SLOVENSKI STANDARD
oSIST FprEN IEC 55011:2023

01-junij-2023

Industrijska, znanstvena in medicinska oprema - Karakteristike občutljivosti za radijske motnje - Mejne vrednosti in merilne metode

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

Industrielle, wissenschaftliche und medizinische Geräte - Funkstörungen - Grenzwerte und Messverfahren

Appareils industriels, scientifiques et médicaux - Caractéristiques de perturbations radioélectriques - Limites et méthodes de mesure

Ta slovenski standard je istoveten z: **prEN IEC 55011:2023**

ICS:

33.100.10 Emisija Emission

oSIST FprEN IEC 55011:2023 **en**

CIS/B/820/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **CISPR 11 ED7**	
DATE OF CIRCULATION: **2023-04-07**	CLOSING DATE FOR VOTING: **2023-06-30**
SUPERSEDES DOCUMENTS: **CIS/B/802/FDIS, CIS/B/809A/RVD**	

IEC CIS/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

SECRETARIAT: Japan	SECRETARY: Mr Hirokazu Tokuda
OF INTEREST TO THE FOLLOWING COMMITTEES: CIS/H	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☒ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of

- any relevant patent rights of which they are aware and to provide supporting documentation,
- any relevant “in some countries” clauses to be included should this proposal proceed. Recipients are reminded that the enquiry stage is the final stage for submitting "in some countries" clauses. See AC/22/2007.

TITLE:

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

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

This CDV implements decision 3 of the CIS/B meeting in San Francisco where it was decided to continue the project CISPR 11 (after the failed B/802/FDIS) with a CDV which contains the technical aspects of the fragments f2, f4, f5, f6 and f7.

INTRODUCTION TO THIS CDV

Note: the text of this INTRODUCTION will not be part of a final publication of the next edition of CISPR 11.

The maintenance activities related to CISPR 11 Ed. 6.2 started in 2016 with the document B/662/DC and the outcome given in B/670/INF. The latest document on those maintenance activities was B/802/FDIS, which however failed the vote.

The further progress with respect to that project was discussed at the CISPR/B meeting in San Francisco in 2022 (see B/813/RM). There it was decided, see decision3 of B/811/DL to continue with the project in that way that contents related to the topic of WPT will be removed from the current project and will be separately treated in future amendments or editions. The other fragments, i.e. f2, f4, f5, f6, and f7, will be merged together in this CDV which contains:

- f2: general maintenance issues, as for example revision of definitions and annexes (following B/739/CD, B/757/CC, B/761/CD, B/772/CC, B/777/CDV and B/794/RVC)
- f4: requirements when performing emission measurements on robots (following B/741/CD, B/751/CC, B/754/CD, B/768/CC, B/779/CDV and B/798/RVC)
- f5: requirements for wired network ports (following B/742/CD, B/753/CC, B/758/CD, B/771/CC, B/780/CDV and B/797/RVC)
- f6: requirements for Group 1 equipment in the frequency range above 1 GHz (following B/743/CD, B/755/CC, B/759/CD, B/769/CC, B/781/CDV and B/795/RVC)
- f7: requirements for radio enabled products (following B/744/CD, B/756/CC, B/760/CD, B/770/CC, B/782/CDV and B/796/RVC)

The work on the fragments f1 (WPT EV) and f3 (Radio beam WPT) will be subject to different documents and continued after circulation of this CDV.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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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.
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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. 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;

This International Standard CISPR 11 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)*.

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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication 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 standard 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.

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 3.1.20 in this International Standard. CISPR and ITU share their responsibility 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 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). 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 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 apply to individual ISM RF applications operated at frequencies outsides designated ISM bands (see Table 1). They also may 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 International Standard.

394 INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT –

395 **RADIO-FREQUENCY DISTURBANCE CHARACTERISTICS –**
396 **LIMITS AND METHODS OF MEASUREMENT**
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399

400 ## 1 Scope

401 This International Standard applies to industrial, scientific and medical electrical equipment
402 operating in the frequency range 0 Hz to 400 GHz and to domestic and similar appliances
403 designed to generate and/or use locally radio-frequency energy.

