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INTERNATIONAL STANDARD

NORME INTERNATIONALE

withdrawn

Equipment for general lighting purposes – EMC immunity requirements

Équipements pour l'éclairage à usage général – Exigences concernant l'immunité CEM

IEC 61547:2009

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EQUIPMENT FOR GENERAL LIGHTING PURPOSES – EMC IMMUNITY REQUIREMENTS

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by IEC technical committee 34: Lamps and related equipment.

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

ISH	Report on voting
34/180/ISH	34/185/RVD

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.

The draft is based on the outcome of documents 34/155/DC and 34/158/INF.

Introduction:

Test conditions of dimmable lighting equipment are unclear in IEC 61547 for dimmable lighting equipment with dim level other than 50 % ± 10 %. Some HID control units have only one dim level, for example 65 %.

Present text, Clause 7, second paragraph, first sentence:

"Equipment including a regulating control shall be tested at a light output level of 50 % ± 10 %."

Interpretation for equipment which could not fulfill the test dim level conditions:

If a light output level of 50 % ± 10 % is not available for equipment including regulating control, the test shall be done at the level which is closest to 50 %. If two steps equally distant to 50 % are available, the lower level (< 50 %) shall be used for the test.

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June 2013 ICS 29.020; 29.140; 33.100.10

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EQUIPMENT FOR GENERAL LIGHTING PURPOSES – EMC IMMUNITY REQUIREMENTS

FOREWORD

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International Standard IEC 61547 has been prepared by IEC technical committee 34: Lamps and related equipment.

This second edition cancels and replaces the first edition, published in 1995, and its Amendment 1 (2000). It constitutes a technical revision

The main reason for this revision is to update the dates of the references to the basic standards which also required some editorial changes in the tables. Other changes are:

1 Scope: clearly excludes multimedia equipment with lamps (e.g. TV);

3.2 Enclosure port: removal of the "earth port" in Figure 1 as in the generic EMC standards; the note below Figure 1 in the first edition relates to a requirement and moved to the main text under 5.1 General;

5.6 Injected currents: update of the names of the example CDN's;

5.7 Surges: test only at the peak of the mains voltage by deleting the requirement to test at zero crossings;

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5.8 Voltage dips and interruptions: clarifying that the voltage level changes at the zero crossing;

6.3.2 Independent auxiliaries: Table 14 has been simplified because most independent auxiliaries have identical performance criteria;

6.3.3 Luminaires: Table 15 has been simplified because most luminaires have identical performance criteria; correcting the error in the injected current column by changing the B into A for luminaires with electronic ballast for discharge lamps; additionally, the requirements for emergency luminaires operating in high risk task areas are updated to meet the levels specified in IEC 60598-2-22;

7 Conditions during testing: the ”under consideration” for the operating conditions for starting devices has been deleted; the supply voltage and frequency during the test are clearly stated; shortening the immunity test for equipment incorporating a regulating control by testing at one light output level (50 % ± 10 %) instead of testing at three light output levels which are difficult to adjust and do not provide extra protection.

The text of this standard is based on the following documents:

FDIS	Report on voting
34/127/FDIS	34/130/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.

This standard is to be read in conjunction with the relevant basic and/or product standard(s).

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

The contents of the corrigendum of April 2010 and Interpretation sheet 1 of June 2013 have been included in this copy.

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EQUIPMENT FOR GENERAL LIGHTING PURPOSES – EMC IMMUNITY REQUIREMENTS

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1 Scope

This International Standard for electromagnetic immunity requirements applies to lighting equipment which is within the scope of IEC technical committee 34, such as lamps, auxiliaries and luminaires, intended either for connecting to a low voltage electricity supply or for battery operation.

Excluded from the scope of this standard is equipment for which the immunity requirements are formulated in other IEC or CISPR standards such as:

– lighting equipment for use in transport vehicles;
– entertainment lighting control equipment for professional purposes;
– lighting devices built into other equipment such as:
  - scale illumination or indicators;
  - photocopiers;
  - slide and overhead projectors;
  - multimedia equipment.

