



BSI Standards Publication

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

National foreword

This British Standard is the UK implementation of EN IEC 55015:2019+A11:2020. It is derived from CISPR 15:2018. It supersedes BS EN IEC 55015:2019, which will be withdrawn on 27 November 2022.

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30 April 2020	Implementation of IEC Interpretation Sheet 1 November 2019

English Version

**Limits and methods of measurement of radio disturbance
characteristics of electrical lighting and similar equipment
(CISPR 15:2018)**

Limites et méthodes de mesure des perturbations
radioélectriques produites par les appareils électriques
d'éclairage et les appareils analogues
(CISPR 15:2018)

Grenzwerte und Messverfahren für Funkstörungen von
elektrischen Beleuchtungseinrichtungen und ähnlichen
Elektrogeräten
(CISPR 15:2018)

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European foreword

The text of document CIS/F/733/FDIS, future edition 9 of CISPR 15, prepared by CISPR SC F "Interference relating to household appliances tools, lighting equipment and similar apparatus" of CISPR "International special committee on radio interference" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 55015:2019.

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This document supersedes EN 55015:2013 and all of its amendments and corrigenda (if any).

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

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

CISPR/TR 16-4-3:2004	NOTE	Harmonized as EN 55016-4-3 (not modified) ¹
IEC 60155:1993	NOTE	Harmonized as EN 60155:1995 (not modified)
IEC 60155:1993/A1:1995	NOTE	Harmonized as EN 60155:1995/A1:1995 (not modified)
IEC 60155:1993/A2:2006	NOTE	Harmonized as EN 60155:1995/A2:2007 (not modified)
IEC 61000-6-3:2006	NOTE	Harmonized as EN 61000-6-3:2007 (not modified)
IEC 61000-6-3:2006/A1:2010	NOTE	Harmonized as EN 61000-6-3:2007/A1:2011 (not modified)
IEC 61347-1:2015	NOTE	Harmonized as EN 61347-1:2015 (not modified)
IEC 62776:2014	NOTE	Harmonized as EN 62776:2015 (not modified)

¹ To be published. Stage at the time of publication: prEN 55016-4-3:2018

European foreword to amendment A11

This document (EN IEC 55015:2019/A11:2020) has been prepared by CLC/TC 210 "Electromagnetic Compatibility (EMC)".

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- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-11-27

This document amends EN IEC 55015:2019.

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

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where 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 60038	-	IEC standard voltages	EN 60038	-
IEC 60050-161	-	International Electrotechnical Vocabulary. Chapter 161: Electromagnetic compatibility	-	-
IEC 60050-845	1987	International Electrotechnical Vocabulary. Lighting	-	-
IEC 60061-1	-	Lamp caps and holders together with gauges for the control of interchangeability and safety. Part 1: Lamp caps	EN 60061-1	-
IEC 60081	-	Double-capped fluorescent lamps - Performance specifications	EN 60081	-
IEC 60598-1 (mod)	2014	Luminaires - Part 1: General requirements and tests	EN 60598-1	2015
+ A1	2017		+ A1	2018
IEC 60921	-	Ballasts for tubular fluorescent lamps - Performance requirements	EN 60921	-
IEC 61000-4-20	2010	Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	EN 61000-4-20	2010
IEC 61195	-	Double-capped fluorescent lamps - Safety specifications	EN 61195	-
IEC 62504	2014	General lighting - Light emitting diode (LED) products and related equipment - Terms and definitions	EN 62504	2014

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 16-1-1	2015	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus	-	-
CISPR 16-1-2	2014	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Coupling devices for conducted disturbance measurements	EN 55016-1-2	2014
CISPR 16-1-4	2010	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Antennas and test sites for radiated disturbance measurements	EN 55016-1-4	2010
+ A1	2012		+ A1	2012
+ A2	2017		+ A2	2017
CISPR 16-2-1	2014	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements	EN 55016-2-1	2014
+ A1	2017		+ A1	2017
CISPR 16-2-3	2016	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements	EN 55016-2-3	2017
CISPR 16-4-2	2011	Specification for radio disturbance and immunity measuring apparatus and methods - Part 4-2: Uncertainties, statistics and limit modelling - Measurement instrumentation uncertainty	EN 55016-4-2	2011
+ A1	2014		+ A1	2014
CISPR/TR 30-1	2012	Test method on electromagnetic emissions - Part 1: Electronic control gear for single- and double-capped fluorescent lamps	-	-
CISPR 32	2015	Electromagnetic compatibility of multimedia equipment - Emission requirements	EN 55032	2015
ISO/IEC 17025	2005	General requirements for the competence of testing and calibration laboratories	-	-

Annex ZZ (informative)

Relationship between this European standard and the essential requirements of Directive 2014/30/EU [2014 OJ L96] aimed to be covered

This European standard has been prepared under the European Commission standardisation request C(2016) 7641 final of 30.11.2016¹, ('M/552'), as regards harmonised standards in support of Directive 2014/30/EU relating to electromagnetic compatibility, to provide one voluntary means of conforming to essential requirements of Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility [2014 OJ L96].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZZ.1 — Correspondence between this European standard and the Essential Requirements set out in Directive 2014/30/EU [2014 OJ L96]

Essential requirements of Directive 2014/30/EU	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Annex I. 1(a) (electromagnetic disturbance)	5 Application of the limits 6 Product specific limit application requirements	The following shall not be applied for the purposes of presumption of conformity: The Note in Clause 10 (Compliance with this document) Annex E (Statistical considerations in the determination of EMC compliance of mass-produced products)

WARNING 1: Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2: Other Union legislation may be applicable to the product(s) falling within the scope of this standard."

¹ COMMISSION IMPLEMENTING DECISION C(2016) 7641 final of 30.11.2016 on a standardisation request to the European Committee for Standardisation, to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards harmonised standards in support of Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CISPR 15
Edition 9.0 2018-05**LIMITS AND METHODS OF MEASUREMENT
OF RADIO DISTURBANCE CHARACTERISTICS OF
ELECTRICAL LIGHTING AND SIMILAR EQUIPMENT****INTERPRETATION SHEET 1**

This interpretation sheet has been prepared by subcommittee CISPR F: Interference relating to household appliances tools, lighting equipment and similar apparatus, of IEC technical committee CISPR: International special committee on radio interference.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
CIS/F/777/DISH	CIS/F/790/RVDISH

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

CISPR 15 interpretation sheet on the worst-case mode of operation**Introduction**

Subclause 7.5 specifies the operating modes of lighting equipment that must be considered during an emission test. A few examples are given to support the explanation of what 'different operating modes' means. The list of examples is of course not exhaustive. Apparently, the example of 'colour shifting' is not clear enough and it is sometimes interpreted as if any possible colour and/or correlated colour temperature (CCT) setting that lighting equipment may produce shall be assessed during measurements. Many types of LED lighting may be set in many different colours and CCTs. Compared to other operational-mode related influence quantities such as light level regulation, flashing or radio communication, the risk of not capturing the maximum level of electromagnetic (EM) disturbances due to different colour or CCT settings is very small, provided that all channels of a LED driver used to change colour or CCT are operative. The 'colour shifting'-example was meant for example for a mode where the light output continuously switches from one colour to another with a certain repetition frequency (e.g. applied for entertainment, events etc.), instead of emitting a single stable colour and/or CCT.

Question

What is the meaning of example 'colour shifting' as mode of operation to be considered during testing? What colour and/or colour temperature should be selected in case lighting equipment can be set in a wide range of colours and/or CCTs?

Interpretation

The example 'colour shifting' in the first paragraph of 7.5 of CISPR 15:2018 must not be interpreted as if any possible colour and/or CCT setting that lighting equipment may produce shall be assessed during measurements.

Generally, according to 7.5 the worst case shall be found by prescanning every mode of operation over at least one repetition interval of the specific mode.

Alternatively, measurements can be performed using the setting(s) that are expected to produce the highest amplitude emissions relative to the limit; and, the reasons for the selection shall be given in the test report.

A reason could be that highest level of electromagnetic (EM) disturbances will be captured if all channels of a LED driver used to create different colours and/or CCTs are operative. The number of channels applied depends on the LED-driver/LED-light-source architecture. Often, maximum EM disturbances can be achieved by selecting a white colour and/or a CCT setting in the middle of the specified CCT range.

