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GB/T 17743-2007 / CISPR 15:2005

Replacing GB 17743-1999, GB 15734-1995

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

(CISPR 15:2005, IDT)

Issued on: November 12, 2007 **Implemented on: November 1, 2009**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine;

Standardization Administration Committee.

Table of Contents

Foreword

All technical content of this Standard is mandatory.

This Standard is identical to CISPR 15:2005 “Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment” and the 2006 No.1 Amendment 1.

This Standard covers all content of GB 15734-1995 “Limits and methods of measurement of radio disturbance characteristics of electronic lighting control equipment”.

Since the implementation of this Standard, it replaces GB 17743-1999 “Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment”.

Compared with GB 17743-1999, the main changes are as follows:

- Deleted “radio disturbance limits of electronic dimming device used for stage, TV and entertainment, of which the control object is incandescent lamp, shall be in accordance with GB 15734 *Limits and methods of measurement of radio disturbance characteristics of electronic lighting control equipment*” in Foreword;

- Deleted CISPR Foreword;

- Added “Excluded from the scope of this Standard are: lighting equipment operating in the ISM frequency bands (as defined in Resolution 63 (1979) of the ITU Radio Regulation)” (see Clause I);

- “Reference standards” was modified as “Normative references” (see Clause II);

- Rule of normative references was modified as dated references and undated references (see Clause II);

- Normative reference GB 7000.1-1996 was modified to GB 7000.1-2007 “Luminaires - Part 1: General requirements and tests” (IEC 60598-1:2003, IDT) (see Clause II);

- Normative reference CISPR 16-1:1993 was modified as:

CISPR 16-1-1:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus* (see Clause 2);

CISPR 16-1-2:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Conducted disturbances* (see Clause 2);

CISPR 16-1-4:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Radiated disturbances* (see Clause 2);

- Added CISPR 16-2-1:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements* in “Normative references” (see Clause 2);

- Added CISPR 22:2005 *Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement* in “Normative references” (see Clause 2);

- Added IEC 61000-4-6:2003 Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields;

- “Definitions” was modified as “Terms and definitions” (see Clause 3);

- Modified Table 2a - Disturbance voltage limits at mains terminals; deleted “NOTE In Japan, the limits in the frequency range 9 kHz to 150 kHz do not apply” (see 4.3.1);

- Added Table 2c - Disturbance voltage limits at control terminals (see 4.3.3);

- Modified Table 3a - Radiated disturbance limits in the frequency range 9 kHz to 30 MHz, and deleted “NOTE In Japan, the limits for frequencies 9 kHz to 150 kHz do not apply” (see 4.4.1);

- Added the frequency range 30 kHz to 300 MHz and Table 3b (see 4.4.2);

- Deleted “4.5 Limits at specified frequencies”;

- Added limits and measurement method for independent starters and igniters (see 5.3.6, 8.9);

- “NOTE Requirements for lighting equipment used in road vehicles are dealt with by CISPR subcommittee D.” in CISPR 15:2005 was modified as “NOTE Requirements for lighting equipment used in road vehicles are dealt with by Subcommittee D of National Technical Committee on Radio Interference of Standardization Administration of China” (see 5.7.1);

- Added limits and measurement method for self-contained emergency lighting luminaires (see 5.9, 8.8, 9.8);

- Added limits and measurement method for replaceable starters for fluorescent lamps (see 5.10);

- Added measurement method for supply voltage and frequency (see 6.3);

- Modified measurement method for disturbance voltage of light regulator (see 8.1.4);

- Added measurement method for floor lamps (see 8.2);

- Modified independent transformers and convertors for incandescent lamps (see 8.4.2);

- Modified “measuring arrangement and procedure” to “measuring arrangement and procedure related to Subclause 4.4.1 and 4.4.2” (see 9.1, 9.2);

- Modified magnetic component loop antenna (see 9.1.1);

- Modified measurement method for the radiated electromagnetic disturbance of light regulator (see 9.1.4);

- Annex B was modified from “Magnetic induction current method” to “Independent method of measurement of radiated disturbances”;

- Relative sensitivity and conversion factors of large loop antenna (LLA) in Annex C was modified to “Example test arrangements during CISPR 22:2005 radiated disturbance measurement”;

- Light regulation devices in Figure 5 and Figure 6 were modified as remote terminals.

