INTERNATIONAL STANDARD

IEC 61000-4-32

First edition
2002-10

BASIC EMC PUBLICATION

Electromagnetic compatibility (EMC) –

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

Compatibilité électromagnétique (CEM) –

Partie 4-32:
Techniques d'essai et de mesure –
Compendium des simulateurs d'impulsions électromagnétiques à haute altitude (IEMN-HA)

© IEC 2002 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE XE

For price, see current catalogue

CONTENTS

1	Scope	6
2	Normative references	6
3	General	6
4	Definitions	7
5	Datasheet definitions and instructions	8
5.1	General information	8
5.2	Simulator input options	8
5.3	Electromagnetic field characteristics	8
5.4	Administrative information	9
5.5	Availability	10
5.6	Other technical information	10
6	Project description	11
6.1	Introduction	11
6.2	Guided-wave simulators	11
6.3	Dipole simulators	14
6.4	Hybrid simulators	19
7	EMP simulator datasheets	20
7.1.1	Canada – DREMPS	24
7.2.1	China – DM-1200	26
7.3.1	Czech Republic (reserved)	--
7.4.1	Egypt (reserved)	--
7.5.1	France – France Telecom R&D Guided-wave	28
7.5.2	France – DPH	30
7.5.3	France – SSR	32
7.6.1	Germany – DIESES	34
7.6.2	Germany – HPD	36
7.6.3	Germany – WIS Indoor Guided-wave	38
7.6.4	Germany – VPD	40
7.6.5	Germany – MIGUS	42
7.7.1	India – IBWEMPS	44
7.7.2	India – RBWEMPS	46
7.8.1	Israel – Rafael Guided-wave	48
7.8.2	Israel – Rafael Hybrid	50
7.9.1	Italy – INSIEME	52
7.10.1	Netherlands – EMIS-III-HPD	54
7.10.2	Netherlands – EMIS-III-TL	56
7.10.3	Netherlands – EMIS-III-VPD	58
7.11.1	Poland (reserved)	--
7.12.1	Russia – ERU-2M	60
7.12.2	Russia – SEMP-6-2M	62
7.12.3	Russia – PULSE-M	64
7.12.4	Russia – SEMP-12-3	66
7.12.5	Russia – SEMP-1,5	68

7.13.1 Sweden – SAPIENS-2 70
7.13.2 Sweden – SPERANS 72
7.14.1 Switzerland – MEMPS 74
7.14.2 Switzerland – VEPES 76
7.14.3 Switzerland – VERIFY 78
7.14.4 Switzerland – SEMIRAMIS 80
7.15.1 Ukraine – GIN-1,6-5 82
7.15.2 Ukraine – GINT-12-30 84
7.15.3 Ukraine – IEMI-M5M 86
7.15.4 Ukraine – IEMP-10 88
7.16.1 United Kingdom – DERA Guided-wave 90
7.17.1 United States – ALECS 92
7.17.2 United States – ARES 94
7.17.3 United States – HPD 96
7.17.4 United States – Trestle 98
7.17.5 United States – VPD-I 100
7.17.6 United States – VPD-II 102
7.17.7 United States – USN NAWCAD HPD 104
7.17.8 United States – USN NAWCAD VPD 106
8 Bibliography 108

Tables

1 Guided-wave EMP simulators with conventional termination 15
2 Guided-wave EMP simulators with distributed termination 16
3 Vertical dipole EMP simulators 17
4 Hybrid EMP simulators 18
5 EMP simulator datasheets 21

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

ELECTROMAGNETIC COMPATIBILITY (EMC) –

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

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this technical report may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

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".

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:

Enquiry draft	Report on voting
77C/116/CDV	77C/126/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 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 worldand 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 61000-2-9: *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 9: Description of HEMP environment – Radiated disturbance.* Basic EMC publication

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