EXAMPLE Colour variation and CCT variation may be achieved using a 5-channel LED driver powering three LED strings for colour (RGB) setting and two cool white and warm white LED strings for CCT setting. Hence, in case the lighting equipment under test is capable to operate at different colours and/or CCTs, a white colour and/or a single CCT in the middle of the specified CCT range may be selected¹.

¹ 7.4 of CISPR 15:2018, also still applies.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

**LIMITS AND METHODS OF MEASUREMENT OF
RADIO DISTURBANCE CHARACTERISTICS OF
ELECTRICAL LIGHTING AND SIMILAR EQUIPMENT**

FOREWORD

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International Standard CISPR 15 has been prepared by subcommittee CIS/F: Interference relating to household appliances tools, lighting equipment and similar apparatus, of IEC technical committee CISPR: International special committee on radio interference.

This ninth edition cancels and replaces the eighth edition published in 2013 and its Amendment 1:2015. This edition constitutes a technical revision.

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

- a) full editorial revision and restructuring;
- b) the restriction to mains and battery operation is deleted in the scope;
- c) radiated disturbance limits in the frequency range 300 MHz to 1 GHz have been introduced;

- d) the load terminals limits and the CDNE (alternative to radiated emissions) limits have changed;
- e) deletion of the insertion-loss requirements and the associated Annex A;
- f) introduction of three basic ports: wired network ports, local wired ports and the enclosure port;
- g) introduction of a more technology-independent approach;
- h) replacement of Annex B (CDNE) by appropriate references to CISPR 16-series of standards;
- i) modified requirements for the metal holes of the conical housing;
- j) new conducted disturbance measurement method for GU10 self-ballasted lamp;
- k) addition of current probe measurement method and limits for various types of ports (in addition to voltage limits and measurement methods);
- l) introduction of the term 'module' (instead of independent auxiliary) and requirements for measurement of modules using a host (reference) system;
- m) modified specifications for stabilization times of EUTs;
- n) for large EUT (> 1,6 m), addition of the magnetic field measurement method using a 60 cm loop antenna at 3 m distance (method from CISPR 14-1) as an alternative to the 3 m and 4 m LAS.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
CIS/F/733/FDIS	CIS/F/736/RVD

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

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://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.

The contents of the interpretation sheet of November 2019 have been included in this copy.

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.

LIMITS AND METHODS OF MEASUREMENT OF RADIO DISTURBANCE CHARACTERISTICS OF ELECTRICAL LIGHTING AND SIMILAR EQUIPMENT

1 Scope

This document applies to the emission (radiated and conducted) of radiofrequency disturbances from:

- lighting equipment (3.3.16);
- the lighting part of multi-function equipment where this lighting part is a primary function;

NOTE 1 Examples are lighting equipment with visible-light communication, entertainment lighting.

- UV and IR radiation equipment for residential and non-industrial applications;
- advertising signs;

NOTE 2 Examples are neon tube advertising signs.

- decorative lighting;
- emergency signs.

Excluded from the scope of this document are:

- components or modules intended to be built into lighting equipment and which are not user-replaceable;

NOTE 3 See CISPR 30 (all parts) for built-in controlgear.

- lighting equipment operating in the ISM frequency bands (as defined in Resolution 63 (1979) of the ITU Radio Regulation);
- lighting equipment for aircraft and airfield facilities (runways, service facilities, platforms);
- video signs;
- installations;
- equipment for which the electromagnetic compatibility requirements in the radio-frequency range are explicitly formulated in other CISPR standards, even if they incorporate a built-in lighting function.

NOTE 4 Examples of exclusions are:

- equipment with built-in lighting devices for display back lighting, scale illumination and signaling;
- SSL-displays;
- range hoods, refrigerators, freezers;
- photocopiers, projectors;
- lighting equipment for road vehicles (in scope of CISPR 12).

The frequency range covered is 9 kHz to 400 GHz. No measurements need to be performed at frequencies where no limits are specified in this document.