Annex A, Annex B and Annex C of this Standard are normative.

This Standard was proposed by National Technical Committee on Radio Interference of Standardization Administration of China.

This Part shall be under the jurisdiction of Subcommittee F of National Technical Committee on Radio Interference of Standardization Administration of China.

The drafting organizations of this Standard: Shanghai Research Institute for Lighting & Fitting, Guangzhou Electric Apparatus Research Institute, Philips (China) Investment Co., Ltd., Guangzhou Jiufo Electric Appliance Co., Ltd., and Shanghai Alpha Lighting Equipment Testing Ltd.

Main drafters of this Standard: Chen Chaozhong, Wang Yongxi, Li Xiuqing, Chen Ziliang, Zhong Xuezhou, Liu Erli and Shi Xiaohong.

This Standard replaces the following previous standards:

- GB 17743-1999;

- GB 15734-1995.

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

1 Scope

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

- 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;
- the lighting part of multi-function equipment where one of the primary functions of this is illumination;
- independent auxiliaries exclusively for use with lighting equipment;
- UV and IR radiation equipment;
- neon advertising signs;
- street/flood lighting intended for outdoor use;
- transport lighting (installed in buses and trains).

Excluded from the scope of this Standard are:

- lighting equipment operating in the ISM frequency bands (as defined in Resolution 63 (1979) of the ITU Radio Regulation);
- lighting equipment for aircraft and airports;
- apparatus for which the electromagnetic compatibility requirements in the radio-frequency range are explicitly formulated in other IEC or CISPR standards.

NOTE Examples are:

- built-in lighting devices in other equipment, for example scale illumination or neon devices;
- photocopiers;

- slide projectors;

- lighting equipment for road vehicles.

The frequency range covered is 9 kHz to 400 GHz.

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

The limits in this Standard have been determined on a probabilistic basis to keep the suppression of disturbances within economically reasonable limits while still achieving an adequate level of radio protection and electromagnetic compatibility. In exceptional cases, additional provisions may be required.

2 Normative references

The following standards contain the provisions which, through reference in this Standard, constitute the provisions of this Standard. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Standard are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Standard.

GB/T 4365-2003 *Electrotechnical terminology - Electromagnetic compatibility (IEC 60050 (161):1990, IDT)*

GB 4824-2004 *Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement (idt CISPR 11:2003, IDT)*

GB 7000.1-2007 *Luminaires - Part 1:General requirements and tests (IEC 60598-1:2003, IDT)*

QB 2276-1996 *Starters Intended to be Used in Fluorescent Lamps (idt IEC 60155:1993)*

IEC 61000-4-6:2003 *Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields*

CISPR 16-1-1:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus*

CISPR 16-1-2:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Conducted disturbances*

CISPR 16-1-4:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Radiated disturbances*

CISPR 16-2-1:2003 *Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements*

CISPR 22:2005 *Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement*

3 Terms and definitions

For the purposes of this document, the terms and definitions contained in GB/T 4365-2003 apply.

Continuous disturbance may be either broadband, for instance caused by the switching operations or by unstable gas-discharges in the lamp electrode region, or may be narrowband, for instance caused by electronic control devices operating at dedicated frequencies.

NOTE Instead of the concept of "broadband" and "narrowband", a distinction is made in this Standard between two related kinds of disturbance, defined by the type of the applied detector. For this purpose, limits have been defined with respect to the measurement with the quasi-peak detector and with the average detector. By using this approach, a combination of broadband and narrowband disturbances can also be assessed.

4 Limits

4.1 Frequency ranges

In 4.2, 4.3 and 4.4, limits are given as a function of frequency range. No measurements need to be performed at frequencies where no limits are specified.

NOTE The World Administrative Radiocommunications Conference (WARC) has in 1979 reduced the lower frequency limit in region 1 to 148.5 kHz; for applications falling within the scope of this Standard, tests at 150 kHz are considered adequate, since 148.5 kHz falls within the receiver bandwidth.

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