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Electromagnetic compatibility (EMC) – Part 4-35: Testing and measurement techniques – HPEM simulator compendium

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC 61000-4-35, which is a technical report, has been prepared by subcommittee 77C: High power transient phenomena, of IEC technical committee 77: Electromagnetic compatibility.

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

Enquiry draft	Report on voting
77C/189/DTR	77C/193/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.

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- withdrawn,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.

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

INTRODUCTION

IEC 61000 is published in separate parts according to the following structure:

Part 1: General
General considerations (introduction, fundamental principles)
Definitions, terminology
Part 2: Environment
Description of the environment
Classification of the environment
Compatibility levels
Part 3: Limits
Emission limits
Immunity limits (in so far as they do not fall under responsibility of product committees)
Part 4: Testing and measurement techniques
Measurement techniques
Testing techniques
Part 5: Installation and mitigation guidelines
Installation guidelines
Mitigation methods and devices
Part 6: Generic standards
Part 9: Miscellaneous

Each part is further subdivided into several parts published either as international standards, technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-35: Testing and measurement techniques – HPEM simulator compendium

1 Scope

This part of IEC 61000 provides information about extant system-level High-Power Electromagnetic (HPEM) simulators and their applicability as test facilities and validation tools for immunity test requirements in accordance with the IEC 61000 series of standards. HPEM simulators with the capability of conducted susceptibility or immunity testing will be included in a further stage of the project. In the sense of this report the group of HPEM simulators consists of narrow band microwave test facilities and wideband simulators for radiated high power electromagnetic fields. IEC 61000-2-13 defines high power electromagnetic (HPEM) radiated environments as those with a peak power density that exceeds 26 W/m^2 (100 V/m or 0,27 A/m). This part of IEC 61000 focuses on a sub-set of HPEM simulators capable of achieving much higher fields. Therefore, the HPEM radiated environments used in this document are characterized by a peak power density exceeding 663 W/m^2 (500 V/m or 1,33 A/m). The intention of this report is to provide the first detailed listing of both narrowband (hypoband) and wideband (mesoband, sub-hyperband and hyperband) simulators throughout the world.

HEMP simulators are the subject of a separate compendium (IEC 61000-4-32) and thus are outside the scope of this Technical Report.

After an introduction, a general description of HPEM simulators, as listed in this Technical Report, is presented. A database has been created by collecting information from simulator owners and operators and this data is presented for the technical characterization of the test facilities. In addition, some important commercial aspects, such as availability and operational status, are also addressed.

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 61000-2-9, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 9: Description of HEMP environment – Radiated disturbance*

IEC 61000-2-10, *Electromagnetic compatibility (EMC) – Part 2-10: Environment – Description of HEMP environment – Conducted disturbance*

IEC 61000-2-13, *Electromagnetic compatibility (EMC) – Part 2-13: Environment – High-power electromagnetic (HPEM) environments – Radiated and conducted*

IEC 61000-4-21, *Electromagnetic compatibility (EMC) – Part 4-21: Testing and measurement techniques – Reverberation chamber test methods*