Multi-function equipment which is subjected simultaneously to different clauses of this document and/or other standards need to meet the provisions of each clause/standard with the relevant functions in operation.

For equipment outside the scope of this document and which includes lighting as a secondary function, there is no need to separately assess the lighting function against this document, provided that the lighting function was operative during the assessment in accordance with the applicable standard.

NOTE 5 Examples of equipment with a secondary lighting function can be range hoods, fans, refrigerators, freezers, ovens and TV with ambient lighting.

The radiated emission requirements in this document are not intended to be applicable to the intentional transmissions from a radio transmitter as defined by the ITU, nor to any spurious emissions related to these intentional transmissions.

Within the remainder of this document, wherever the term "lighting equipment" or "EUT" is used, it is meant to be the electrical lighting and similar equipment falling in the scope of this document as specified in this clause.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

IEC 60050-161, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 60050-845:1987, *International Electrotechnical Vocabulary – Chapter 845: Lighting*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60081, *Double-capped fluorescent lamps – Performance specifications*

IEC 60598-1:2014, *Luminaires – Part 1: General requirements and tests*
IEC 60598-1:2014/AMD1:2017

IEC 60921, *Ballasts for tubular fluorescent lamps – Performance requirements*

IEC 61000-4-20:2010, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

IEC 61195, *Double-capped fluorescent lamps – Safety specifications*

IEC 62504:2014, *General lighting – Light emitting diode (LED) products and related equipment – Terms and definitions*

CISPR 16-1-1:2015, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

CISPR 16-1-2:2014, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-2: Radio disturbance and immunity measuring apparatus – Coupling devices for conducted disturbance measurements*

CISPR 16-1-4:2010, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-4: Radio disturbance and immunity measuring apparatus – Antennas and test sites for radiated disturbance measurements*

CISPR 16-1-4:2010/AMD1:2012

CISPR 16-1-4:2010/AMD2:2017

CISPR 16-2-1:2014, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-1: Methods of measurement of disturbances and immunity – Conducted disturbance measurements*

CISPR 16-2-1:2014/AMD1:2017

CISPR 16-2-3:2016, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*

CISPR 16-4-2:2011, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Measurement instrumentation uncertainty*

CISPR 16-4-2:2011/AMD1:2014

CISPR TR 30-1:2012, *Test method on electromagnetic emissions – Part 1: Electronic control gear for single- and double-capped fluorescent lamps*

CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment – Emission requirements*

ISO/IEC 17025:2005¹, *General requirements for the competence of testing and calibration laboratories*

3 Terms, definitions and abbreviated terms

3.1 General

For the purposes of this document, the terms and definitions given in IEC 60050-161, IEC 62504, IEC 60050-845 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.2 General terms and definitions

3.2.1

base of the luminaire

mounting surface of the luminaire in normal use, usually the side opposite of the optical window

3.2.2

clock frequency

fundamental frequency of any signal used in the EUT excluding those generated inside an integrated circuit (IC) and which are solely used inside the same IC without being accessible outside that IC, and excluding those used exclusively for radio transmission or radio receiving functions

Note 1 to entry: High frequencies are often generated inside integrated circuits (IC) by phase-locked-loop (PLL) circuits from lower clock oscillator frequencies outside the IC.

¹ This edition was replaced by ISO/IEC 17025:2017 but the listed edition applies.

3.2.3

ELV

extra-low voltage

voltage which does not exceed 50 V AC or 120 V ripple free DC between conductors or between any conductor and earth (voltage band 1 of IEC 60449) applied to load interfaces supplying power to lighting equipment, excluding interfaces used for communication or data transfer

Note 1 to entry: Ripple free is conventionally defined for sinusoidal ripple voltage as ripple content of not more than 10 % RMS: the maximum peak value does not exceed 140 V for a nominal 120 V ripple-free DC system.

[SOURCE: IEC 61347-1:2015 + AMD1:2017, 3.27, modified – The definition has been rephrased.]

3.2.4

inductive power transfer

process of inductive transfer of electrical energy over time from a source to a separate load when these are placed in physical (but not electrical) contact or in close proximity with each other

EXAMPLE: Examples are rechargeable luminaires incorporating inductive power transfer or electrodeless lamps with inductive power transfer.

