

# INTERNATIONAL STANDARD

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

---

PRODUCT FAMILY EMC STANDARD

---

**Electromagnetic compatibility – Requirements for household appliances,  
Electric tools and similar apparatus –  
Part 2: Immunity – Product family standard**





**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2020 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 Central Office  
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 It also gives information on projects, replaced and withdrawn publications.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 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.

**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).

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

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

**IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)**

67 000 electrotechnical terminology entries in English and French extracted from the Terms and definitions clause of IEC publications issued between 2002 and 2015. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.



CISPR 14-2

Edition 3.0 2020-08

# INTERNATIONAL STANDARD

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

---

PRODUCT FAMILY EMC STANDARD

---

**Electromagnetic compatibility – Requirements for household appliances,  
Electric tools and similar apparatus –  
Part 2: Immunity – Product family standard**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 33.100.20

ISBN 978-2-8322-8733-0

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

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	8
3 Terms, definitions and abbreviated terms .....	9
3.1 General.....	9
3.2 General terms and definitions .....	9
3.3 Abbreviated terms.....	14
4 Classification of apparatus.....	14
5 Tests .....	15
5.1 Electrostatic discharge.....	15
5.2 Fast transients .....	15
5.3 Injected currents, 0,15 MHz to 230 MHz.....	16
5.4 Injected currents, 0,15 MHz to 80 MHz .....	18
5.5 Radio frequency electromagnetic fields, 80 MHz to 6 GHz .....	19
5.6 Surges .....	20
5.7 Voltage dips.....	21
6 Performance criteria .....	21
7 Applicability of immunity tests.....	22
7.1 General.....	22
7.2 Application of tests for the different categories of apparatus .....	22
7.2.1 General .....	22
7.2.2 Category I.....	22
7.2.3 Category II.....	23
7.2.4 Category III.....	23
7.2.5 Category IV .....	23
7.2.6 Category V .....	24
7.2.7 Exceptions.....	24
8 Test conditions .....	24
8.1 General.....	24
8.2 Mains operation .....	25
8.2.1 Voltage at the AC mains port .....	25
8.2.2 Frequency at the AC mains port.....	25
8.3 DC operation .....	25
8.3.1 Battery operation .....	25
8.3.2 Operation from a DC supply other than a battery .....	25
8.4 Specific test conditions .....	26
8.4.1 Control settings .....	26
8.4.2 Auxiliary equipment .....	26
8.4.3 Specific equipment .....	26
8.5 Test procedures .....	28
8.6 Multifunction equipment .....	29
8.7 Equipment with built-in lighting function .....	29
8.8 Equipment incorporating radio functions .....	29
9 Compliance with this publication.....	29
10 Test uncertainty.....	30

11 Test report.....	30
Annex A (informative) Guidance for permissible degradation .....	31
Bibliography.....	32
Figure 1 – Examples of ports .....	11
Figure 2 – Example for a test set-up for large EUTs (e.g. refrigerators) where the cable leaves the EUT on a height of more than 1 m above the floor .....	18
Table 1 – Enclosure port.....	15
Table 2 – Signal ports, control ports and wired network ports .....	15
Table 3 – Input and output DC power ports .....	15
Table 4 – Input and output AC power ports .....	16
Table 5 – Signal ports, control ports and wired network ports .....	16
Table 6 – Input and output DC power ports .....	17
Table 7 – Input and output AC power ports .....	17
Table 8 – Signal ports, control ports and wired network ports .....	18
Table 9 – Input and output DC power ports .....	19
Table 10 – Input and output AC power ports .....	19
Table 11 – Enclosure ports .....	20
Table 12 – Input AC power ports.....	20
Table 13 – Wired network ports .....	21
Table 14 – Input AC power ports.....	21
Table 15 – Immunity tests applicable to Category II .....	23
Table 16 – Immunity tests applicable to Category III .....	23
Table 17 – Immunity tests applicable to Category IV .....	23
Table 18 – Immunity tests applicable to Category V .....	24
Table A.1 – Examples of degradations .....	31

INTERNATIONAL ELECTROTECHNICAL COMMISSION  
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

---

**ELECTROMAGNETIC COMPATIBILITY –  
REQUIREMENTS FOR HOUSEHOLD APPLIANCES,  
ELECTRIC TOOLS AND SIMILAR APPARATUS –**

**Part 2: Immunity – Product family standard**

**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.

International Standard CISPR 14-2 has been prepared by CISPR subcommittee F: Interference relating to household appliances tools, lighting equipment and similar apparatus.

This third edition cancels and replaces the second edition published in 2015. This edition constitutes a technical revision.

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

- a) extension of the frequency range for radiated immunity above 1 GHz;
- b) an advanced categorisation of equipment;
- c) revision of general test conditions and addition of new specific test conditions (e.g. for robotic equipment);
- d) clarification of requirements applicable to equipment incorporating radio functions;

- e) addition of requirements for wired network ports;
- f) revision of definitions and addition of new ones;
- g) delete requirements referring to statistical evaluation;
- h) alignment with CISPR 14-1, where applicable.

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

FDIS	Report on voting
CIS/F/795/FDIS	CIS/F/797/RVD

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

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

A list of all parts in the CISPR 14 series, published under the general title *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus*, can be found on the IEC website.

This document has the status of a product family standard.

The committee has decided that the contents of this publication 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.

## INTRODUCTION

The intention of this document is to establish uniform requirements for the electromagnetic immunity of the equipment mentioned in the scope, to fix test specifications of immunity, to refer to basic standards for methods of testing, and to standardize operating conditions, performance criteria and interpretation of results.

*Keywords:* Immunity, household appliances, electric apparatus, electromagnetic compatibility.



# ELECTROMAGNETIC COMPATIBILITY – REQUIREMENTS FOR HOUSEHOLD APPLIANCES, ELECTRIC TOOLS AND SIMILAR APPARATUS –

## Part 2: Immunity – Product family standard

### 1 Scope

This part of CISPR 14 specifies the electromagnetic immunity requirements in the frequency range 0 Hz to 400 GHz that apply to appliances, electric tools and similar apparatus as specified below, whether powered by AC or DC (including a battery).

This document specifies immunity requirements for continuous and transient electromagnetic disturbances, both conducted and radiated.

Unless otherwise specified, this document is applicable to all equipment in the scope of CISPR 14-1, namely:

- household appliances or similar apparatus;

NOTE 1 Examples are equipment used:

- for typical housekeeping functions in the household environment, which includes the dwelling and its associated buildings, the garden, etc.;
- for typical housekeeping functions in shops, offices, commercial and other similar working environments;
- on farms;
- by clients in hotels and other residential type environments;
- for induction cooking or air conditioning, either in residential or commercial environments.

- electric tools;

NOTE 2 Examples of electric tools include electric motor-operated or electromagnetically driven hand-held tools, transportable tools, lawn and garden machinery.

- similar apparatus;

NOTE 3 Examples are:

- external power controllers using semiconductor devices;
- motor-driven electro-medical equipment;
- electric/electronic toys;
- personal care and beauty care appliances;
- automatic goods-dispensing machines;
- entertainment machines;
- cine or slide projectors;
- battery chargers and external power supplies for use with products under the scope of this document;
- electric fence energisers.

Included in the scope of this document are also microwave ovens for domestic use or catering.

Equipment which incorporate radio transmit/receive functions are included in the scope of this document.

NOTE 4 For handling cases where equipment under the scope of this document is combined with transmit and/or receive radio functions, see Clause 8.