

ELEKTRIVALGUSTITE JA NENDETAOLISTE SEADMETE
RAADIOHÄIRINGU-TUNNUSSUURUSTE PIIRVÄÄRTUSED
JA MÕÕTEMEETODID

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 55015:2019 sisaldab Euroopa standardi EN IEC 55015:2019 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 55015:2019 consists of the English text of the European standard EN IEC 55015:2019.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.08.2019.	Date of Availability of the European standard is 30.08.2019.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.100.10

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

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)

This European Standard was approved by CENELEC on 2018-06-19. 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 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.

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) 2020-02-29
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-08-30

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

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

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

Endorsement notice

The text of the International Standard CISPR 15:2018 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/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

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	-	-

CONTENTS

FOREWORD	7
1 Scope	9
2 Normative references	10
3 Terms, definitions and abbreviated terms	11
3.1 General	11
3.2 General terms and definitions	11
3.3 Terms and definitions related to equipment	12
3.4 Terms and definitions related to interfaces and ports	16
3.5 Abbreviated terms	18
4 Limits	20
4.1 General	20
4.2 Frequency ranges	20
4.3 Limits and methods for the assessment of wired network ports	21
4.3.1 Electric power supply interface	21
4.3.2 Wired network interfaces other than power supply	21
4.4 Limits and methods for the assessment of local wired ports	22
4.5 Limits and methods for the assessment of the enclosure port	23
4.5.1 General	23
4.5.2 Frequency range 9 kHz to 30 MHz	23
4.5.3 Frequency range 30 MHz to 1 GHz	24
5 Application of the limits	25
5.1 General	25
5.2 Identification of the interfaces subject to test	25
5.3 Application of limits to the interfaces	26
5.3.1 General	26
5.3.2 Conducted disturbance requirements for the wired network port	26
5.3.3 Conducted disturbance requirements for local wired ports	26
5.3.4 Radiated disturbance requirements for the enclosure port	26
5.3.5 Multiple interfaces of the same type	27
5.3.6 Interfaces that can be categorised as multiple types of ports	27
6 Product specific limit application requirements	28
6.1 General	28
6.2 Passive EUT	28
6.3 Rope lights	28
6.3.1 General	28
6.3.2 Requirements for rope lights	28
6.4 Modules	28
6.4.1 General	28
6.4.2 Modules having multiple applications	29
6.4.3 Internal modules	29
6.4.4 External modules	29
6.4.5 Single capped self-ballasted lamps	30
6.4.6 Double-capped self-ballasted lamps, double-capped lamp adapters, double-capped semi-luminaires and double-capped retrofit lamps used in fluorescent lamp luminaires	30
6.4.7 ELV lamps	30

6.4.8	Single-capped semi-luminaires	30
6.4.9	Independent igniters	30
6.4.10	Replaceable starters for fluorescent lamps	30
7	Operating and test conditions of the EUT.....	31
7.1	General.....	31
7.2	Switching	31
7.3	Supply voltage and frequency	31
7.4	Rated lamp load and light regulation	31
7.5	Operating modes	31
7.6	Ambient conditions.....	32
7.7	Lamps.....	32
7.7.1	Type of lamps used in lighting equipment	32
7.7.2	Ageing times.....	32
7.8	Stabilization times.....	32
7.9	Operation and loading of wired interfaces	32
7.9.1	General	32
7.9.2	Interface intended for a continuous signal or data transmission	32
7.9.3	Interface not intended for a continuous signal or data transmission	33
7.9.4	Load	33
8	Methods of measurement of conducted disturbances	33
8.1	General.....	33
8.2	Measurement instrumentation and methods	33
8.3	Electrical power supply interface disturbance measurement.....	34
8.4	Disturbance measurement of wired network interfaces other than power supply.....	34
8.5	Local wired port disturbance measurement	35
8.5.1	Electrical power supply of ELV lamps	35
8.5.2	Other than electrical power supply of ELV lamps	35
9	Methods of measurement of radiated disturbances	35
9.1	General.....	35
9.2	Intentional wireless transmitters.....	35
9.3	Measurement instrumentation and methods	36
9.3.1	General	36
9.3.2	LLAS radiated disturbance measurement 9 kHz to 30 MHz	36
9.3.3	Loop antenna radiated disturbance measurement 9 kHz to 30 MHz	37
9.3.4	Radiated disturbance measurement 30 MHz to 1 GHz	37
10	Compliance with this document	38
11	Measurement uncertainty	38
12	Test report.....	38
Annex A (normative) Product specific application notes referring to particular measurement set-ups or operating conditions		42
A.1	Single-capped self-ballasted lamps.....	42
A.1.1	Arrangement for conducted disturbance measurements	42
A.1.2	Arrangement for radiated disturbance measurements	42
A.2	Semi-luminaires	42
A.3	Rope lights	42
A.3.1	Preparation of the EUT	42
A.3.2	Arrangement for conducted disturbance measurements	43