Note 1 to entry: If in addition a radio technology, as defined by the ITU, is used or superimposed to the power transfer function of inductive power transfer equipment for the purpose of data communication then the applicable standards for this radio technology apply.

Note 2 to entry: Any propagation of electromagnetic energy outside of the system of inductive power source and load is seen as electromagnetic disturbance and therefore subject to assessment by this standard.

3.2.5

optical window

side of the lighting equipment from which the light emanates

3.2.6

primary function

function of an equipment which is defined as such by the manufacturer

3.2.7

secondary function

any function of an equipment not being essential for fulfilling the primary function, defined by the manufacturer

3.2.8

test arrangement

specific arrangement of the EUT, cabling and auxiliary equipment during the test

3.3 Terms and definitions related to equipment

3.3.1

advertising sign

unit which makes use of lighting for advertising, traffic signage, road signs or alike

3.3.2

ancillary equipment

transducers (e.g. current and voltage probes and artificial networks) and other equipment (e.g. cables, preamplifier, attenuators, filters, adapters) connected to a measuring receiver or to the EUT and used in the disturbance signal transfer between the EUT and the measuring receiver

Note 1 to entry: Within CISPR publications various different definitions are given for associated, auxiliary and ancillary equipment. The definitions given in this document are based on CISPR 16-2-3. See also 3.3.3 and 3.3.4.

Note 2 to entry: See also Figure 2.

[SOURCE: CISPR 16-2-3:2016, 3.1.2, modified – Examples in the definition and Notes to entry have been added.]

3.3.3

associated equipment

AE

apparatus, that is not part of the system under test, but needed to help exercise the EUT

EXAMPLE: Equipment to generate lighting control signals.

Note 1 to entry: See also Figure 2.

[SOURCE: CISPR 16-2-3:2016, 3.1.5, modified – The example and Note 1 to entry have been added.]

3.3.4

auxiliary equipment

AuxEq

peripheral equipment that is part of the system under test

EXAMPLE: In CISPR TR 30-1 or CISPR TR 30-2, the reference luminaire, in case a ballast or driver is tested.

Note 1 to entry: See also Figure 2.

[SOURCE: CISPR 16-2-3:2016; 3.1.6, modified – The example and the Note to entry have been added.]

3.3.5

controlgear

electrical device between the supply and one or more light source(s) which may serve to transform the supply voltage, limit the current of the light source(s) to the required value, provide starting voltage and preheating current, prevent cold starting, correct power factor, reduce radio interference, include means for dimming, and further control functions

Note 1 to entry: This definition deviates from IEC 60598-1.

[SOURCE: IEC 62504:2014; 3.6.1, modified – The abbreviation 'LED' in the term is removed and various modifications in the definition.]

3.3.6

decorative lighting

equipment that emits light for atmospheric, artistic or ambiance purposes

3.3.7

double-capped lamp adapter

component designed to be installed into luminaires which are constructed for lamps of one tube diameter (according IEC 60081 and IEC 61195) and one specific tube length for the purpose of allowing them to receive lamps of another tube diameter or another tube length instead

Note 1 to entry: A lamp adapter may incorporate a switch or a fuse or an electronic lamp controlgear for HF lamp operation.

3.3.8

double-capped self-ballasted lamp

unit which cannot be dismantled without being permanently damaged, provided with one or more light sources and two lamp caps and any additional elements necessary for starting and stable operation of the light source

Note 1 to entry: See Notes 1 and 2 to entry given in 3.3.21.

3.3.9

double-capped semi-luminaire

unit similar to a self-ballasted lamp but designed to utilize a replaceable light source and/or starting device

Note 1 to entry: Semi-luminaires for compact fluorescent lamps and for incandescent lamps, sometimes called adapters, are devices equipped, on the one side, with an IEC 60061-1 standardized lamp cap to allow mounting in a standard lampholder and, on the other side, with a lampholder to allow the insertion of a replaceable light source.

Note 2 to entry: The light source component and/or starting device of a semi luminaire is readily replaceable.

Note 3 to entry: For gas-discharge technologies, the ballast component is not replaceable and is not disposed of each time a light source is replaced.

