

# INTERNATIONAL STANDARD



BASIC EMC PUBLICATION

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



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INTERNATIONAL  
ELECTROTECHNICAL  
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## CONTENTS

FOREWORD .....	5
INTRODUCTION .....	7
1 Scope .....	8
2 Normative references .....	8
3 Terms and definitions .....	8
4 General .....	12
5 Description of HEMP environment, conducted parameters .....	13
5.1 Introductory remarks .....	13
5.2 Early-time HEMP external conducted environment .....	13
5.3 Intermediate-time HEMP external conducted environment .....	15
5.4 Late-time HEMP external conducted environment .....	15
5.5 Antenna currents .....	17
5.6 HEMP internal conducted environments .....	21
Annex A (informative) Discussion of early-time HEMP coupling for long lines .....	23
A.1 Elevated line coupling .....	23
A.2 Buried line coupling .....	24
Annex B (informative) Discussion of intermediate-time HEMP coupling for long lines .....	26
B.1 General .....	26
B.2 Elevated line coupling .....	26
B.3 Buried line coupling .....	26
Annex C (informative) Responses of simple linear antennas to the IEC early-time HEMP environment .....	28
C.1 Overview .....	28
C.2 IEC early-time HEMP environment .....	28
C.3 Evaluation of the antenna responses .....	31
C.3.1 General .....	31
C.3.2 Monopole antenna .....	31
C.3.3 Dipole antenna .....	32
C.4 Calculated results .....	33
C.5 Summary of results .....	34
Annex D (informative) Measured cable currents inside telephone buildings .....	43
Annex E (informative) Time waveform description for the responses of simple linear antennas to the early-time HEMP environment .....	44
E.1 General .....	44
E.2 Description of the recommended waveform .....	44
E.3 Procedure for determining the test waveform .....	46
Bibliography .....	47
Figure 1 – Geometry for the definition of polarization and of the angles of elevation $\psi$ and azimuth $\phi$ .....	9
Figure 2 – Geometry for the definition of the plane wave .....	10
Figure 3 – Geomagnetic dip angle .....	11
Figure 4 – Three-phase line and equivalent circuit for computing late-time HEMP conducted current .....	16

Figure 5 – Centre-loaded dipole antenna of length $l$ and radius $a$ , excited by an incident early-time HEMP field .....	18
Figure A.1 – Variation of peak coupled cable current versus local geomagnetic dip angle .....	23
Figure C.1 – Illustration of the incident HEMP field .....	29
Figure C.2 – HEMP tangent radius $R_t$ defining the illuminated region, shown as a function of burst height ( $HOB$ ) .....	29
Figure C.3 – Geometry of the monopole antenna .....	32
Figure C.4 – Geometry of the dipole antenna .....	33
Figure C.5 – Cumulative probability distributions for the peak responses for the 1 m vertical monopole antenna load currents and voltages .....	34
Figure C.6 – Cumulative probability distributions for the peak responses for the 3 m vertical monopole antenna load currents and voltages .....	35
Figure C.7 – Cumulative probability distributions for the peak responses for the 10 m vertical monopole antenna load currents and voltages .....	36
Figure C.8 – Cumulative probability distributions for the peak responses for the 100 m vertical monopole antenna load currents and voltages .....	37
Figure C.9 – Cumulative probability distributions for the peak responses for the 1 m horizontal dipole antenna load currents and voltages .....	38
Figure C.10 – Cumulative probability distributions for the peak responses for the 3 m horizontal dipole antenna load currents and voltages .....	39
Figure C.11 – Cumulative probability distributions for the peak responses for the 10 m horizontal dipole antenna load currents and voltages .....	40
Figure C.12 – Cumulative probability distributions for the peak responses for the 100 m horizontal dipole antenna load current and voltages .....	41
Figure C.13 – Plot of multiplicative correction factors for correcting the values of $V_{OC}$ , $I_{SC}$ , $I_L$ and $V_L$ for antennas having other $L/a$ ratios .....	42
Figure E.1 – Comparison of a computation and an analytic formula for a 1 m wire illuminated by the $E_1$ HEMP with the field parallel to the wire (and no ground present) [11] ..	45
Figure E.2 – General waveform of the damped oscillatory waveform from IEC 61000-4-18 [14] .....	45
Table 1 – Early-time HEMP conducted common-mode short-circuit currents including the time history and peak value $I_{pk}$ as a function of severity level, length $L$ (in metres) and ground conductivity $\sigma_g$ .....	14
Table 2 – Intermediate-time HEMP conducted common-mode short-circuit currents including the time history and peak value $I_{pk}$ as a function of length $L$ (in metres) and ground conductivity $\sigma_g$ .....	15
Table 3 – Maximum peak electric dipole antenna load current versus frequency for antenna principal frequencies .....	19
Table 4 – HEMP response levels for $V_{OC}$ for the vertical monopole antenna .....	19
Table 5 – HEMP response levels for $I_{SC}$ for the vertical monopole antenna .....	20
Table 6 – HEMP response levels for $I_L$ for the loaded vertical monopole antenna <sup>a</sup> .....	20
Table 7 – HEMP response levels for $V_{OC}$ for the horizontal dipole antenna .....	20
Table 8 – HEMP response levels for $I_{SC}$ for the horizontal dipole antenna .....	21
Table 9 – HEMP response levels for $I_L$ for the loaded horizontal dipole antenna <sup>a</sup> .....	21