A.3.3	Arrangement for radiated disturbance measurements	43
A.4	Double-capped lamp adapters, double-capped self-ballasted lamps, double-capped semi-luminaires and double-capped retrofit lamps used in fluorescent lamp luminaires	43
A.4.1	For application in linear luminaires with electromagnetic controlgear	43
A.4.2	For application in linear luminaires with electronic controlgear	43
A.4.3	For application in other than linear luminaires	43
A.4.4	Measurement methods	43
A.5	ELV lamps	44
A.5.1	Conducted disturbance test	44
A.5.2	Radiated disturbance tests	44
A.6	Independent igniters	44
Annex B (normative)	Test arrangements for conducted disturbance measurements	50
B.1	General	50
B.2	Arrangement of cables connected to interfaces of wired network ports	50
B.2.1	Arrangements of electric power supply cables	50
B.2.2	Arrangement of other than electric power supply cables	50
B.3	Arrangement of cables connected to interfaces of local wired ports	51
B.3.1	General	51
B.3.2	Cables of local-wired ports indirectly connected to a network	51
B.3.3	Cables of local-wired ports other than the type mentioned in B.3.2	51
B.3.4	Power-supply cables of an ELV lamp	52
B.3.5	Arrangement of measurement probes	52
B.4	Loading and termination of cables	52
B.5	Luminaires	52
B.6	Modules	53
Annex C (normative)	Test arrangements for radiated disturbance measurements	57
C.1	General	57
C.2	Arrangements of electric power supply cables	57
C.3	Arrangement of cables other than electric power supply cables	57
C.4	Arrangements of EUT, auxiliary equipment and associated equipment	57
C.4.1	General	57
C.4.2	EUT arrangements for table-top, wall-mounted or ceiling-mounted applications	57
C.4.3	EUT arrangements for floor-standing and pole-mounted applications	57
C.5	Loading and termination of cables	57
Annex D (informative)	Examples of application of limits and test methods	61
D.1	General	61
D.2	Case 1: Power controlgear with remote battery connection	61
D.2.1	EUT description	61
D.2.2	Interfaces, ports and limits	61
D.3	Case 2: Universal presence and light detector	62
D.3.1	EUT description	62
D.3.2	Interfaces, ports and limits	62
D.4	Case 3: Driver with three load interfaces	64
D.4.1	EUT description	64
D.4.2	Interfaces, ports and limits	64
D.5	Case 4: Ethernet powered OLED	66
D.5.1	EUT description	66