3.3.10

double-capped retrofit lamp

tubular lamp applying a technology alternative to fluorescent technology and which can be used as a replacement for double-capped fluorescent lamps without requiring any internal modification in the luminaire and which, after installation, maintains the same level of safety of the replaced lamp in the luminaire

Note 1 to entry: The replacement of a glow starter according to IEC 60155 with LED replacement starter having the same dimensions and fit, for the correct functioning of the double-capped LED lamp is not considered as a modification to the luminaire.

3.3.11

electrodeless lamp

gas discharge lamp in which the power required to generate light is transferred from outside the lamp envelope to the gas inside via an electric or magnetic field

3.3.12

equipment-under-test

EUT

equipment in the scope of this document subjected to EMC (emission) compliance (conformity assessment) tests

EXAMPLE: The EUT may be a luminaire including lamp(s), a self-ballasted lamp, a rope light or a module.

Note 1 to entry: See also Figure 2.

[SOURCE: CISPR 16-2-3:2016, 3.1.14, modified – Definition is modified and the example and Note 2 to entry have been added.]

3.3.13

lamp

unit containing one or more light sources and one or two standardised caps for interfacing

3.3.14

LED light source

device containing an LED or collection of LEDs used for the purpose of illumination

3.3.15

light source

device emitting light produced by a transformation of electrical energy

Note 1 to entry: Lighting equipment emits light in the range from visible wavelength 400 nm to 780 nm.

[SOURCE: IEC 60050-845:1987, 845-07-01, modified – The definition has been rephrased and the Note to entry has been added.]

3.3.16**lighting equipment**

device which can be used as an independent unit to illuminate a scene, objects or their surroundings so that they can be seen, and modules designed to be used in or with such device or assembly of devices

Note 1 to entry: Examples of lighting equipment are luminaires, self-ballasted lamps, ELV-lamps and modules which are used for general purpose lighting, street/flood lighting intended for outdoor use, lighting installed in or on transport vehicles and which is not in the scope of CISPR 12.

[SOURCE: IEC 60050-845:1987, 845-09-01, modified – The definition has been rephrased.]

3.3.17**luminaire**

lighting equipment which distributes, filters or transforms the light transmitted from one or more lamps or light sources and which includes all the parts necessary for supporting, fixing and protecting the lamps, but not usually the lamps themselves, and, where necessary, circuit auxiliaries, together with the means to connect them to the supply, the driver, control units, cabling, housing and mounting are included

Note 1 to entry: This definition comes from the definition given in the luminaire product standard IEC 60598-1. In the latter standard a luminaire does not include a lamp, unless the lamp is an integral part. For the purpose of emission testing in this document however, a luminaire always contains a lamp or a light source or resistive load.

[SOURCE: IEC 60598-1:2014, 1.2.1, modified – The definition has been rephrased.]

3.3.18**module**

electronic or electrical part which serves a specific function or functions of a lighting application and may contain radio-frequency sources, which is intended for application in a luminaire or in an installation by an end user and which is intended to be marketed and/or sold separately from a lighting apparatus or system

Note 1 to entry: Examples are: self-ballasted lamp, starter, controlgear, wall dimmer, control unit, LED module.

3.3.19**passive EUT**

equipment which, by its inherent nature and physical characteristics such as absence of active and fast variation or switching of currents or voltages, is incapable of generating or contributing to electromagnetic emissions which exceed a level allowing radio reception to happen as intended

Note 1 to entry: A passive EUT is not likely to produce any electromagnetic disturbances. See 6.2.

Note 2 to entry: Mains rectifier diodes and an electronic starter that is only active during the starting phase is considered to be a passive component.

3.3.20**restricted ELV lamp**

ELV lamp with specific restrictions on the type of power supply and/or the cable length that can be applied to it, as provided or specified by the manufacturer

Note 1 to entry: ELV lamps without detailed description of restrictions are non-restricted.

3.3.21**self-ballasted lamp**

self-contained unit incorporating a light source and any additional elements that may be necessary for starting and ensuring a stable operation of the light source which cannot be dismantled without being permanently damaged and which is connected to a lamp holder or luminaire via one or two IEC 60061-1 standardized lamp caps

Note 1 to entry: The light source component of a self-ballasted lamp is not replaceable.

