



SLOVENSKI STANDARD
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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

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CIS/B/820/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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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: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
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<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING <input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING	
<p>Attention IEC-CENELEC parallel voting</p> <p>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.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

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- 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.

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1 INTRODUCTION TO THIS CDV

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

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

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

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

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

24

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263 INTERNATIONAL ELECTROTECHNICAL COMMISSION
264
265 INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE
266

267
268 **INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT –**
269 **RADIO-FREQUENCY DISTURBANCE CHARACTERISTICS –**
270 **LIMITS AND METHODS OF MEASUREMENT**
271

272 FOREWORD

- 273 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising
274 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote
275 international co-operation on all questions concerning standardization in the electrical and electronic fields. To
276 this end and in addition to other activities, IEC publishes International Standards, Technical Specifications,
277 Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC
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307 International Standard CISPR 11 has been prepared by CISPR Subcommittee B: Interference
308 relating to industrial, scientific and medical radio-frequency apparatus, to other (heavy)
309 industrial equipment, to overhead power lines, to high voltage equipment and to electric
310 traction.

311 This seventh edition cancels and replaces the sixth edition published in 2015. This edition
312 constitutes a technical revision.

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

- 315 a) Introduction of limits for radiated disturbances in the frequency range above 1 GHz for
316 group 1 equipment in line with the requirements given in the generic emission standards
- 317 b) Introduction of limits for conducted disturbances on the wired network port in line with the
318 requirements given in the generic emission standards

319 c) Introduction of requirements for equipment which incorporates radio transmit/receive
320 functions

321 d) Introduction of definitions for various types of robots;

322 e) Consideration of some particular conditions when measuring robots, such as
323 measurement setups and operating modes of robots;

324 This International Standard CISPR 11 has the status of a Product Family EMC standard in
325 accordance with IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of*
326 *electromagnetic compatibility publications (2014)*.

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

328 The committee has decided that the contents of the base publication and its amendments will
329 remain unchanged until the stability date indicated on the IEC web site under
330 "http://webstore.iec.ch" in the data related to the specific publication. At this date, the
331 publication will be

- 332 • reconfirmed,
- 333 • withdrawn,
- 334 • replaced by a revised edition, or
- 335 • amended.

336

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.

337

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

340 RECOMMENDATION No. 39/2

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

343 The CISPR

344 CONSIDERING

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

349 RECOMMENDS

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

352

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353

INTRODUCTION

354 This CISPR publication contains, amongst common requirements for the control of RF
355 disturbances from equipment intended for use in industrial, scientific, and medical electrical
356 applications, specific requirements for the control of RF disturbances caused by ISM RF
357 applications in the meaning of the definition of the International Telecommunication Union
358 (ITU), see also Definition 3.1.20 in this International Standard. CISPR and ITU share their
359 responsibility for the protection of radio services in respect of the use of ISM RF applications.

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

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

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

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378 However, for operation and use of several types of ISM RF applications the manufacturer,
379 installer and/or customer should be aware of additional national provisions regarding possible
380 licensing and particular protection needs of local radio services and applications. Depending
381 on the country concerned, such additional provisions may apply to individual ISM RF
382 applications operated at frequencies outside designated ISM bands (see Table 1). They also
383 may apply to ISM RF applications operated at frequencies above 18 GHz. For the latter type
384 of applications, local protection of radio services and appliances requires an accomplishment
385 of the conformity assessment by application of the relevant national provisions in the
386 frequency range above 18 GHz in accordance with vested interests of the ITU and national
387 administrations. These additional national provisions may apply to spurious emissions,
388 emissions appearing at harmonics of the operation frequency, and to wanted emissions at the
389 operation frequency allocated outside a designated ISM band in the frequency range above
390 18 GHz.

391 Recommendations of CISPR for the protection of radio services in particular areas are found
392 in Annex C of this International Standard.

393

394 INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT –
395 **RADIO-FREQUENCY DISTURBANCE CHARACTERISTICS –**
396 **LIMITS AND METHODS OF MEASUREMENT**
397
398
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.

- 434 undated references, the latest edition of the referenced document (including any
435 amendments) applies.
- 436 CISPR 16-1-1:2019, *Specification for radio disturbance and immunity measuring apparatus*
437 *and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring*
438 *apparatus*
- 439 CISPR 16-1-2:2014, *Specification for radio disturbance and immunity measuring apparatus*
440 *and methods – Part 1-2: Radio disturbance and immunity measuring apparatus – Coupling*
441 *devices for conducted disturbance measurements*
442 CISPR 16-1-2:2014/AMD 1:2017
- 443 CISPR 16-1-4:2019, *Specification for radio disturbance and immunity measuring apparatus*
444 *and methods – Part 1-4: Radio disturbance and immunity measuring apparatus – Antennas*
445 *and test sites for radiated disturbance measurements*
446 CISPR 16-1-4:2019/AMD 1:2020
- 447 CISPR 16-2-1:2014, *Specification for radio disturbance and immunity measuring apparatus*
448 *and methods – Part 2-1: Methods of measurement of disturbances and immunity – Conducted*
449 *disturbance measurements*
450 CISPR 16-2-1:2014/AMD 1:2017
- 451 CISPR 16-2-3:2016, *Specification for radio disturbance and immunity measuring apparatus*
452 *and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated*
453 *disturbance measurements*
454 CISPR 16-2-3:2016/AMD 1:2019
- 455 CISPR 16-4-2:2011, *Specification for radio disturbance and immunity measuring apparatus*
456 *and methods – Part 4-2: Uncertainties, statistics and limit modelling – Measuring*
457 *instrumentation uncertainty*
458 CISPR 16-4-2:2011/AMD 1:2014
459 CISPR 16-4-2:2011/AMD 1:2018
- 460 CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment - Emission*
461 *requirements*
462 CISPR 32:2015/AMD 1:2019
- 463 IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161:*
464 *Electromagnetic compatibility*
- 465 IEC 60601-1-2:2014, *Medical electrical equipment – Part 1-2: General requirements for basic*
466 *safety and essential performance – Collateral standard: Electromagnetic disturbances –*
467 *Requirements and tests*
468 IEC 60601-1-2:2014/AMD 1:2020
- 469 IEC 60601-2-2:2017, *Medical electrical equipment – Part 2-2: Particular requirements for the*
470 *basic safety and essential performance of high frequency surgical equipment and high*
471 *frequency surgical accessories*
- 472 IEC 60974-10:2020, *Arc welding equipment – Part 10: Electromagnetic compatibility (EMC)*
473 *requirements*
- 474 IEC 61307:2011, *Industrial microwave heating installations – Test methods for the*
475 *determination of power output*
- 476 IEC 62135-2:2020, *Resistance welding equipment – Part 2: Electromagnetic compatibility*
477 *(EMC) requirements*