D.5.2	Interfaces, ports and limits.....	66
D.6	Case 5: Stand-alone occupancy-daylight sensor	66
D.6.1	EUT description	66
D.6.2	Interfaces, ports and limits.....	67
Annex E (informative) Statistical considerations in the determination of EMC compliance of mass-produced products		68
E.1	General.....	68
E.2	Test method based on a general margin to the limit	68
E.3	Test method based on the non-central t-distribution	69
E.3.1	Practical implementation by using frequency sub-ranges	69
E.3.2	Frequency sub-ranges	70
E.3.3	Data distortion occurring at a sub-range boundary.....	71
E.4	Test method based on the binomial distribution.....	71
E.5	Application of larger sample size.....	72
Bibliography.....		73
Figure 1 – EMC-ports of an EUT		18
Figure 2 – Generic depiction of the definitions of test-, ancillary-, auxiliary- and associated equipment w.r.t. EUT and the test/measurement environment (definitions given in CISPR 16-2-3)		20
Figure 3 – EUT and its physical interfaces		39
Figure 4 – Decision process on the application of limits to the EUT.....		40
Figure 5 – Example of a host system with different types of modules		41
Figure A.1 – Reference luminaire for double-capped lamp adapter, double-capped self-ballasted lamp, double-capped semi-luminaire and double-capped retrofit lamp used in linear fluorescent lamp luminaires (see A.4.1).....		45
Figure A.2 – Conical metal housing for single capped lamps (see A.1.1).....		46
Figure A.3 – Arrangements for conducted disturbance measurements from non-restricted ELV lamps (see A.5.1).....		47
Figure A.4 – Arrangements for conducted disturbance measurements from restricted ELV lamps (see A.5.1)		48
Figure A.5 – Hose-clamp reference luminaire for self-ballasted lamps with a GU10 bayonet cap (see A.1.1).....		49
Figure A.6 – Support plate for arranging long cables and rope lights (see 9.3.2, Clauses A.3 and B.3)		49
Figure B.1 – Circuit for measuring conducted disturbances from a luminaire (Figure B.1a), an internal/mounted/replaceable module (Figure B.1b) and a single capped self-ballasted or independent non-gas-discharge lamp Figure B.1c)		54
Figure B.2 – Circuit for measuring conducted disturbances from an external module		55
Figure B.3 – Measuring arrangements for conducted disturbances (see Clause B.5).....		56
Figure C.1 – EUT arrangement of ceiling-, wall-mounted and table-top applications during the radiated (OATS, SAC or FAR) disturbance measurement		58
Figure C.2 – EUT arrangement of floor-standing and pole-mounted applications during the radiated (OATS, SAC or FAR) disturbance measurement.....		59
Figure C.3 – Example of arrangement of a luminaire during the radiated (OATS, SAC or FAR) disturbance measurement.....		59
Figure C.4 – Example of arrangement of an internal module during the radiated (OATS, SAC or FAR) disturbance measurement		60

Figure C.5 – Example of arrangement of an external module during the radiated (OATS, SAC or FAR) disturbance measurement	60
Figure D.1 – Case 1 EUT	61
Figure D.2 – Case 2 EUT	63
Figure D.3 – Case 3 EUT	65
Figure D.4 – Case 4 EUT	66
Figure D.5 – Case 5 EUT	67
Figure E.1 – Illustration of difficulties in case the maximum value of the disturbance is at the boundary of a sub-range	71
Table 1 – Disturbance voltage limits at the electric power supply interface.....	21
Table 2 – Disturbance voltage limits at wired network interfaces other than power supply.....	21
Table 3 – Disturbance current limits at wired network interfaces other than power supply.....	22
Table 4 – Disturbance voltage limits of local wired ports: electrical power supply interface of non-restricted ELV lamps	22
Table 5 – Disturbance voltage limits at local wired ports: local wired ports other than electrical power supply interface of ELV lamp	23
Table 6 – Disturbance current limits at local wired ports: local wired ports other than electrical power supply interface of ELV lamp	23
Table 7 – Maximum EUT dimension that can be used for testing using LLAS with different diameters	24
Table 8 – LLAS radiated disturbance limits in the frequency range 9 kHz to 30 MHz.....	24
Table 9 – Loop antenna radiated disturbance limits in the frequency range 9 kHz to 30 MHz for equipment with a dimension > 1,6 m	24
Table 10 – Radiated disturbance limits and associated measurement methods in the frequency range 30 MHz to 1 GHz	25
Table 11 – Overview of standardized conducted disturbance measurement methods	34
Table 12 – Overview of standardized radiated disturbance measurement methods	36
Table D.1 – Case 1: Summary of interfaces, applicable ports and limits.....	62
Table D.2 – Case 2 – Application 1: Summary of interfaces, applicable ports and limits.....	63
Table D.3 – Case 2 – Application 2: Summary of interfaces, applicable ports and limits.....	64
Table D.4 – Case 3: Summary of interfaces, applicable ports and limits.....	65
Table D.5 – Case 4: Summary of interfaces, applicable ports and limits.....	66
Table D.6 – Case 5: Summary of interfaces, applicable ports and limits.....	67
Table E.1 – General margin to the limit for statistical evaluation	69
Table E.2 – Sample size and corresponding k factor in a non-central t-distribution.....	70
Table E.3 – Application of the binomial distribution	71

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

- 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 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.

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.