Note 2 to entry: For gas-discharge technologies, the ballast component is part of the self-ballasted lamp; it is not part of the luminaire.

Note 3 to entry: The term "self-ballasted lamp" is used as a general term for designating all lamps that can operate independent of other external accessories or auxiliary equipment, except for a lampholder. This includes gas-discharge technologies as well as LED and OLED technologies.

[SOURCE: IEC 60598-1:2014, 1.2.59, modified – The definition has been rephrased, Notes 2 and 3 to entry have been modified and Note 4 to entry has been deleted.]

3.3.22

semi luminaire

device (sometimes called adapter) equipped, on the one side, with any IEC-standardised lamp cap system to allow mounting in a standard lampholder and, on the other side, with a lampholder to allow the insertion of a replaceable light source with a cap

3.3.23

UV and IR radiation equipment

optical radiation equipment operating at a wavelength between 780 nm to 1 mm or 1 nm to 400 nm

EXAMPLE: Examples are appliances used for medical and cosmetic care, and for instant zone heating.

[SOURCE: IEC 60050-731:1991 + AMD1:2016, 731-01-05 and 731-01-06, modified – The definitions have been combined.]

3.4 Terms and definitions related to interfaces and ports

3.4.1

AC electric power supply interface

connection point to an external AC electrical supply network

3.4.2

communication/data/network interface

point of connection for data and signalling transfers intended to interconnect widely dispersed systems via such means as direct connection to multi-user telecommunications networks (e.g. local area networks like Ethernet, token ring, etc.)

3.4.3

control interface

point at which a conductor or cable is attached to the lighting equipment for the purpose of controlling the function of the equipment

3.4.4

DC electric power supply interface

connection point to an external DC electrical supply network

3.4.5

electric power supply interface

connection point at which a conductor or cable carrying the primary electrical power needed for the operation (functioning) of the lighting equipment is connected, and through which also conducted electromagnetic disturbance may couple to the electromagnetic environment

Note 1 to entry: It is possible to connect cables to such an interface for transmission of electric power from DC and/or AC mains power distribution systems which has a topology such that an electromagnetic disturbance easily couples to the electromagnetic environment.

3.4.6

enclosure port

artificial non-intentional wireless interface of the lighting equipment through which electromagnetic disturbances can radiate into the environment

Note 1 to entry: Based on IEC 61000-6-3:2006/AMD1:2010, 3.1.2.

Note 2 to entry: The artificial interface can consist of for instance seams and apertures in the physical metallic enclosure, but also limited lengths of each of its wired interfaces. In the frequency range above 30 MHz typically one third of a wavelength of the length of the wired interfaces can contribute to radiated disturbances. Therefore, also included are wired interfaces to auxiliary equipment which are intended to be connected with cables of less than 3 m length.

3.4.7

electrical interface

connection point of equipment at which a conductor or cable is attached for various purposes such as powering, control or communication

EXAMPLES: See Figure 3.

3.4.8

functional earth

terminal of equipment intended for connection to an external grounding conductor for functional and/or electromagnetic compatibility purposes

3.4.9

load interface

connection point of the lighting equipment providing electrical energy to another item of lighting equipment

3.4.10

local wired port

interface of the lighting equipment which directly connects to cables that are not connected to a network and have a length greater than or equal to 3 m, or that are indirectly connected to a network via auxiliary equipment

EXAMPLE: Examples are, the electrical power supply interface of ELV lamp, an interface of a driver for connecting a long (≥ 3 m) load cable with a light source, a control interface of a sensor for connecting a short (< 3 m) control cable with an AC mains-fed luminaire. See Annex D for examples.

Note 1 to entry: Such a port can emit electromagnetic disturbances.

3.4.11

network

electrical installation consisting of equipment and interconnecting cables or wiring for the transmission and distribution of electrical power, electrical signal for data transmission or communication or alike

3.4.12

port

particular category of an interface of an EUT which provides a coupling path for electromagnetic disturbances from the EUT into the electromagnetic environment specific for that category

Note 1 to entry: See Figure 1.