However, in multi-function equipment where the lighting part operates independently from other parts, the electromagnetic immunity requirements of this standard apply to the lighting part.

The requirements of this standard are based on the requirements for domestic, commercial and light-industrial environments as given in IEC 61000-6-1, but modified to lighting engineering practice.

It can be expected that lighting equipment complying with the requirements of this standard will operate satisfactorily in other environments. In some special cases, measures have to be taken to provide higher immunity. It is impracticable to deal with all these possibilities. Such requirements may be established by contractual agreement between supplier and purchaser.

2 Normative references

The following referenced documents are indispensable for the application 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 60050-161, *International Electrotechnical Vocabulary – Chapter 161: Electromagnetic Compatibility*

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

IEC 60598-1:2008, *Luminaires – Part 1: General requirements and tests*

IEC 60598-2-22, *Luminaires – Part 2-22: Particular requirements – Luminaires for emergency lighting*

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IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio frequency, electromagnetic field immunity test* [1]
Amendment 1 (2007)

IEC 61000-4-4:2004, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity tests*

IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6:2008, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8:1993, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 8: Power frequency magnetic field immunity test* [2]
Amendment 1 (2000)

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-6-1:2005, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments*

3 Terms and definitions

For the purposes of this document, the terms and definitions of IEC 60050(161) and IEC 60050(845) apply, together with the following.

3.1
port
particular electrical interface of the specified equipment with the external electromagnetic environment

3.2
enclosure port
the physical boundary of the equipment through which electromagnetic fields may radiate or penetrate (see Figure 1)

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1 There exists a consolidated edition 3.1 (2008) that comprises IEC 61000-4-3 and its Amendment 1.

2) There exists a consolidated edition 1.1 (2001) that comprises IEC 61000-4-8 and its Amendment 1.

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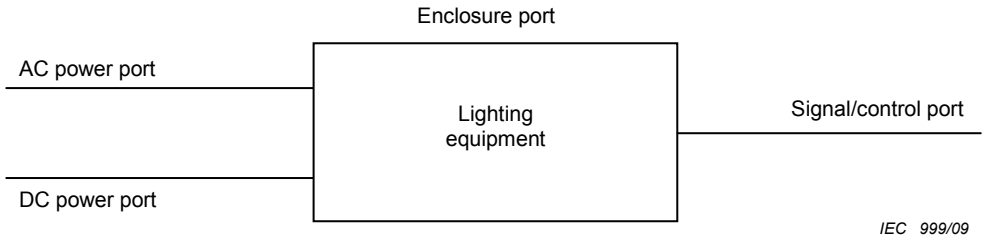

NOTE AC/DC power port may include the protective earth conductor.

Figure 1 – Examples of ports

4 Performance criteria

4.1 A functional description of performance criteria, during or as a consequence of the immunity testing, shall be provided by the manufacturer and noted in the test report.

The performance of lighting equipment shall be assessed by monitoring:

– the luminous intensity of the luminaire or of the lamp(s);
– the functioning of the control in the case of equipment which includes a regulating control or concerns the regulating control itself;
– the functioning of the starting device, if any.

4.2 The performance criteria given hereafter apply to lighting equipment.

a) Performance criterion A

During the test, no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.

b) Performance criterion B

During the test, the luminous intensity may change to any value. After the test, the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test, the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.

c) Performance criterion C

During and after the test, any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal, if necessary by temporary interruption of the mains supply and/or operating the regulating control.

Additional requirement for lighting equipment incorporating a starting device: After the test, the lighting equipment is switched off. After half an hour, it is switched on again. The lighting equipment shall start and operate as intended.

4.3 A change of luminous intensity may be checked by visual observation but, in case of doubt, the following applies.

The luminous intensity of a luminaire or of the lamp(s) shall be measured by means of a illuminance (lux) meter which is positioned in an axis perpendicular to the main plane of the

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