

# INTERNATIONAL STANDARD



INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

PRODUCT FAMILY EMC STANDARD

**Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement**

Document Preview

[CISPR 11:2024](https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024)

<https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024>



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2024 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

**About the IEC**

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

**About IEC publications**

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

**IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)**

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

**IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)**

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

**IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

**Electropedia - [www.electropedia.org](http://www.electropedia.org)**

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

**IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

International  
Standards.iteh.ai)  
Document Preview

[CISPR 11:2024](https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024)

<https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024>



CISPR 11

Edition 7.0 2024-02  
COMMENTED VERSION

# INTERNATIONAL STANDARD



INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

PRODUCT FAMILY EMC STANDARD

**Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement**

Document Preview

CISPR 11:2024

<https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 33.100.10

ISBN 978-2-8322-8316-5

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD .....	7
INTRODUCTION .....	10
1 Scope .....	14
2 Normative references .....	14
3 Terms, definitions and abbreviated terms .....	16
3.1 Terms and definitions .....	16
3.2 Abbreviated terms .....	21
4 Frequencies designated for ISM use .....	22
5 Classification of equipment .....	23
5.1 Separation into groups .....	23
5.2 Division into classes .....	23
5.3 Documentation for the user .....	23
6 Limits of electromagnetic disturbances .....	24
6.1 General .....	24
6.2 Group 1 equipment measured on a test site .....	24
6.2.1 Limits for conducted disturbances .....	24
6.2.2 Limits of electromagnetic radiation disturbance .....	29
6.3 Group 2 equipment measured on a test site .....	32
6.3.1 Limits for conducted disturbances .....	32
6.3.2 Limits of electromagnetic radiation disturbance .....	33
6.4 Group 1 and group 2 class A equipment measured in situ .....	39
6.4.1 Limits for conducted disturbances .....	39
6.4.2 Limits of electromagnetic radiation disturbance .....	39
7 Measurement requirements .....	42
7.1 General .....	42
7.2 Ambient noise .....	42
7.3 Measuring equipment .....	43
7.3.1 Measuring instruments .....	43
7.3.2 Artificial network (AN) .....	43
7.3.3 Voltage probe .....	44
7.3.4 Antennas .....	44
7.3.5 Artificial hand .....	45
7.4 Frequency measurement .....	46
7.5 Configuration of equipment under test .....	46
7.5.1 General .....	46
7.5.2 Interconnecting EUT cables and components .....	49
7.5.3 Connection to the electricity supply network on a test site .....	50
7.5.4 Measurements of robots .....	53
7.6 Load conditions of the EUT .....	57
7.6.1 General .....	57
7.6.2 Medical equipment .....	57
7.6.3 Industrial equipment .....	59
7.6.4 Scientific, laboratory and measuring equipment .....	59
7.6.5 Microwave cooking appliances .....	59
7.6.6 Other equipment in the frequency range 1 GHz to 18 GHz .....	59
7.6.7 Electric welding equipment .....	60

7.6.8	ISM RF lighting equipment.....	60
7.6.9	Medium voltage (MV) and high voltage (HV) switchgear.....	60
7.6.10	Grid connected power converters.....	60
7.6.11	Robots.....	61
7.7	Recording of test-site measurement results.....	61
7.7.1	General.....	61
7.7.2	Conducted emissions.....	62
7.7.3	Radiated emissions.....	62
8	Special provisions for test site measurements (9 kHz to 1 GHz).....	62
8.1	Ground planes.....	62
8.2	Measurement of conducted disturbances.....	62
8.2.1	General.....	62
8.2.2	Measurements on grid connected power converters.....	63
8.2.3	Handheld equipment which is normally operated without an earth connection.....	68
8.3	OATS and SAC for measurements in the range 9 kHz to 1 GHz.....	68
8.3.1	General.....	68
8.3.2	Validation of the radiation test site (9 kHz to 1 GHz).....	69
8.3.3	Disposition of equipment under test (9 kHz to 1 GHz).....	69
8.3.4	Radiation measurements (9 kHz to 1 GHz).....	70
8.4	Alternative radiation test sites for the frequency range 30 MHz to 1 GHz.....	70
8.5	FAR for measurements in the range 30 MHz to 1 GHz.....	70
9	Radiation measurements: 1 GHz to 18 GHz.....	70
9.1	Test arrangement.....	70
9.2	Receiving antenna.....	71
9.3	Validation and calibration of test site.....	71
9.4	Measuring procedure.....	71
9.4.1	General.....	71
9.4.2	Operating conditions of the EUT (group 2 equipment only).....	72
9.4.3	Peak measurements (group 2 equipment only).....	72
9.4.4	Weighted measurements (group 2 equipment only).....	73
10	Measurement <i>in situ</i> .....	74
11	Safety precautions for emission measurements on ISM RF equipment.....	75
12	Measurement uncertainty.....	75
Annex A (informative)	Examples of equipment classification.....	76
A.1	General.....	76
A.2	Group 1 equipment.....	76
A.2.1	General Group 1 equipment.....	76
A.2.2	Detailed Group 1 equipment.....	76
A.3	Group 2 equipment.....	77
A.3.1	General Group 2 equipment.....	77
A.3.2	Detailed Group 2 equipment.....	77
<del>Annex B (informative) Precautions to be taken in the use of a spectrum analyzer (see 7.3.1).....</del>		
Annex B (normative)	Measurement of electromagnetic radiation disturbance in the presence of signals from radio transmitters.....	79
<del>Annex D (informative) Propagation of interference from industrial radio-frequency equipment at frequencies between 30 MHz and 300 MHz.....</del>		

Annex C (informative) Recommendations of CISPR for protection of certain radio services in particular areas.....	81
C.1 General.....	81
C.2 Recommendations for protection of safety-related radio services .....	81
C.3 Recommendations for protection of specific sensitive radio services .....	83
<del>Annex F (informative) Frequency bands allocated for safety-related radio services.....</del>	<del>71</del>
<del>Annex G (informative) Frequency bands allocated for sensitive radio services .....</del>	<del>72</del>
<del>Annex H (informative) Statistical assessment of series produced equipment against the requirements of CISPR standards.....</del>	<del>74</del>
<del>Annex I (normative) Artificial Network (AN) for the assessment of disturbance voltages at d.c. power ports of semiconductor power converters.....</del>	<del>79</del>
Annex D (informative) Measurements on Grid Connected Power Converters (GCPC) – Setups for an effective test site configuration .....	100
D.1 General information and purpose .....	100
D.2 Setup of the test site.....	100
D.2.1 Block diagram of test site.....	100
D.2.2 DC power supply .....	101
D.2.3 AC power source.....	101
D.2.4 Other components .....	102
D.3 Other test setups .....	102
D.3.1 Configuration comprising laboratory AC power source and resistive load.....	102
D.3.2 Configuration with reverse power flow into the AC mains .....	104
Annex E (informative) <del>Test site configuration and instrumentation</del> Guidance on prevention of saturation effects in mitigation filters of transformer-less power converters during <del>type tests according to this standard</del> .....	106
E.1 General information and purpose .....	106
E.2 Recommendations for avoidance of saturation effects in the range 9 kHz to 150 kHz.....	107
E.3 Detailed advice.....	107
E.3.1 General.....	107
E.3.2 Insert of series inductors (or common mode chokes) in the laboratory's DC power supply chain .....	108
E.3.3 Employment of additional common mode decoupling capacitors at the interface between the AE port of the DC-AN and the laboratory DC power supply port allocated in the test environment.....	109
E.4 Background information .....	110
Annex F (normative) Additional requirements for equipment with radio functionality.....	113
F.1 Configuration of the EUT during emission tests.....	113
F.2 Radiated emissions .....	113
F.3 Conducted emissions.....	113
Bibliography.....	115
List of comments.....	118
Figure 1 – Circuit for disturbance voltage measurements on mains supply .....	44
Figure 2 – Artificial hand, RC element.....	46
Figure 3 – Example for a typical cable arrangement for measurements of radiated disturbances in 3 m separation distance, Table-top EUT.....	48
Figure 4 – Example for a typical test set up for measurement of conducted and/or radiated disturbances from a floor standing EUT, 3D view .....	49

Figure 5 – EUT boundary determination for radiated disturbance measurements of robots with extendable/moving arm .....	53
Figure 6 – Example of a typical test setup for conducted disturbance measurement on a floor-standing robot system .....	54
Figure 7 – Example of a typical test setup for radiated disturbance measurement on a floor-standing robot system .....	55
Figure 8 – Example of a typical test setup for conducted disturbance measurement on a combination robot system .....	56
Figure 9 – Example of a typical test setup for radiated disturbance measurement on a combination robot system.....	57
Figure 10 – Disposition of medical equipment (capacitive type) and dummy load.....	58
Figure 11 – Typical arrangement for measurement of conducted disturbances at LV DC power ports with the DC-AN used as termination and decoupling unit to the laboratory DC power source .....	65
Figure 12 – Typical arrangement for measurement of conducted disturbances at LV DC power ports with the DC-AN used as termination and voltage probe.....	66
Figure 13 – Typical arrangement for measurement of conducted disturbances at LV DC power ports with the DC-AN used as voltage probe and with a current probe – 2D diagram .....	67
Figure 14 – Typical arrangement for measurement of conducted disturbances at LV DC power ports with a DC-AN used as voltage probe and with a current probe – 3D diagram .....	67
Figure 15 – Radiation test site .....	69
Figure 16 – Minimum size of metal ground plane .....	69
Figure 17 – Decision tree for the measurement of emissions from 1 GHz to 18 GHz of group 2 equipment operating at frequencies above 400 MHz .....	72
Figure D.1 – <del>Setup of the test site (Case 1) – 2D diagram</del> Test setup for Case 1 (schematic).....	100
Figure D.2 – <del>Setup of the test site (Case 1) – 3D diagram</del> Test setup for Case 1 (3D view) .....	101
Figure D.3 – <del>Setup of the test site (Case 2) – 2D diagram</del> Test setup for Case 2 (schematic).....	103
Figure D.4 – <del>Setup of the test site (Case 2) – 3D diagram</del> Test setup for Case 2 (3D view) .....	103
Figure D.5 – <del>Setup of the test site (Case 3) – 2D diagram</del> Test setup for Case 3 (schematic).....	104
Figure D.6 – <del>Setup of the test site (Case 3) – 3D diagram</del> Test setup for Case 3 (3D view) .....	105
Figure E.1 – Flow of the common mode RF current at test site configuration level.....	108
Figure E.2 – Blocking of flow of common mode RF current by insert of series inductors.....	109
Figure E.3 – Blocking of flow of common mode RF current by employment of additional CM decoupling capacitors .....	109
Figure E.4 – CM termination impedance at the EUT port of a DC-AN – Magnitude-versus-frequency characteristic in the range 3 kHz to 30 MHz, Example .....	110
Figure E.5 – Prevention of saturation of mitigation filters by use of additional decoupling capacitors.....	111
Figure E.6 – Change in the resonant frequency caused by the increase and decrease in the decoupling capacitor's capacitance .....	111
Figure E.7 – DC-AN circuit example where capacitance of blocking capacitors of the LC decoupling circuit can be increased or decreased .....	112
Table 1 – Frequencies in the radio-frequency (RF) range designated by ITU for use as fundamental ISM frequencies .....	22

Table 2 – Disturbance voltage limits for class A group 1 equipment measured on a test site (AC mains power port) .....	26
Table 3 – Limits for conducted disturbances of class A group 1 equipment measured on a test site (DC power port).....	27
Table 4 – Disturbance voltage limits for class B group 1 equipment measured on a test site (AC mains power port) .....	27
Table 5 – Disturbance voltage limits for class B group 1 equipment measured on a test site (DC power port).....	28
Table 6 – Applicability of measurements at DC power ports.....	28
Table 7 – Limits for conducted disturbances measured on a test site (wired network port) .....	29
Table 8 – Electromagnetic radiation disturbance limits for class A group 1 equipment measured on a test site .....	30
Table 9 – Electromagnetic radiation disturbance limits for class B group 1 equipment measured on a test site .....	30
Table 10 – Required highest frequency for radiated measurements .....	31
Table 11 – Electromagnetic radiation disturbance limits for group 1 equipment measured on a test site .....	32
Table 12 – Disturbance voltage limits for class A group 2 equipment measured on a test site (AC mains power port) .....	33
Table 13 – Disturbance voltage limits for class B group 2 equipment measured on a test site (AC mains power port) .....	33
Table 14 – Electromagnetic radiation disturbance limits for class A group 2 equipment measured on a test site .....	35
Table 15 – Electromagnetic radiation disturbance limits for class A EDM and arc welding equipment measured on a test site .....	36
Table 16 – Electromagnetic radiation disturbance limits for class B group 2 equipment measured on a test site .....	37
Table 17 – Electromagnetic radiation disturbance peak limits for group 2 equipment operating at frequencies above 400 MHz .....	38
Table 18 – Electromagnetic radiation disturbance weighted limits for group 2 equipment operating at frequencies above 400 MHz .....	38
Table 19 – Electromagnetic radiation disturbance APD level corresponding to 10 <sup>-1</sup> limits for class B group 2 equipment operating at frequencies above 400 MHz .....	39
Table 20 – Electromagnetic radiation disturbance limits for class A group 1 equipment measured <i>in situ</i> .....	40
Table 21 – Electromagnetic radiation disturbance limits for class A group 2 equipment measured <i>in situ</i> .....	41
Table 22 – Operation modes for fixed robots .....	61
Table 23 – Operation modes for mobile robots .....	61
Table 24 – Frequency subranges to be used for weighted measurements .....	73
Table C.1 – Limits for electromagnetic radiation disturbances for <i>in situ</i> measurements to protect specific safety-related radio services in particular areas.....	81
Table C.2 – Frequency bands allocated for safety-related radio services.....	82
Table C.3 – Frequency bands allocated for sensitive radio services.....	84
Table F.1 – Disturbance voltage and current limits for group 1 and group 2 equipment measured on a test site (antenna port).....	114