Table A.1 – Rectified impulse ( $RI$ ) and computed effective pulse widths for vertical polarization of the early-time HEMP for an elevated conductor ( $h = 10$ m).....	24
Table A.2 – Coupled early-time HEMP currents for a buried conductor ( $z = -1$ m).....	25
Table A.3 – Waveform parameters for early-time HEMP buried conductor coupling ( $z = -1$ m).....	25
Table A.4 – Average waveform parameters for early-time HEMP buried conductor currents.....	25
Table B.1 – Coupled HEMP intermediate-time short-circuit currents for an elevated conductor ( $h = 10$ m).....	26
Table B.2 – Coupled HEMP intermediate-time short-circuit currents for a buried conductor ( $h = -1$ m).....	26
Table D.1 – Estimated internal peak-to-peak cable currents ( $I_{PP}$ ) from direct HEMP illumination (from [8]).....	43
Table D.2 – Damped sinusoid waveform characteristics for internal cable currents (measured) (from [8]).....	43
Table E.1 – Waveform parameters to be used in Formula (E.1).....	46

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**ELECTROMAGNETIC COMPATIBILITY (EMC) –****Part 2-10: Environment – Description of HEMP environment –  
Conducted disturbance****FOREWORD**

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IEC 61000-2-10 has been prepared by subcommittee 77C: High power transient phenomena, of IEC technical committee 77: Electromagnetic compatibility. It is an International Standard.

It forms Part 2-10 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This second edition cancels and replaces the first edition published in 1998. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) a new Annex E has been added to describe the time waveform characteristics of the response of simple linear antennas to aid in the development of test methods;
- b) technical support for this waveform is provided in Annex E.

- c) a procedure to use the waveforms presented in Annex E along with the peak values previously provided in Annex C is provided.

The text of this International Standard is based on the following documents:

Draft	Report on voting
77C/318/FDIS	77C/321/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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- withdrawn,
- replaced by a revised edition, or
- amended.

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## 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 (insofar as these limits do not fall under the responsibility of the 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 or as 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).

The IEC has initiated the preparation of standardized methods to protect civilian society from the effects of high-power electromagnetic environments including the high-altitude electromagnetic pulse. Such environments could disrupt systems for communications, electric power, information technology, etc.

This part of IEC 61000 is an international standard that establishes the HEMP conducted disturbances that are the result of coupling by the radiated HEMP disturbances.

## **ELECTROMAGNETIC COMPATIBILITY (EMC) –**

### **Part 2-10: Environment – Description of HEMP environment – Conducted disturbance**

#### **1 Scope**

This part of IEC 61000 defines the high-altitude electromagnetic pulse (HEMP) conducted environment that is one of the consequences of a high-altitude nuclear explosion.

Those dealing with this subject consider two cases:

- high-altitude nuclear explosions;
- low-altitude nuclear explosions.

For civil systems the most important case is the high-altitude nuclear explosion. In this case, the other effects of the nuclear explosion such as blast, ground shock, thermal and nuclear ionizing radiation are not present at the ground level.

However, the electromagnetic pulse associated with the explosion can cause disruption of, and damage to, communication, electronic and electric power systems thereby upsetting the stability of modern society.

The object of this document is to establish a common reference for the conducted HEMP environment in order to select realistic stresses to apply to victim equipment to evaluate their performance.

#### **2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

IEC 61000-4-24, *Electromagnetic compatibility (EMC) – Part 4-24: Testing and measurement techniques – Test methods for protective devices for HEMP conducted disturbance*

#### **3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>