

STN	Posudzovanie osvetľovacích zariadení vo vzťahu k vystaveniu osôb pôsobeniu elektromagnetických polí.	STN EN 62493
		36 7080

Assessment of lighting equipment related to human exposure to electromagnetic Field

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/15

Obsahuje: EN 62493:2015, IEC 62493:2015

Oznámením tejto normy sa od 14.04.2018 ruší
STN EN 62493 (36 7080) zo septembra 2010

121553

EUROPEAN STANDARD

EN 62493

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2015

ICS 29.020; 29.140

Supersedes EN 62493:2010

English Version

Assessment of lighting equipment related to human exposure to electromagnetic Field (IEC 62493:2015)

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

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

This European Standard was approved by CENELEC on 2015-04-14. 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, 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

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.

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) 2016-01-14
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-04-14

This document supersedes EN 62493:2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

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

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

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).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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)	EN 62209-2	2010
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 (mod)	2007	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)	EN 62311	2008
IEC 62479 (mod)	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)	EN 62479	2010
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	EN 55016-1-1	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE



Assessment of lighting equipment related to human exposure to electromagnetic field

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





THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2015 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

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

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 60 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 60 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 62493

Edition 2.0 2015-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Assessment of lighting equipment related to human exposure to electromagnetic field

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

ISBN 978-2-8322-2348-2

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references	9
3 Terms, definitions, physical quantities, units and abbreviations	10
3.1 Terms and definitions.....	10
3.2 Physical quantities and units.....	12
3.3 Abbreviations	13
4 Limits	13
4.1 General.....	13
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	14
4.2.3 Application of limits.....	14
4.3 Intentional radiating part of lighting equipment.....	14
5 General requirements Van der Hoofden test	15
5.1 Measurand.....	15
5.2 Supply voltage and frequency	15
5.3 Measurement frequency range.....	16
5.4 Ambient temperature.....	16
5.5 Measurement equipment requirements.....	16
5.6 Measurement instrumentation uncertainty	17
5.7 Test report	17
5.8 Evaluation of results	18
6 Measurement procedure for the Van der Hoofden test	18
6.1 General.....	18
6.2 Operating conditions	18
6.2.1 Operating conditions for lighting equipment	18
6.2.2 Operating conditions for specific lighting equipment	18
6.2.3 Operating conditions for lighting equipment with intentional radiators	19
6.3 Measurement distance	19
6.4 Measurement set-up	19
6.4.1 General	19
6.4.2 Measurement set-up for specific lighting equipment.....	20
6.5 Location of measurement test head	20
6.6 Calculation of the results	20
7 Assessment procedure intentional radiators.....	20
7.1 General.....	20
7.2 Low-power exclusion method	20
7.2.1 General	20
7.2.2 Determination of the total radiated power	21
7.2.3 Determination of the low-power exclusion level.....	21
7.2.4 Summation of multiple transmitters	21
7.3 Application of the EMF product standard for body worn-equipment	21
7.4 Application of the EMF product standard for base stations	21

7.5	Application of another EMF standard	21
Annex A (normative)	Measurement distances	23
Annex B (informative)	Location of measurement test head	24
Annex C (informative)	Exposure limits	29
C.1	General.....	29
C.2	ICNIRP	29
C.2.1	ICNIRP 1998	29
C.2.2	ICNIRP 2010	29
C.3	IEEE	29
Annex D (informative)	Rationale measurement and assessment method.....	31
D.1	General.....	31
D.2	Induced internal electric field	31
D.2.1	General	31
D.2.2	Induced electric field due to the magnetic field; $E_{\text{eddy}}(f_i, d_{\text{loop}})$	33
D.2.3	Induced electric field due to the electric field; $E_{\text{cap}}(f_i, d)$	38
D.3	Thermal effects from 100 kHz to 300 GHz.....	41
D.3.1	General	41
D.3.2	The 100 kHz to 30 MHz contribution to the thermal effects	42
D.3.3	The 30 MHz to 300 MHz contribution to the thermal effects	43
D.3.4	Overall conclusion for the contribution to thermal effects	44
Annex E (normative)	Practical internal electric-field measurement and assessment method	45
E.1	Measurement of induced internal electric field.....	45
E.2	Calculation program.....	45
E.3	Compliance criterion for the Van der Hoofden head test.....	46
Annex F (normative)	Protection network	47
F.1	Calibration of the protection network.....	47
F.2	Calculation of the theoretical characteristic of the protection network.....	48
Annex G (informative)	Measurement instrumentation uncertainty	50
Annex H (informative)	Equipment deemed to comply	52
Annex I (informative)	Intentional radiators.....	54
I.1	General.....	54
I.2	Intentional radiators in lighting equipment	54
I.3	Properties of antennas in lighting applications	54
I.4	Exposure assessment approach.....	60
I.4.1	General	60
I.4.2	Determination of average total radiated power $P_{\text{int,rad}}$	60
I.4.3	Determination of the low-power exclusion level P_{max}	61
I.5	Multiple transmitters in a luminaire.....	61
I.6	Exposure to multiple luminaires	62
I.7	References in Annex I.....	62
Bibliography.....		64
Figure 1 – Compliance routes and pass/fail criteria for lighting equipment		15
Figure 2 – The Van der Hoofden test head.....		16
Figure 3 – Example of a protection circuit		17

