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TECHNICAL REPORT

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Equipment for general lighting purposes – EMC immunity requirements – Part 1: An objective voltage fluctuation immunity test method

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC TR 61547-1, which is a technical report, has been prepared by subcommittee 34: Lamps and related equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
34/212/DTR	34/220A/RVC

Full information on the voting for the approval of this technical report 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.

A list of all parts in the IEC 61547 series, published under the general title *Equipment for general lighting purposes – EMC immunity requirements*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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- withdrawn,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.

A bilingual version of this publication may be issued at a later date.

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.

INTRODUCTION

Flicker perception, and the associated IEC 61000-3-3 standard for voltage fluctuations and the flickermeter IEC 61000-4-15, is based on the 60 W incandescent lamp. As a result of the phasing out of incandescent lamps and the widespread introduction of alternative lighting equipment technologies, a new reference lamp was considered. It has been demonstrated that new lighting technologies are in general less but sometimes also more sensitive to supply voltage fluctuations than the current 60 W incandescent lamp. CIGRE working group C4.111 has assessed the impact of new lighting technologies on the existing flicker standards. Most likely, the present flicker sensitivity curve of IEC 61000-3-3 will stay as the reference, but because of the increased diversity of sensitivity of lighting equipment to voltage fluctuations, there is a future need for a voltage-fluctuation immunity test specifically for lighting equipment. In this way, the full-EMC approach (Figure 1) is introduced for flicker, i.e. limit voltage fluctuations caused by equipment connected to the grid, and in addition establish a minimum level of flicker immunity of lighting equipment against these voltage fluctuations.

This technical report provides an objective method and procedure for testing the immunity of lighting equipment against mains voltage fluctuations. With this technical report, the lighting industry can gain experience with the flicker immunity test. Results of actual tests will be reported separately in IEC TR 61547-2.

Based on the experience with this immunity test method, the adoption of a similar test in the immunity standard for lighting equipment IEC 61547 will be considered.

EQUIPMENT FOR GENERAL LIGHTING PURPOSES – EMC IMMUNITY REQUIREMENTS –

Part 1: An objective voltage fluctuation immunity test method

1 Scope

This Part of 61547, which is a Technical Report, establishes an objective method and procedure for testing the immunity performance of lighting equipment against voltage fluctuation disturbances on the a.c. power port.

The object of this Technical Report is to establish a common and objective reference for evaluating the immunity of lighting equipment in terms of illuminance flicker when subjected to mains voltage fluctuations. Temporal changes in the colour of the light (chromatic flicker) are not considered in this test.

This method and procedure can be applied to lighting equipment which is within the scope of IEC technical committee 34, such as lamps and luminaires, intended for connection to a low voltage electricity supply. Independent auxiliaries such as drivers can be tested also by application of a representative light source to that auxiliary.

The method and procedure described in this technical report are based on the IEC 61000-3-3 standard for voltage fluctuation limits and the flickermeter standard IEC 61000-4-15.

The test method described in this report applies to lighting equipment rated for 230 V a.c. and 50 Hz (for verification purposes).

NOTE The principle of the method can be applied for other nominal voltage and frequency ratings.

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 61000-3-3:2013, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

IEC 61000-4-15:2010, *Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications*