

**VALGUSTUSSEADMETE HINDAMINE INIMESELE
TOIMIVA ELEKTROMAGNETVÄLJA JÄRGI**

**Assessment of lighting equipment related to human
exposure to electromagnetic Field**

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EUROPEAN STANDARD

EN 62493

NORME EUROPÉENNE

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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)

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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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This document supersedes EN 62493:2010.

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¹⁾ Superseded by EN 55016-4-2:2011 (CISPR 16-4-2:2011).

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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.

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*

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