Australian/New Zealand Standard™

Electromagnetic compatibility (EMC)

Part 4.13: Testing and measurement techniques—Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-034, Power Quality. It was approved on behalf of the Council of Standards Australia on 27 June 2006 and on behalf of the Council of Standards New Zealand on 23 June 2006.
This Standard was published on 25 August 2006.

The following are represented on Committee EL-034:

Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Australian Energy Market Commission
Australian Information Industry Association
Bureau of Steel Manufacturers of Australia
Consumers Federation of Australia
Electrical Regulatory Authorities Council
Electricity Engineers Association (New Zealand)
Energy Networks Association
Engineers Australia
Ministry of Economic Development (New Zealand)
National Measurement Institute
New Zealand Coordinating Committee on Power & Telecommunication Systems
Telstra Corporation
University of Canterbury New Zealand
University of Wollongong

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 06162.

Australian/New Zealand Standard™

Electromagnetic compatibility (EMC)

Part 4.13: Testing and measurement techniques—Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests

First published as AS/NZS 61000.4.13:2006.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 7679 5

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 functional immunity of electrical and electronic equipment when subject to harmonics and interharmonics and main signalling frequencies.

This Standard is identical with, and has been reproduced from IEC 61000-4-13, Ed. 1.0 (2002), *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'IEC 61000-4-13' should read 'AS/NZS 61000.4.13'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

CONTENTS

Page

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 EMC basic standard which gives immunity requirements and test procedures related to harmonics and interharmonics including mains signalling at a.c. power port.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard

Electromagnetic compatibility (EMC) Part 4.13: Testing and measurement techniques—Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests

1 Scope and object

This part of IEC 61000 defines the immunity test methods and range of recommended basic test levels for electrical and electronic equipment with rated current up to 16 A per phase at disturbance frequencies up to and including 2 kHz (for 50 Hz mains) and 2,4 kHz (for 60 Hz mains) for harmonics and interharmonics on low voltage power networks.

It does not apply to electrical and electronic equipment connected to 16 2/3 Hz , or to 400 Hz a.c. networks. Tests for these networks will be covered by future standards.

The object of this standard is to establish a common reference for evaluating the functional immunity of electrical and electronic equipment when subjected to harmonics and inter-harmonics and mains signalling frequencies. 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. 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.

The verification of the reliability of electrical components (for example capacitors, filters, etc.) is not in the scope of the present standard. Long term thermal effects (greater than 15 min) are not considered in this standard.

The levels proposed are more adapted for residential, commercial and light industry environments. For heavy industrial environments the product committees are responsible for the definition of a class X with the necessary levels. They have also the possibility of defining more complex waveforms for their own need. Nevertheless, the simple waveforms proposed have been mainly observed on several networks (flat curve more often for single phase system) and also on industrial networks (overswing curve more for three phase systems).

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.

References to international standards that are struck through in this clause are replaced by references to Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is identified as such.

IEC 60050(161), *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*