

AS/NZS CISPR 16.1.3:2020
CISPR 16-1-3:2004+AMD1:2016+AMD2:
2020 CSV



Australian/New Zealand Standard™

Specification for radio disturbance and immunity measuring apparatus and methods

Part 1.3: Radio disturbance and immunity measuring apparatus —
Ancillary equipment — Disturbance power



AS/NZS CISPR 16.1.3:2020

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee TE-003, Electromagnetic Compatibility. It was approved on behalf of the Council of Standards Australia on 10 August 2020 and by the New Zealand Standards Approval Board on 2 September 2020.

This Standard was published on 25 September 2020.

The following are represented on Committee TE-003:

- Australian Broadcasting Corporation
- Australian Communications and Media Authority
- Australian Industry Group
- Australian Information Industry Association
- Consumer Electronics Suppliers Association
- Department of Defence (Australian Government)
- Electrical Compliance Testing Association of Australia
- EMC Society of Australia
- Energy Networks Australia
- Engineers Australia
- Free TV Australia
- Lighting Council New Zealand
- Ministry of Business, Innovation and Employment (NZ)
- National Measurement Institute
- Wireless Institute Australia

This Standard was issued in draft form for comment as DR AS/NZS CISPR 16.1.3:2020.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.standards.govt.nz

ISBN 978 1 76072 981 3

Australian/New Zealand Standard™

Specification for radio disturbance and immunity measuring apparatus and methods

Part 1.3: Radio disturbance and immunity measuring apparatus — Ancillary equipment — Disturbance power

Originated as part of AS 1052.1—1976.
Previous edition 2004.
Third edition 2020.



© IEC 2020 — All rights reserved

© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2020

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 either the IEC or the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth). If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please see the contact details on the back cover or the contact us page of the website for further information.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE-003, Electromagnetic Compatibility, to supersede AS/NZS CISPR 16.1.3:2004, *Specification for radio disturbance and immunity measuring apparatus and methods, Part 1.3: Radio disturbance and immunity measuring apparatus — Ancillary equipment — Disturbance power*.

The objective of this document is to specify the characteristics and calibration of the absorbing clamp for the measurement of radio disturbance power in the frequency range 30 MHz to 1 GHz.

This Standard is identical with, and has been reproduced from, CISPR 16-1-3:2004+AMD1:2016+AMD2:2020 CSV, *Specification for radio disturbance and immunity measuring apparatus and methods, Part 1-3: Radio disturbance and immunity measuring apparatus — Ancillary equipment — Disturbance power*.

The major changes in this edition are as follows:

- (a) A more detailed calibration method for the absorbing clamp is specified.
- (b) New alternative calibration methods are introduced.
- (c) Additional parameters to describe the absorbing clamp are defined, eg decoupling factor for the broadband absorber (DF) and the decoupling factor for the current transformer (DR), including validation methods.
- (d) A procedure for the validation of the absorbing clamp test site (ACTS).

As this document has been reproduced from an International Standard, the following applies:

- (i) In the source text “This part of CISPR 16” should read “this document”.
- (ii) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

