

INTERNATIONAL STANDARD

NORME INTERNATIONALE

BASIC EMC PUBLICATION

PUBLICATION FONDAMENTALE EN CEM

**Electromagnetic compatibility (EMC) –
Part 4-17: Testing and measurement techniques – Ripple on d.c. input power
port immunity test**

**Compatibilité électromagnétique (CEM) –
Partie 4-17: Techniques d'essai et de mesure – Essai d'immunité à l'ondulation
résiduelle sur entrée de puissance à courant continu**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-17: Testing and measurement techniques – Ripple on d.c. input power port immunity test

FOREWORD

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International Standard IEC 61000-4-17 has been prepared by subcommittee 77A: Low-frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms part 4-17 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This consolidated version of IEC 61000-4-17 consists of the first edition (1999) [documents 77A/271/FDIS and 77A/280/RVD], its amendment 1 (2001) [documents 77B/291+293/FDIS and 77B/298+300/RVD] and its amendment 2 (2008) [documents 77A/632/CDV and 77A/652/RVC].

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 1.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

Annex A is for information only.

The committee has decided that the contents of the base publication and its amendments 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- withdrawn,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.

INTRODUCTION

This standard is part of the IEC 61000 series, 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 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.

This part is an International Standard which gives test procedures related to ripple on d.c. input power port.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-17: Testing and measurement techniques – Ripple on d.c. input power port immunity test

1 Scope

This part of IEC 61000 defines test methods for immunity to ripple at the d.c. input power port of electrical or electronic equipment.

This standard is applicable to low-voltage d.c. power ports of equipment supplied by external rectifier systems, or batteries which are being charged.

The object of this standard is to establish a common and reproducible basis for testing, in a laboratory, electrical and electronic equipment when subjected to ripple voltages such as those generated by rectifier systems and/or auxiliary service battery chargers overlaying on d.c. power supply sources.

This standard defines

- test voltage waveform;
- range of test levels;
- test generator;
- test set-up;
- test procedure.

The test described hereafter applies to electrical or electronic equipment and systems. It also applies to modules or subsystems whenever the equipment under test (EUT) rated power is greater than the test generator capacity specified in clause 6.

This test does not apply to equipment connected to battery charger systems incorporating switch mode converters.

This standard does not specify the tests to be applied to particular apparatus or systems. Its main aim is to give a general basic reference to IEC product committees. These product committees (or users or manufacturers of equipment) remain responsible for the appropriate choice of the test and the severity level to be applied to their equipment.

Dedicated test procedures are in use for testing specific categories of electrical or electronic equipment, e.g. equipment connected to d.c. supply network of telephone switching centres; the related product committees should evaluate the relevance and applicability of the test procedure specified in this basic 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 60068-1, *Environmental testing – Part 1: General and guidance*

3 General

Ripple may influence the reliable operation of equipment and systems, powered by d.c. supplies, installed in industrial plants as well in residential and commercial installations.

The ripple disturbance is represented by the voltage derived from a pulsating quantity from which the direct component has been removed.

The main sources of ripple disturbance are rectifier systems used in the external d.c. power networks and battery chargers.

Ripple is therefore a phenomenon continuously present in this type of d.c. power source, and may be accentuated when the battery is recharging after a recovery of the a.c. power line service.

Ripple components may also be produced by equipment absorbing a pulsating current; this is not covered in this standard.

4 Definitions

For the purpose of this part of IEC 61000 the following definitions apply, together with the definitions of IEC 60050(161) [IEV].

4.1

ripple content, alternating component

quantity derived by removing the direct component from a pulsating quantity (see figure 1), [IEV 161-02-25]

4.2

EUT

equipment under test