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Part 4-32:
Testing and measurement techniques –
High-altitude electromagnetic pulse (HEMP) simulator compendium

Compatibilité électromagnétique (CEM) –

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) – Part 4-32: Testing and measurement techniques – High-altitude electromagnetic pulse (HEMP) simulator compendium

FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 61000-4-32, which is a technical report, has been prepared by subcommittee 77C: High power transient phenomena, of IEC technical committee 77: Electromagnetic compatibility (EMC). It has the status of a basic EMC publication in accordance with IEC Guide 107.

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

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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 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.
ELECTROMAGNETIC COMPATIBILITY (EMC) –
Part 4-32: Testing and measurement techniques –
High-altitude electromagnetic pulse (HEMP) simulator compendium

1 Scope

This Technical Report provides information about extant system-level high-altitude EMP (HEMP) simulators and their applicability as test facilities and validation tools for immunity test requirements. This report provides the first detailed listing of HEMP simulators throughout the world and is the preliminary summary of this effort. It should be updated on a regular basis as the status of test facilities change.

The main body of the report is a collection of datasheets describing 42 EMP simulators in 14 countries that are still operational or could be made available for use by the international community.

The owners of the simulators have provided the information contained in this report. The IEC shall not be held responsible for the accuracy of the information.

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

3 General

A high-altitude (above 30 km) nuclear burst produces 3 types of electromagnetic pulses that are observed on the earth’s surface:

- early-time HEMP (fast);
- intermediate-time HEMP (medium);
- late-time HEMP (slow).

Historically most interest has been focused on the early-time HEMP that was previously referred to as simply “HEMP”. Here we will use the term high-altitude EMP or HEMP to include all 3 types of waveforms. The term NEMP \(^1\) covers many categories of nuclear EMPs including those produced by surface bursts (SREMP) \(^2\) or created on space systems (SGEMP) \(^3\).

\(^1\) Nuclear Electromagnetic Pulse
\(^2\) Source Region EMP
\(^3\) System Generated EMP