

INTERNATIONAL STANDARD

NORME INTERNATIONALE

BASIC EMC PUBLICATION

PUBLICATION FONDAMENTALE EN CEM

**Electromagnetic compatibility (EMC) –
Part 4-5: Testing and measurement techniques – Surge immunity test**

**Compatibilité électromagnétique (CEM) –
Partie 4-5: Techniques d'essai et de mesure – Essai d'immunité aux ondes
de choc**



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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope and object.....	7
2 Normative references	7
3 Terms and definitions	8
4 General	11
4.1 Power system switching transients	11
4.2 Lightning transients	11
4.3 Simulation of the transients	11
5 Test levels.....	12
6 Test instrumentation.....	12
6.1 1,2/50 µs combination wave generator	12
6.2 10/700 µs combination wave generator	16
6.3 Coupling/decoupling networks	19
7 Test setup	32
7.1 Test equipment	32
7.2 Test setup for tests applied to EUT power ports	32
7.3 Test setup for tests applied to unshielded unsymmetrical interconnection lines	32
7.4 Test setup for tests applied to unshielded symmetrical interconnections communication lines	33
7.5 Test setup for tests applied to high speed communications lines	33
7.6 Test setup for tests applied to shielded lines	33
7.7 Test setup to apply potential differences	36
7.8 EUT mode of operation	36
8 Test procedure	37
8.1 Laboratory reference conditions	37
8.2 Application of the surge in the laboratory.....	37
9 Evaluation of test results	38
10 Test report.....	39
Annex A (informative) Selection of generators and test levels	40
Annex B (informative) Explanatory notes	42
Annex C (informative) Considerations for achieving immunity for equipment connected to low voltage power systems	46
Bibliography.....	48
Figure 1 – Simplified circuit diagram of the combination wave generator (1,2/50 µs – 8/20 µs)	13
Figure 2 – Waveform of open-circuit voltage (1,2/50 µs) at the output of the generator with no CDN connected (waveform definition according to IEC 60060-1).....	15

Figure 3 – Waveform of short-circuit current (8/20 μ s) at the output of the generator with no CDN connected (waveform definition according to IEC 60060-1).....	15
Figure 4 – Simplified circuit diagram of the combination wave generator (10/700 μ s – 5/320 μ s) according to ITU K series standards.....	16
Figure 5 – Waveform of open-circuit voltage (10/700 μ s) (waveform definition according to IEC 60060-1)	17
Figure 6 – Waveform of the 5/320 μ s short-circuit current waveform (definition according to IEC 60060-1)	18
Figure 7 – Example of test setup for capacitive coupling on a.c./d.c. lines; line-to-line coupling (according to 7.2).....	19
Figure 8 – Example of test setup for capacitive coupling on a.c./d.c. lines; line-to-ground coupling (according to 7.2).....	20
Figure 9 – Example of test setup for capacitive coupling on a.c. lines (3 phases); line L3 to line L1 coupling (according to 7.2)	21
Figure 10 – Example of test setup for capacitive coupling on a.c. lines (3 phases); line L3 to ground coupling (according to 7.2).....	22
Figure 11 – Example of test set up for unshielded unsymmetrical interconnection lines; line-to-line and line-to-ground coupling (according to 7.3), coupling via capacitors	23
Figure 12 – Example of test setup for unshielded unsymmetrical interconnection lines; line-to-line and line-to-ground coupling (according to 7.3), coupling via arrestors.....	24
Figure 13 – Example of test setup for unshielded unsymmetrical interconnection lines; line-to-line and line-to-ground coupling (according to 7.3), coupling via a clamping circuit.....	25
Figure 14 – Example of test setup for unshielded symmetrical interconnection lines (communication lines); lines-to-ground coupling (according to 7.4), coupling via arrestors	26
Figure 15 – Example of a coupling/decoupling network for symmetrical high speed communication lines using the 1,2/50 μ s surge	27
Figure 16 – Example of test setup for tests applied to shielded lines (according to 7.6) and to apply potential differences (according to 7.7)	34
Figure 17 – Example of test setup for tests applied to shielded lines grounded only at one end (according to 7.6) and to apply potential differences (according to 7.7)	35
Figure 18 – Coupling method and test setup for tests applied to shielded lines and to apply potential differences, especially in configurations with multiple shielded cable wiring.....	36
Table 1 – Test levels.....	12
Table 2 – Definitions of the waveform parameters 1,2/50 μ s – 8/20 μ s.....	14
Table 3 – Relationship between peak open-circuit voltage and peak short-circuit current.....	14
Table 4 – Definitions of the waveform parameters 10/700 μ s – 5/320 μ s	18
Table 5 – Relationship between peak open-circuit voltage and peak short-circuit current.....	18
Table 6 – Voltage waveform specification at the EUT port of the coupling/decoupling network.....	29
Table 7 – Current waveform specification at the EUT port of the coupling/decoupling network.....	29
Table A.1 – Selection of the test levels (depending on the installation conditions)	41

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 4-5 : Testing and measurement techniques –
Surge immunity test**

FOREWORD

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International Standard IEC 61000-4-5 has been prepared by subcommittee 77B: High frequency phenomena, of IEC technical Committee 77: Electromagnetic compatibility.

It forms Part 4-5 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications*.

This second edition cancels and replaces the first edition published in 1995 and its amendment 1 (2000), and constitutes a technical revision. Particularly, the clauses dedicated to coupling/decoupling networks and to test setups are more detailed.

The text of this standard is based on the following documents:

FDIS	Report on voting
77B/467/FDIS	77B/486/RVD

Full information on the voting for the approval of this standard 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.

The contents of the corrigendum of October 2009 have been included in this copy.

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 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: 61000-6-1).

This part is an International Standard which gives immunity requirements and test procedures related to surge voltages and surge currents.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-5 : Testing and measurement techniques – Surge immunity test

1 Scope and object

This part of IEC 61000 relates to the immunity requirements, test methods, and range of recommended test levels for equipment to unidirectional surges caused by overvoltages from switching and lightning transients. Several test levels are defined which relate to different environment and installation conditions. These requirements are developed for and are applicable to electrical and electronic equipment.

The object of this standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to surges. The test method documented in this part of IEC 61000 describes a consistent method to assess the immunity of an equipment or system against a defined phenomenon.

NOTE As described in IEC Guide 107, this is a basic EMC publication for use by product committees of the IEC. As also stated in Guide 107, the IEC product committees are responsible for determining whether this immunity test standard should be applied or not, and if applied, they are responsible for determining the appropriate test levels and performance criteria. TC 77 and its sub-committees are prepared to co-operate with product committees in the evaluation of the value of particular immunity tests for their products.

This standard defines:

- a range of test levels;
- test equipment;
- test setups;
- test procedures.

The task of the described laboratory test is to find the reaction of the EUT under specified operational conditions, to surge voltages caused by switching and lightning effects at certain threat levels.

It is not intended to test the capability of the EUT's insulation to withstand high-voltage stress. Direct injections of lightning currents, i.e, direct lightning strikes, are not considered in this standard.

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 (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60469-1, *Pulse techniques and apparatus – Part 1: Pulse terms and definitions*