 100 kHz to 30 MHz contribution to the thermal effects	43
D.3.3	The 30 MHz to 300 MHz contribution to the thermal effects	44
D.3.4	Overall conclusion for the contribution to thermal effects	45
Annex E	(normative) Practical internal electric-field measurement and assessment method	46
E.1	Measurement of induced internal electric field.....	46
E.2	Calculation program.....	46
E.3	Compliance criterion for the Van der Hoofden head test.....	47
Annex F	(normative) Protection network	48
F.1	Calibration of the protection network	48
F.2	Calculation of the theoretical characteristic of the protection network.....	49
Annex G	(informative) Measurement instrumentation uncertainty	51
Annex H	(informative) Equipment deemed to comply	53
Annex I	(informative) Intentional radiators	55
I.1	General.....	55
I.2	Intentional radiators in lighting equipment	55
I.3	Properties of antennas in lighting applications	55
I.4	Exposure assessment approach.....	61
I.4.1	General	61
I.4.2	Determination of average total radiated power $P_{\text{int,rad}}$	61
I.4.3	Determination of the low-power exclusion level P_{max}	62
I.5	Multiple transmitters in a luminaire.....	62
I.6	Exposure to multiple luminaires	63
I.7	References in Annex I.....	63
Annex ZA	(normative) Normative references to international publications with their corresponding European publications	65

Bibliography	66
Figure 1 – Compliance routes and pass/fail criteria for lighting equipment	16
Figure 2 – The Van der Hoofden test head	17
Figure 3 – Example of a protection circuit	18
Figure 4 – Measurement set-up	20
Figure 5 – Compliance demonstration procedure for the intentional-transmitter part of the lighting equipment.....	23
Figure B.1 – Location of measurement point in the transverse direction of lighting equipment – side view	25
Figure B.2 – Location of measurement points in the longitude direction of lighting equipment – side view	25
Figure B.3 – Location of measurement points in the longitude direction of lighting equipment; in the direction of illumination	26
Figure B.4 – Location of measurement point for lighting equipment with rotationally symmetrical dimensions	26
Figure B.5 – Location of measurement point for lighting equipment with rotationally symmetrical dimensions; in the direction of illumination	27
Figure B.6 – Location of measurement point for lighting equipment with the same dimensions in the x- and y- axis	27
Figure B.7 – Location of measurement point(s) for lighting equipment with single capped lamp (360° illumination)	28
Figure B.8 – Location of measurement points for lighting equipment with a remote controlgear	28
Figure B.9 – Location of measurement point for an independent electronic converter	29
Figure B.10 – Location of measurement point(s) for an uplighter (floor standing/suspended)	29
Figure D.1 – Overview measurement and assessment method	32
Figure D.2 – Distances of the head, loop and measurement set-up	34
Figure D.3 – Maximum current in the 2 m LLA as function of the frequency	36
Figure D.4 – Induced internal electric field and associated limit levels	38
Figure D.5 – Example of magnetic-field test result using the LLA	39
Figure D.6 – Distances of the head and measurement set-up	40
Figure D.7 – Plot of Equation (D.20)	40
Figure D.8 – Example of the CM-current measured using a conducted emission test	44
Figure F.1 – Test set-up for normalization of the network analyser	48
Figure F.2 – Test set-up for measurement of the voltage division factor using a network analyser.....	49
Figure F.3 – Calculated theoretical characteristic for the calibration of the protection network.....	50
Figure H.1 – Flow chart to determine applicability deemed to comply without F factor measurement.....	54
Figure I.1 – Luminaire with a transmitting antenna in a room.....	57
Figure I.2 – Impact of a conducting ceiling/plane	58
Figure I.3 – Electric field of a small electrical dipole: analytical formula vs far-field approximation	59

Figure I.4 – Electric field as a function of distance, antenna gain and input power (far-field approximation)	60
Figure I.5 – Impact of pulsed signals on the average exposure	62
Table 1 – Physical quantities and units	13
Table 2 – Receiver or spectrum analyser settings	17
Table A.1 – Lighting equipment and measurement distances	24
Table C.1 – Basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies between 100 kHz and 300 GHz	30
Table C.2 – Basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies up to 10 MHz	30
Table C.3 – IEEE basic restrictions (BR) for the general public	31
Table C.4 – IEEE basic restrictions (BR) between 100 kHz and 3 GHz for the general public.....	31
Table D.1 – Induced internal electric field calculations	35
Table D.2 – Calculation main contributions	41
Table D.3 – Frequency steps for the amplitude addition that equals 1,11 times B_6	42
Table D.4 – Frequency steps for the power addition that equals 0,833 times B_6	43
Table D.5 – Field strength limits according to CISPR 15	44
Table E.1 – Conductivity as a function of frequency (see Table C.1 of IEC 62311:2007)	47
Table G.1 – Uncertainty calculation for the measurement method described in Clauses 5 and 6 in the frequency range from 20 kHz to 10 MHz	51
Table G.2 – Comments and information to Table G.1	52
Table I.1 – Overview of wireless radio technologies that might be applied in lighting systems	56

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**ASSESSMENT OF LIGHTING EQUIPMENT RELATED
TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS****FOREWORD**

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International Standard IEC 62493 has been prepared by IEC technical committee 34: Lamps and related equipment.

This second edition cancels and replaces the first edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) identification of lighting product types deemed to comply with the standard without the need for test;
- b) deletion of the need for CISPR-15-compliance as a prerequisite for IEC 62493 compliance;
- c) inclusion of the consequences of the ICNIRP 2010 guidelines for (up to 100 kHz);
- d) adding some guidance to the Van der Hoofden test head method to improve reproducibility of results;
- e) inclusion of compliance demonstration method for products having intentional radiators.

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

FDIS	Report on voting
34/222/FDIS	34/228/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62493 series, published under the general title *Assessment of lighting equipment related to human exposure to electromagnetic fields*, can be found on the IEC website.

The exposure limits given in Annex C (informative) are for information only; they do not comprise an exhaustive list and are valid only in certain regions of the world. It is the responsibility of users of this standard to ensure that they use the current version of the limit values specified by the applicable national authorities.

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A1 AMENDMENT A1 FOREWORD

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/.

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INTRODUCTION

This International Standard establishes a suitable evaluation method for the influence of the electromagnetic fields in the space around the equipment mentioned in the scope, and defines standardized operating conditions and measurement distances.

A1 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). **A1**

Based on the lighting equipment operating properties, the frequency range of the applicable basic restrictions can be limited as follows:

- internal electric field between 20 kHz and 10 MHz;
- specific absorption rate (SAR) between 100 kHz and 300 MHz;
- power density is outside the scope.

NOTE Operating frequencies of lighting equipment are higher than 20 kHz to avoid audible noise and infrared interference. Frequency contributions above 300 MHz can be neglected.

This standard is not meant to supplant definitions and procedures specified in exposure standards, but it is aimed at supplementing the procedure already specified for compliance with exposure.

¹ Numbers in square brackets refer to the Bibliography.

ASSESSMENT OF LIGHTING EQUIPMENT RELATED TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

1 Scope

This International Standard applies to the assessment of lighting equipment related to human exposure to electromagnetic fields. The assessment consists of the induced internal electric field for frequencies from 20 kHz to 10 MHz and the specific absorption rate (SAR) for frequencies from 100 kHz to 300 MHz around lighting equipment.

Included in the scope of this standard are:

- all lighting equipment with a primary function of generating and/or distributing light intended for illumination purposes, and intended either for connection to the low voltage electricity supply or for battery operation; used indoor and/or outdoor;
- lighting part of multi-function equipment where one of the primary functions of this is illumination;
- independent auxiliaries exclusively for the use with lighting equipment;
- lighting equipment including intentional radiators for wireless communication or control.

Excluded from the scope of this standard are:

- lighting equipment for aircraft and airfields;
- lighting equipment for road vehicles; (except lighting used for the illumination of passenger compartments in public transport)
- lighting equipment for agriculture;
- lighting equipment for boats/vessels;
- photocopiers, slide projectors;
- apparatus for which the requirements of electromagnetic fields are explicitly formulated in other IEC standards.

NOTE The methods described in this standard are not suitable for comparing the fields from different lighting equipment.

This standard does not apply to built-in components for luminaires such as electronic controlgear.

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.

IEC 62209-2:2010, *Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*

IEC 62232:2011, *Determination of RF field strength and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure*

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

IEC 62479:2010, *Assessment of the compliance of low-power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)*

CISPR 16-1-1, *Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

3 Terms, definitions, physical quantities, units and abbreviations

3.1 Terms and definitions

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

3.1.1

ballast

unit inserted between the supply and one or more discharge lamps which by means of inductance, capacitance, or a combination of inductance and capacitance, serves mainly to limit the current of the lamp(s) to the required value

Note 1 to entry: It may also include means for transforming the supply voltage and arrangements that help provide starting voltage and pre-heating current.

3.1.2

basic restriction

basic limitations

restrictions on exposure to time-varying electric, magnetic and electromagnetic fields that are based on established biological effects and including a safety factor

Note 1 to entry: The basic restriction is the maximum level that should not be exceeded under any conditions.

3.1.3

built-in lamp controlgear

lamp controlgear generally designed to be built into a luminaire, a box, an enclosure or the like and not intended to be mounted outside a luminaire, etc. without special precautions

Note 1 to entry: The controlgear compartment in the base of a road lighting column is considered to be an enclosure.

3.1.4

compliance factor

F

factor determined using the Van der Hoofden head test method that represents the measured (weighted and summed) induced internal electric field due to the external electric field in the frequency range 20 kHz to 10 MHz

Note 1 to entry: See Annex D and Annex E.

3.1.5

electronic controlgear

mains-supplied a.c./d.c. to a.c./d.c. inverter including stabilizing elements for starting and operating one or more lamps, generally at high frequency

Note 1 to entry: All kinds of igniters, starters, switches, dimmers (including phase control units e.g. triac, GTO) and sensors are not considered as electronic controlgear.

3.1.6

exposure

exposure occurs whenever and wherever a person is subjected to electric, magnetic or electromagnetic fields or to contact currents other than those originating from physiological processes in the body and other natural phenomena

3.1.7

exposure distance

typical distance between lighting equipment and a person under normal conditions of use