INTERNATIONAL ELECTROTECHNICAL COMMISSION  
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

**INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT –  
RADIO-FREQUENCY DISTURBANCE CHARACTERISTICS –  
LIMITS AND METHODS OF MEASUREMENT**

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

**This commented version (CMV) of the official standard CISPR 11:2024 edition 7.0 allows the user to identify the changes made to the previous CISPR 11:2015+AMD1:2016+AMD2:2019 CSV edition 6.2. Furthermore, comments from CISPR Subcommittee B experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.**

**A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.**

**This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.**

International Standard CISPR 11 has been prepared by CISPR Subcommittee B: Interference relating to industrial, scientific and medical radio-frequency apparatus, to other (heavy) industrial equipment, to overhead power lines, to high voltage equipment and to electric traction.

This seventh edition cancels and replaces the sixth edition published in 2015, Amendment 1:2016 and Amendment 2:2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) introduction of limits for radiated disturbances in the frequency range above 1 GHz for group 1 equipment in line with the requirements given in the generic emission standards;
- b) introduction of limits for conducted disturbances on the wired network port in line with the requirements given in the generic emission standards;
- c) introduction of requirements for equipment which incorporates radio transmit/receive functions;
- d) introduction of definitions for various types of robots;
- e) consideration of some particular conditions when measuring robots, such as measurement setups and operating modes of robots.

The text of this document is based on the following documents:

Draft	Report on voting
CIS/B/831/FDIS	CIS/B/837/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

This document has the status of a Product Family EMC standard in accordance with IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications (2014)*.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

**IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

The main content of this document is based on CISPR Recommendation No. 39/2 given below:

RECOMMENDATION No. 39/2

**Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment**

The CISPR

CONSIDERING

- a) that ISM RF equipment is an important source of disturbance;
- b) that methods of measuring such disturbances have been prescribed by the CISPR;
- c) that certain frequencies are designated by the International Telecommunication Union (ITU) for unrestricted radiation from ISM equipment,

RECOMMENDS

that the latest edition of CISPR 11 be used for the application of limits and methods of measurement of ISM equipment.

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[CISPR 11:2024](#)

<https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024>

## INTRODUCTION

This CISPR publication contains, amongst common requirements for the control of RF disturbances from equipment intended for use in industrial, scientific, and medical electrical applications, specific requirements for the control of RF disturbances caused by ISM RF applications in the meaning of the definition of the International Telecommunication Union (ITU), see also Definition 3.1.18 in this document. CISPR and ITU share their responsibilities for the protection of radio services in respect of the use of ISM RF applications.

The CISPR is concerned with the control of RF disturbances from ISM RF applications by means of an assessment of these disturbances either at a standardised test site or, for an individual ISM RF application which cannot be tested at such a site, at its place of operation. Consequently, this CISPR Publication covers requirements for ~~conformity assessment of~~ both, equipment assessed by means of ~~type~~ tests at standardised test sites or of individual equipment under *in situ* conditions.

The ITU is concerned with the control of RF disturbances from ISM RF applications during normal operation and use of the respective equipment at its place of operation (see Definition 1.15 in the ITU Radio Regulations (2020)). There, use of radio-frequency energy decoupled from the ISM RF application by radiation, induction or capacitive coupling is restricted to the location of that individual application.