Figure 4 – Measurement set-up	19
Figure 5 – Compliance demonstration procedure for the intentional-transmitter part of the lighting equipment.....	22
Figure B.1 – Location of measurement point in the transverse direction of lighting equipment – side view	24
Figure B.2 – Location of measurement points in the longitude direction of lighting equipment – side view	24
Figure B.3 – Location of measurement points in the longitude direction of lighting equipment; in the direction of illumination	25
Figure B.4 – Location of measurement point for lighting equipment with rotationally symmetrical dimensions.....	25
Figure B.5 – Location of measurement point for lighting equipment with rotationally symmetrical dimensions; in the direction of illumination	26
Figure B.6 – Location of measurement point for lighting equipment with the same dimensions in the x - and y - axis	26
Figure B.7 – Location of measurement point(s) for lighting equipment with single capped lamp (360° illumination).....	27
Figure B.8 – Location of measurement points for lighting equipment with a remote controlgear	27
Figure B.9 – Location of measurement point for an independent electronic converter	28
Figure B.10 – Location of measurement point(s) for an uplighter (floor standing/suspended).....	28
Figure D.1 – Overview measurement and assessment method.....	31
Figure D.2 – Distances of the head, loop and measurement set-up.....	33
Figure D.3 – Maximum current in the 2 m LLA as function of the frequency	35
Figure D.4 – Induced internal electric field and associated limit levels	37
Figure D.5 – Example of magnetic-field test result using the LLA.....	38
Figure D.6 – Distances of the head and measurement set-up	39
Figure D.7 – Plot of Equation (D.20)	39
Figure D.8 – Example of the CM-current measured using a conducted emission test	43
Figure F.1 – Test set-up for normalization of the network analyser.....	47
Figure F.2 – Test set-up for measurement of the voltage division factor using a network analyser.....	48
Figure F.3 – Calculated theoretical characteristic for the calibration of the protection network.....	49
Figure H.1 – Flow chart to determine applicability deemed to comply without F factor measurement.....	53
Figure I.1 – Luminaire with a transmitting antenna in a room.....	56
Figure I.2 – Impact of a conducting ceiling/plane	57
Figure I.3 – Electric field of a small electrical dipole: analytical formula vs far-field approximation	58
Figure I.4 – Electric field as a function of distance, antenna gain and input power (far-field approximation)	59
Figure I.5 – Impact of pulsed signals on the average exposure	60
Table 1 – Physical quantities and units	13
Table 2 – Receiver or spectrum analyser settings	16
Table A.1 – Lighting equipment and measurement distances	23

Table C.1 – Basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies between 100 kHz and 10 GHz	29
Table C.2 – Basic restrictions for general public exposure to time varying electric and magnetic fields for frequencies up to 10 MHz	29
Table C.3 – IEEE basic restrictions (BR) for the general public	30
Table C.4 – IEEE basic restrictions (BR) between 100 kHz and 3 GHz for the general public.....	30
Table D.1 – Induced internal electric field calculations	34
Table D.2 – Calculation main contributions	40
Table D.3 – Frequency steps for the amplitude addition that equals 1,11 times B_6	41
Table D.4 – Frequency steps for the power addition that equals 0,833 times B_6	42
Table D.5 – Field strength limits according to CISPR 15	43
Table E.1 – Conductivity as a function of frequency (see Table C.1 of IEC 62311:2007)	46
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	50
Table G.2 – Comments and information to Table G.1	51
Table I.1 – Overview of wireless radio technologies that might be applied in lighting systems	55

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ASSESSMENT OF LIGHTING EQUIPMENT RELATED TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

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 IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication 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

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.

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:1998 [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).

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*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN