

AS/NZS 61000.4.13:2012  
IEC 61000-4-13, Ed.1.1 (2009)

AS/NZS 61000.4.13:2012

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**



## **AS/NZS 61000.4.13:2012**

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 4 May 2012 and on behalf of the Council of Standards New Zealand on 26 April 2012.

This Standard was published on 22 May 2012.

---

The following are represented on Committee EL-034:

Australian Chamber of Commerce and Industry  
Australian Industry Group  
Australian Information Industry Association  
Bureau of Steel Manufacturers of Australia  
Consumer Electronics Suppliers Association  
Consumers Federation of Australia  
Electrical Regulatory Authorities Council  
Electricity Engineers Association, New Zealand  
Energy Networks Association  
Engineers Australia  
Lighting Council of Australia  
Ministry of Economic Development, New Zealand  
National Measurement Institute  
New Zealand Coordinating Committee on Power & Telecommunication Systems  
New Zealand Electric Fence Energiser Manufacturers Standards WG  
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 Standards may also be withdrawn.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.saiglobal.com.au](http://www.saiglobal.com.au) or Standards New Zealand web site at [www.standards.co.nz](http://www.standards.co.nz) and looking up the relevant Standard in the on-line catalogue.

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 AS/NZS 61000.4.13.*

---

AS/NZS 61000.4.13:2012

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**

Originated as AS/NZS 61000.4.13:2006.  
Second edition 2012.

#### **COPYRIGHT**

© Standards Australia Limited/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140

ISBN 978 1 74342 112 3

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-034, Power Quality, to supersede AS/NZS 61000.4.13:2006, *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*.

The objective of this Standard is to establish a common reference for evaluating the functional immunity of electrical and electronic equipment when subjected to harmonics and interharmonics and mains signalling frequencies.

This Standard is identical with, and has been reproduced from IEC 61000-4-13, Ed.1.1 (2009), *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*.

IEC 61000-4-13, Ed.1.1 (2009) consists of the IEC 61000-4-13, Ed.1.0 (2002) and its Amendment 1 (2009). A vertical line in the margin of the source document shows where the base publication has been modified by Amendment 1.

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

- (a) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (b) In the source text ‘this part of IEC 61000’ should read ‘this part of AS/NZS 61000’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
IEC		AS/NZS	
61000	Electromagnetic compatibility (EMC)	61000	Electromagnetic compatibility (EMC)
61000-2-2	Part 2-2: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	61000.2.2	Part 2.2: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems
61000-3-2	Part 3-2: Limits—Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)	61000.3.2	Part 3.2: Limits—Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)
61000-4-7	Part 4-7: Testing and measurement techniques—General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto	61000.4.7	Part 4.7: Testing and measurement techniques—General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

## CONTENTS

1	Scope and object.....	7
2	Normative references.....	7
3	Definitions .....	8
4	General .....	9
4.1	Description of the phenomenon.....	9
4.2	Sources.....	9
5	Test levels .....	10
5.1	Harmonics test levels.....	10
5.2	Test levels for interharmonics and mains signalling.....	12
6	Test instrumentation .....	13
6.1	Test generator .....	13
6.2	Verification of the characteristics of the generator .....	15
7	Test set up .....	15
8	Test procedures.....	16
8.1	Test procedure .....	16
8.2	Application of the test .....	16
9	Evaluation of test results.....	21
10	Test report.....	22
	Annex A (informative) Impedance network between voltage source and EUT .....	27
	Annex B (informative) Resonance point.....	28
	Annex C (informative) Electromagnetic environment classes .....	29
	Bibliography.....	30
	Figure 1 – Test flowcharts .....	18
	Figure 2 – An example of a test set-up for single phase.....	23
	Figure 3 – An example of a test set-up for three phases .....	23
	Figure 4 – Test sequences for individual harmonics.....	24
	Figure 5 – An example of the sweep in frequency test (for example class 1 equipment from Table 9) .....	24
	Figure 6 – Flat curve waveshape .....	25
	Figure 7 – Over swing waveshape .....	26
	Table 1 – Odd harmonics non-multiple of 3 harmonics.....	11
	Table 2 – Odd harmonics multiple of 3 harmonics.....	11
	Table 3 – Even harmonics.....	12
	Table 4 – Frequencies between harmonic frequencies.....	12
	Table 4a – Frequencies between harmonic frequencies (for 50 Hz mains) .....	12
	Table 4b – Frequencies between harmonic frequencies (for 60 Hz mains) .....	12

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-