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Responsible committee: GEL/210/11 EMC - Standards Committee

Interested committees:

Title: BS EN 55011 Fragments 2-7 - Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement - Requirements for air-gap wireless power transfer (WPT)

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Introduction

This draft standard is based on international discussions in which the UK has taken an active part. Your comments on this draft are welcome and will assist in the preparation of the consequent standard. There is a high probability that this text could be adopted by CENELEC as a reference document for harmonization or as a European Standard. Recipients of this draft are requested to comment on the text bearing in mind this possibility.

UK Vote

Please indicate whether you consider the UK should submit a negative (with reasons) or positive vote on this draft.

Submission of Comments

- The guidance given below is intended to ensure that all comments receive efficient and appropriate attention by the responsible BSI committee. **Annotated drafts are not acceptable and will be rejected.**
- All comments must be submitted, preferably electronically, to the Responsible Committee Secretary at the address given on the front cover. Comments should be compatible with version 6.0 or version 97 of Microsoft Word for Windows, if possible; otherwise comments in ASCII text format are acceptable. **Any comments not submitted electronically should still adhere to these format requirements.**
- All comments submitted should be presented as given in the example below. Further information on submitting comments and how to obtain a blank electronic version of a comment form are available from the BSI website at:
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	(7)
MB	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



CIS/B/739/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

CISPR 11/FRAG2 ED7

DATE OF CIRCULATION:

2020-06-19

CLOSING DATE FOR COMMENTS:

2020-09-11

SUPERSEDES DOCUMENTS:

CIS/B/661/RR

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 Satoru Ozaki

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☒ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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.

TITLE:

Fragment 2: Miscellaneous, definitions and annexes

NOTE FROM TC/SC OFFICERS:

INTRODUCTION

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

During the latest meetings of CISPR/B WG 1, since discussing the comments from NCs on the document B/662/DC (with the outcome in B/670/INF), and at the last plenary meeting of CISPR/B in Shanghai, CN in Oct 2019 (see B/734/DL, B/735/RM), the need of maintenance of CISPR 11 Ed. 6.2 was identified. WG 1 was tasked at that plenary meeting to start with the related activities and consequently to circulate working drafts and/or committee drafts to NCs for commenting.

As many maintenance issues have been identified, partly editorial ones, partly technical ones and partly ones resulting in new sets of requirements, WG 1 decided to split the maintenance work into several fragments. This would allow to process the maintenance issues individually and to finally merge them at the FDIS stage depending on their individual progress.

For the time being, it is intended to perform maintenance with the following fragments:

- f1: requirements for WPT transfer systems (circulated already as B/737/CDV; further progress depends on B/738/Q)
- f2: general maintenance issues, as for example revision of definitions and annexes
- f3: requirements for radio beam wireless power transfer (WPT-AAD) equipment
- f4: requirements when performing emission measurements on robots
- f5: requirements for wired network ports
- f6: requirements for Group 1 equipment in the frequency range above 1 GHz
- f7: requirements for radio enabled products

This document covers fragment f2 with a proposal for the resolution of comments described in B/670/INF as well as some other issues identified in the past.

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

Modifications in CISPR 11 – Miscellaneous, definitions and annexes Committee Draft (CD) – Fragment 2 (f2)

Start of the instruction list

1 Scope

2 Normative references

3 Terms and definitions

Rename the headline of Clause 3 “Terms and definitions” into “Terms, definitions and abbreviations” and restructure Clause 3 into two sub-clauses

3.1 Terms and definitions

3.2 Abbreviations

and move all the definitions into sub-clause 3.1

Remove the following definition:

3.17

small size equipment

equipment, either positioned on a table top or standing on the floor which, including its cables fits in an imaginary cylindrical test volume of 1,2 m in diameter and 1,5 m height (to ground plane)

Editor’s note: the definition 3.17 is no longer needed as it is now introduced into the basic standard CISPR 16-2-3:2019 as definition 3.1.35 “small EUT”.

As a consequence, replace all instances of “small size equipment” in CISPR 11 by “small EUT”.

Replace definition 3.19 by the following:

3.19

type test

test of one or more devices made to a certain design to show that the design meets certain specifications

Note 1 to entry: Recognition of a type test as type approval may depend on national or regional regulation, see H.2 in Annex H.

Add a new definition:

3.X

associated equipment

AE

apparatus that is not part of the system under test, but needed to help exercise the EUT

Editor's note: this definition was proposed by CISPR/1358/INF and is modified in CISPR 16-2-3:2019 as definition 3.1.5.

As a consequence, replace all six instances of "peripheral equipment" in CISPR 11 by "associated equipment".

Add a new sub-clause 3.2 which will contain a list of abbreviations, starting with the following:

3.2 Abbreviations

AGV	Automated Guided Vehicle
FSOATS	Free Space Open Area Test Site

6 Limits of electromagnetic disturbances

6.2.1.3 Frequency range 150 kHz to 30 MHz

Insert a footnote c in Table 3 and add the reference to this footnote c in the column headings for "Rated power of < 20 kVA to ≤ 75 kVA" and "Rated power > 75 kVA":

Footnote

c Either the voltage limits or the current limits apply.

7.1 General

Delete the 2nd paragraph:

~~Requirements which relate to measurements at such test sites are type test requirements. A type test may be recognized as type approval if the conditions for the statistical assessment of measurement results according to Annex H are observed.~~

7.5.1 General

Replace the 1st paragraph by the following text:

Consistent with typical applications of the equipment under test, the level of the disturbance shall be maximized by varying the configuration of the equipment.

The EUT shall be arranged in accordance with the requirements of Table 7.5-1.

Table 7.5-1 – Test arrangements of EUT

Intended operational arrangement(s) of EUT	Test arrangement	Remarks
Table-top only	Table-top	
Floor-standing only	Floor-standing	See table clause 3.3 of Table 3 for testing in a FAR
Can be floor-standing or table-top	Table-top	
Rack mounted	In a rack or table-top	
Other, for example wall mounted, ceiling mounted, handheld, body worn	Table-top	With normal orientation If the equipment is designed to be mounted on a ceiling, the downward-facing portion of the EUT may be oriented facing upward.
If a physical hazard would be caused by testing the device on a table-top, then it may be tested as floor standing and the test report shall document the decision and justification.		

If the EUT has a large number of similar ports or ports with many similar connections, a sufficient number shall be selected to simulate actual operating conditions and to ensure that all the different types of termination are covered.

An example of a typical setup for measurements of radiated disturbances from a table-top EUT is provided in Figure 3. The measurement arrangement shall be typical of normal installation practice and centred to the turntable's vertical axis.

Add in between the drawing of Figure 4 and the figure title the following NOTE:

NOTE: the usage of CMADs is required only for radiated emission measurements.

8.2.1 General

Replace the 2nd paragraph and the subsequent list by the following text:

The measurement of conducted disturbances may be carried out:

a) on an OATS or in a SAC, with floor-standing equipment under test having the same configuration as used during the radiation measurement;

b) above a metal ground plane; or

c) within a screened room. Either the floor or one wall of the screened room shall act as the ground plane.

Annex A (informative)

Examples of equipment classification

Replace the text in the existing annex A by the following text (changes indicated in green coloured text):

Editor's note: the purpose of the changes is to clarify the situation with regard to automated guided vehicle (AGV).

Many types of equipment in the scope of this standard contain two or more types of interference sources, for example an induction heater might incorporate semiconductor rectifiers in addition to its heating coil. For testing purposes the equipment is to be defined in terms of the purpose for which it was designed. For example, the induction heater incorporating semiconductor rectifiers is to be tested as an induction heater (with all disturbances meeting the prescribed limits whatever the source of disturbance) and is not to be tested as if it were a semiconductor power supply.

The standard gives general definitions of group 1 and group 2 equipment and for official purposes the group to which a particular piece of apparatus belongs shall be identified from these definitions. It will, however, be helpful to users of the standard to have a comprehensive list of types of apparatus which have been identified as belonging to a particular group. This will also help in developing the specification where variations in test procedures may be found by experience to be necessary in dealing with specific types of apparatus.

