

Australian/New Zealand Standard™

**Electromagnetic compatibility (EMC)
Part 4.11: Testing and measurement
techniques—Voltage dips, short
interruptions and voltage variations
immunity tests
(IEC 61000-4-11, Ed. 2.0 (2004) MOD)**



AS/NZS 61000.4.11:2005

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 61000.4.11:2005

Electromagnetic compatibility (EMC)

**Part 4.11: Testing and measurement techniques—Voltage dips, short interruptions
and voltage variations immunity tests (IEC 61000-4-11, Ed. 2.0 (2004) MOD)**

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NOTES

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-034, Power Quality.

The objective of this Standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to voltage dips, short interruptions and voltage variations.

This Standard is an adoption with national modifications and has been reproduced from IEC 61000-4-11, Ed. 2.0 (2004), *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques—Voltage dips, short interruptions and voltage variations immunity tests*, and has been varied as indicated to take account of Australian/New Zealand conditions.

Variations to IEC 61000-4-11, Ed. 2.0 (2004) are indicated at the appropriate places throughout this Standard. Strikethrough (~~example~~) identifies IEC text, tables and figures which, for the purposes of this Australian/New Zealand Standard, are deleted. Where text, tables or figures are added, each is set in its proper place and identified by shading (**example**). Added figures are not themselves shaded, but are identified by a shaded border.

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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: 61000-6-1).

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Electromagnetic compatibility (EMC)****Part 4.11: Testing and measurement techniques—Voltage dips, short interruptions and voltage variations immunity tests
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Any table, figure or text of the international standard that is struck through is not part of this standard. Any Australian/New Zealand table, figure or text that is added is part of this standard and is identified by shading.

1 Scope

This part of IEC 61000 defines the immunity test methods and range of preferred test levels for electrical and electronic equipment connected to low-voltage power supply networks for voltage dips, short interruptions, and voltage variations.

This standard applies to electrical and electronic equipment having a rated input current not exceeding 16 A per phase, for connection to 50 Hz or 60 Hz a.c. networks.

It does not apply to electrical and electronic equipment for connection to 400 Hz a.c. networks. Tests for these networks will be covered by future IEC standards.

The object of this standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to voltage dips, short interruptions and voltage variations.

NOTE Voltage fluctuation immunity tests are covered by IEC 61000-4-14.

The test method documented in this part of IEC 61000 describes a consistent method to assess the immunity of equipment or a system against a defined phenomenon. 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 defining the appropriate test levels. Technical committee 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.

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 61000-2-8, *Electromagnetic compatibility (EMC) – Part 2-8: Environment – Voltage dips and short interruptions on public electric power supply systems with statistical measurement results*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply:

3.1

basic EMC standard

standard giving general and fundamental conditions or rules for the achievement of EMC, which are related or applicable to all products and systems and serve as reference documents for product committees

NOTE As determined by the Advisory Committee on Electromagnetic Compatibility (ACEC) – see IEC Guide 107.

3.2

immunity (to a disturbance)

the ability of a device, equipment or system to perform without degradation in the presence of an electromagnetic disturbance

[IEV 161-01-20]

3.3

voltage dip

a sudden reduction of the voltage at a particular point of an electricity supply system below a specified dip threshold followed by its recovery after a brief interval

NOTE 1 Typically, a dip is associated with the occurrence and termination of a short circuit or other extreme current increase on the system or installations connected to it.

NOTE 2 A voltage dip is a two-dimensional electromagnetic disturbance, the level of which is determined by both voltage and time (duration).

3.4

short interruption

a sudden reduction of the voltage on all phases at a particular point of an electric supply system below a specified interruption threshold followed by its restoration after a brief interval

NOTE Short interruptions are typically associated with switchgear operations related to the occurrence and termination of short circuits on the system or on installations connected to it.

3.5

residual voltage (of voltage dip)

the minimum value of r.m.s. voltage recorded during a voltage dip or short interruption

NOTE The residual voltage may be expressed as a value in volts or as a percentage or per unit value relative to the reference voltage.

3.6

malfunction

the termination of the ability of equipment to carry out intended functions or the execution of unintended functions by the equipment

3.7

calibration

method to prove that the measurement equipment is in compliance with its specifications

NOTE For the purposes of this standard, calibration is applied to the test generator.

3.8

verification

set of operations which is used to check the test equipment system (e.g. the test generator and the interconnecting cables) to demonstrate that the test system is functioning within the specifications given in Clause 6

NOTE 1 The methods used for verification may be different from those used for calibration.

NOTE 2 The verification procedure of 6.1.2 is meant as a guide to insure the correct operation of the test generator, and other items making up the test set-up that the intended waveform is delivered to the EUT.