

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



BASIC EMC PUBLICATION

PUBLICATION FONDAMENTALE EN CEM

**Electromagnetic compatibility (EMC) –  
Part 4-12: Testing and measurement techniques – Ring wave immunity test**

**Compatibilité électromagnétique (CEM) –  
Partie 4-12: Techniques d'essai et de mesure – Essai d'immunité à l'onde  
sinusoïdale fortement amortie**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROMAGNETIC COMPATIBILITY (EMC) –****Part 4-12: Testing and measurement techniques –  
Ring wave immunity test**

## FOREWORD

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International Standard IEC 61000-4-12 has been prepared by subcommittee 77B: High frequency phenomena, of IEC technical Committee 77: Electromagnetic compatibility.

It forms Part 4-12 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This third edition cancels and replaces the second edition published in 2006. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition:

- a) addition of a mathematical modelling of ring wave waveform;
- b) new Annex B on selection of generators and test levels;
- c) new Annex C on explanatory notes;
- d) new Annex D on measurement uncertainty;

- e) addition of high speed CDN;
- f) addition of a calibration procedure for CDN.

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

CDV	Report on voting
77B/764/CDV	77B/774/RVC

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

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

The committee has decided that the contents of this publication will remain unchanged until the stability 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

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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 (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: IEC 61000-6-1).

This part is an International Standard which gives immunity requirements and test procedures related to ring waves. It should be noted that edition 1 of IEC 61000-4-12, published in 1995, covered immunity tests against two phenomena, ring waves and damped oscillatory waves. This situation was changed in edition 2, published in 2006, where IEC 61000-4-12 covered the ring wave phenomena only and the damped oscillatory wave phenomenon was moved into a new standard IEC 61000-4-18.

## ELECTROMAGNETIC COMPATIBILITY (EMC) –

### Part 4-12: Testing and measurement techniques – Ring wave immunity test

#### 1 Scope

This part of IEC 61000 relates to the immunity requirements and test methods for electrical and electronic equipment, under operational conditions, to ring waves occurring in low-voltage power, control and signal lines supplied by public and non-public networks.

The object of this document is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to ring waves. 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 is 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 cooperate with product committees in the evaluation of the value of particular immunity test and test levels for their products.

This document defines:

- test voltage and current waveforms;
- a range of test levels;
- test equipment;
- test setups;
- test procedures.

#### 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 60050 (all parts), *International Electrotechnical Vocabulary (IEV)* (available at [www.electropedia.org](http://www.electropedia.org))

#### 3 Terms, definitions and abbreviated terms

##### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050 (all parts) as well as the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
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