This CISPR publication contains, in 6.3, the essential emission requirements for an assessment of RF disturbances from ISM RF applications at standardised test sites. These requirements allow for ~~type~~ testing of ISM RF applications operated at frequencies up to 18 GHz. It further contains, in 6.4, the essential emission requirements for an *in situ* assessment of RF disturbances from individual ISM RF applications in the frequency range up to 1 GHz. All requirements were established in close collaboration with the ITU and enjoy approval of the ITU.

However, for operation and use of several types of ISM RF applications the manufacturer, installer and/or customer should be aware of additional national provisions regarding possible licensing and particular protection needs of local radio services and applications. Depending on the country concerned, such additional provisions ~~may~~ can apply to individual ISM RF applications operated at frequencies outside designated ISM bands (see Table 1). They also ~~may~~ can apply to ISM RF applications operated at frequencies above 18 GHz. ~~For the latter type of applications, local protection of radio services and appliances requires an accomplishment of the conformity assessment by application of the relevant national provisions in the frequency range above 18 GHz in accordance with vested interests of the ITU and national administrations. These additional national provisions may apply to spurious emissions, emissions appearing at harmonics of the operation frequency, and to wanted emissions at the operation frequency allocated outside a designated ISM band in the frequency range above 18 GHz.~~

Recommendations of CISPR for the protection of radio services in particular areas are found in Annex C of this document.

~~Definition 1.15 of the ITU Radio Regulations reads as follows:~~

~~**1.15 industrial, scientific and medical (ISM) applications (of radio frequency energy):**  
Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications.~~

~~[ITU Radio Regulations Volume 1: 2012—Chapter I, Definition 1.15]~~

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[CISPR 11:2024](#)

<https://standards.iteh.ai/catalog/standards/iec/08bb5046-9896-4c39-ab43-4f89b184836c/cispr-11-2024>

## Introduction to Amendment 1

~~This Amendment introduces the fully anechoic room (FAR) for measurements of the disturbance field strength in the range 30 MHz to 1 GHz on equipment in the scope of CISPR 11.~~

~~It contains the complete set of requirements for measurement of radiated disturbances from equipment fitting into the validated test volume of a given FAR. It specifies a separation distance of 3 m and restricts use of the FAR to measurements on table-top equipment.~~

~~At the moment the FAR can be used:~~

- ~~• for measurements on table-top equipment fitting into the validated test volume of the given FAR,~~
- ~~• for a separation distance of 3 m only, and~~
- ~~• if the FAR was validated according to CISPR 16-1-4.~~

~~The limits for class A and class B group 1 equipment in this CDV base on the limits in the generic emission standards IEC 61000-6-3:2006/AMD 1 (2010) and IEC 61000-6-4:2006/AMD 1 (2010). The limits for class A and class B group 2 equipment were derived using the same approximation formula as used when deriving the limits for the generic emission standards in mid of the years 2000 to 2010. CISPR/H/104/INF, published in 2005, gives detailed explanations how these limits for the FAR were derived.~~

~~More detailed background information is still found in CISPR/B/627/CDV.~~

~~CISPR/B-WG1 in October 2015~~

## Introduction to the Amendment 2

~~This AMD 2 combines the contents of two fragments which have been circulated as CIS/B/688/CDV (f2) and CIS/B/697/CDV (f3).~~

### Fragment 2: Requirements for semiconductor power converters (SPC)

~~CISPR 11 Ed. 6.1 needs to be supplemented with further information for full inclusion of type test requirements for SPCs specified hereafter. These requirements apply only to the following types of equipment:~~

- ~~a) power conversion equipment intended for assembly into photovoltaic power generating systems, such as grid-connected power converters (GCPs) and d.c. to d.c. converters,~~
- ~~b) GCPs intended for assembly into energy storage systems.~~

### Fragment 3: Improvement of repeatability for measurements in the frequency range 1-18 GHz

~~Based on the comments from the National Committees on CIS/B/662/DC, CIS/B/WG1 decided on its meeting in Hangzhou 2016 to amend the test procedure for group 2 equipment in the frequency range 1 to 18 GHz for the following reasons:~~

- ~~a) CISPR 11 allows final measurements on group 2 equipment operating at frequencies above 400 MHz with two different weighting functions, the traditional “LogAV detector” with a video bandwidth of 10 Hz and the new APD method, where the Amplitude Probability Distribution is evaluated.~~

~~With the alignment of emission requirements for sources of fluctuating emissions with those generating CW-type emissions (Fraction 4 of the last general maintenance of CISPR 11) for most of the frequency range 1 to 18 GHz the peak detector is used mostly for preliminary~~