404 This standard covers emission requirements related to radio-frequency (RF) disturbances in
405 the frequency range of 9 kHz to 400 GHz. Measurements need only be performed in
406 frequency ranges where limits are specified in Clause 6.

407 For ISM RF applications in the meaning of the definition found in the ITU Radio Regulations
408 (see Definition 3.1.20), this standard covers emission requirements related to radio-frequency
409 disturbances in the frequency range of 9 kHz to 18 GHz.

410 ISM equipment which incorporates radio transmit/receive functions (host equipment with radio
411 functionality) is included in the scope of this document, see Annex F. However, the emission
412 requirements in this document are not intended to be applicable to the intentional
413 transmissions from a radio transmitter as defined by the ITU including their spurious
414 emissions.

415 NOTE 1 This exclusion only applies to emissions from the intentional radio transmitter. However, combination
416 emissions, for example emissions resulting from intermodulation between the radio and the non-radio
417 subassemblies of the ISM equipment, are not subject to this exclusion.

418 NOTE 2 Emission requirements for induction cooking appliances are specified in CISPR 14-1 [2][1].

419 Requirements for ISM RF lighting equipment and UV irradiators operating at frequencies
420 within the ISM frequency bands defined by the ITU Radio Regulations are contained in this
421 standard.

422 Robots used for industrial, scientific and medical applications are in the scope of this
423 document.

424 EXAMPLE Welding robots, spraying robots, handling robots, processing robots, assembly robots, medical robots,
425 education and experimental robots. A comprehensive list of robots in the scope of this document is given on the
426 IEC EMC zone.

427 NOTE 3 Flying robots, domestic helper robots, toy robots and entertainment robots are examples of robots in the
428 scope of other CISPR standards.

429 Equipment covered by other CISPR product and product family emission standards are
430 excluded from the scope of this standard.

431 ## 2 Normative references

432 The following documents, in whole or in part, are normatively referenced in this document and
433 are indispensable for its application. For dated references, only the edition cited applies. For

[1] Figures in square brackets refer to the Bibliography.

undated references, the latest edition of the referenced document (including any amendments) applies.

CISPR 16-1-1:2019, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

CISPR 16-1-2:2014, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-2: Radio disturbance and immunity measuring apparatus – Coupling devices for conducted disturbance measurements*
CISPR 16-1-2:2014/AMD 1:2017

CISPR 16-1-4:2019, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-4: Radio disturbance and immunity measuring apparatus – Antennas and test sites for radiated disturbance measurements*
CISPR 16-1-4:2019/AMD 1:2020

CISPR 16-2-1:2014, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-1: Methods of measurement of disturbances and immunity – Conducted disturbance measurements*
CISPR 16-2-1:2014/AMD 1:2017

CISPR 16-2-3:2016, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*
CISPR 16-2-3:2016/AMD 1:2019

CISPR 16-4-2:2011, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Measuring instrumentation uncertainty*
CISPR 16-4-2:2011/AMD 1:2014
CISPR 16-4-2:2011/AMD 1:2018

CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment - Emission requirements*
CISPR 32:2015/AMD 1:2019

IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 60601-1-2:2014, *Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral standard: Electromagnetic disturbances – Requirements and tests*
IEC 60601-1-2:2014/AMD 1:2020

IEC 60601-2-2:2017, *Medical electrical equipment – Part 2-2: Particular requirements for the basic safety and essential performance of high frequency surgical equipment and high frequency surgical accessories*

IEC 60974-10:2020, *Arc welding equipment – Part 10: Electromagnetic compatibility (EMC) requirements*

IEC 61307:2011, *Industrial microwave heating installations – Test methods for the determination of power output*

IEC 62135-2:2020, *Resistance welding equipment – Part 2: Electromagnetic compatibility (EMC) requirements*