NOTES

CONTENTS

| | |
|---|----|
| FOREWORD | 3 |
| 1 Scope | 5 |
| 2 Normative references | 5 |
| 3 Terms, definitions and abbreviations | 5 |
| 4 Absorbing clamp instrumentation | 6 |
| Annex A (informative) Construction of the absorbing clamp (Subclause 4.2) | 17 |
| Annex B (normative) Calibration and validation methods for the absorbing clamp and the secondary absorbing device (Clause 4)..... | 19 |
| Annex C (normative) Validation of the absorbing clamp test site (Clause 4)..... | 29 |
| Bibliography..... | 32 |
| | |
| Figure 1 – Overview of the absorbing clamp measurement method and the associated calibration and validation procedures | 13 |
| Figure 2 – Schematic overview of the absorbing clamp test method..... | 15 |
| Figure 3 – Schematic overview of the clamp calibration methods | 16 |
| Figure A.1 – The absorbing clamp assembly and its parts..... | 17 |
| Figure A.2 – Example of the construction of an absorbing clamp..... | 18 |
| Figure B.1 – The original calibration site | 24 |
| Figure B.2 – Position of guide for centring the lead under test | 25 |
| Figure B.3 – Side view of the calibration jig | 25 |
| Figure B.4 – Top view of the jig | 26 |
| Figure B.5 – View of the jigs vertical flange | 27 |
| Figure B.8 – Measurement set-up of the decoupling factor DF | 28 |
| Figure B.9 – Measurement set-up of the decoupling factor DR | 28 |
| Figure C.1 – Test set-ups for the site attenuation measurement for clamp site validation | 31 |
| | |
| Table 1 – Overview of the characteristics of the two clamp calibration methods and their relation | 14 |
| Table B.1 – Uncertainty budget for the absorbing clamp jig calibration method in the frequency range 30 MHz to 1 000 MHz | 22 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

**SPECIFICATION FOR RADIO DISTURBANCE AND IMMUNITY
MEASURING APPARATUS AND METHODS –**

**Part 1-3: Radio disturbance and immunity measuring apparatus –
Ancillary equipment – Disturbance power**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

DISCLAIMER

This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.

This Consolidated version of CISPR 16-1-3 bears the edition number 2.2. It consists of the second edition (2004-06) [documents CISPR/A/517/FDIS and CISPR/A/532/RVD] and its corrigendum 1 (2006-02), its amendment 1 (2016-03) [documents CIS/A/1111/CDV and CIS/A/1138/RVC] and its amendment 2 (2020-01) [documents CIS/A/1305/FDIS and CIS/A/1314/RVD]. The technical content is identical to the base edition and its amendments.

This Final version does not show where the technical content is modified by amendments 1 and 2. A separate Redline version with all changes highlighted is available in this publication.

International Standard CISPR 16-1-3 has been prepared by CISPR subcommittee A: Radio interference measurements and statistical methods.

This edition constitutes a technical revision. In this edition a more detailed calibration method for the absorbing clamp is specified. Furthermore, new alternative calibration methods are introduced which are more practicable than the one which was specified previously. Additional parameters to describe the absorbing clamp are defined, like the decoupling factor for the broadband absorber (DF) and the decoupling factor for the current transformer (DR), along with their validation methods. A procedure for the validation of the absorbing clamp test site (ACTS) is also included in the document.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of the base publication and its amendments 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

SPECIFICATION FOR RADIO DISTURBANCE AND IMMUNITY MEASURING APPARATUS AND METHODS –

Part 1-3: Radio disturbance and immunity measuring apparatus – Ancillary equipment – Disturbance power

1 Scope

This part of CISPR 16 is designated a basic standard, which specifies the characteristics and calibration of the absorbing clamp for the measurement of radio disturbance power in the frequency range 30 MHz to 1 GHz.

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.

CISPR 16-1-2:2003, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-2: Radio disturbance and immunity measuring apparatus – Ancillary equipment – Conducted disturbances*

CISPR 16-2-2:2003, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-2: Methods of measurement of disturbances and immunity – Measurement of disturbance power*

CISPR TR 16-4-1:2009, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-1: Uncertainties, statistics and limit modelling – Uncertainties in standardized EMC tests*

IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electro-magnetic compatibility*
Amendment 1 (1997)
Amendment 2 (1998)

3 Terms, definitions and abbreviations

3.1 Terms and definitions

See IEC 60050-161, where applicable.

3.2 Abbreviations

| | |
|------|------------------------------------|
| ACA | Absorbing clamp assembly |
| ACMM | Absorbing clamp measurement method |
| ACRS | Absorbing clamp reference site |
| ACTS | Absorbing clamp test site |
| CF | Clamp factor |
| CRP | Clamp reference point |
| DF | Decoupling factor |