The following lists of group 1 and group 2 equipment are not exhaustive.

Group 1

Group 1 equipment: group 1 contains all equipment in the scope of this standard which is not classified as group 2 equipment.

General:

- Laboratory equipment
- Medical electrical equipment
- Scientific equipment
- Semiconductor converters
- Industrial electroheating equipment with operating frequencies less than or equal to 9 kHz
- Machine tools
- Industrial process measurement and control equipment
- Semiconductor manufacturing equipment

Detailed:

Signal generators, measuring receivers, frequency counters, flow meters, spectrum analysers, weighing machines, chemical analysis machines, electronic microscopes, switched mode power supplies and semiconductor converters (when not incorporated in an equipment), semiconductor rectifiers/inverters, grid connected power converters (GCPC), resistance heating equipment with built-in semiconductor AC power controllers, arc furnaces and metal melting ovens, plasma and glow discharge heaters, X-ray diagnostic equipment, computerised tomography equipment, patient monitoring equipment, ultrasound diagnostic and therapy equipment, ultrasound washing machines, regulating controls and equipment with regulating controls incorporating semiconductor devices with a rated input current in excess of 25 A per phase, AGV without wireless power transfer

Group 2

Group 2 equipment: group 2 contains all ISM RF equipment in which radio-frequency energy in the frequency range 9 kHz to 400 GHz is intentionally generated and used or only used locally, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material, for inspection/analysis purposes, or for transfer of electromagnetic energy.

General:

- Microwave-powered UV irradiating apparatus
- Microwave lighting apparatus
- Industrial induction heating equipment operating at frequencies above 9 kHz
- Inductive power transfer / charging equipment ^a
- Dielectric heating equipment
- Industrial microwave heating equipment
- Microwave ovens
- Medical electrical equipment
- Electric welding equipment
- Electro-discharge machining (EDM) equipment
- Demonstration models for education and training

^a Inductive or capacitive power transfer apparatus normally subject to CISPR 11, but forming part of equipment subject to other CISPR standards is excluded from the scope of CISPR 11.

Detailed:

Metal melting, billet heating, component heating, soldering and brazing, arc welding, arc stud welding, resistance welding, spot welding, tube welding, industrial laser oscillator excited by high-frequency discharge, wood gluing, plastic welding, plastic preheating, food processing, biscuit baking, food thawing, paper drying, textile treatment, adhesive curing, material preheating, short-wave diathermy equipment, microwave therapy equipment, magnetic resonance imaging (MRI), medical HF sterilizers, high-frequency (HF) surgical equipment, crystal zone refining, demonstration models of high-voltage Tesla transformers, belt generators, **AGV with wireless power transfer**, etc.

NOTE Though AGV can be considered as vehicles, due to their sole use in industrial environments they are considered as industrial products in the scope of CISPR 11. Future types of AGV for residential environment are intended to be covered by CISPR 12 (keyword: autonomous driving).

Annex B
(informative)

**Precautions to be taken in the use
of a spectrum analyser (see 7.3.1)**

Delete this Annex B from CISPR 11.

*Editor's note: this "historical" annex is no longer needed as appropriate information is given in
the basic standards CISPR 16-1-1 and CISPR 16-2-1.*

Annex C
(normative)

Measurements of electromagnetic radiation disturbance
in the presence of signals from radio transmitters

Introduce a new paragraph in front of the second last paragraph:

In most cases the results of radiated emission measurements are expressed in logarithmic units, for example dB(μ V/m). Those results would have to be converted into linearly expressed values (μ V/m) before applying the above formula.

Annex D
(informative)

**Propagation of interference from industrial radio-frequency
equipment at frequencies between 30 MHz and 300 MHz**

Delete this Annex D from CISPR 11.

Editor's note: the information in this annex is not specific for industrial, scientific, medical equipment and can be considered out-of-date as it might result from a time where measurements were typically done at the location of installations.

Annex E (informative)

Recommendations of CISPR for protection of certain radio services in particular areas

Move the table about frequency bands allocated for safety-related radio services from Annex F to the end of sub-clause E.2, and the table about frequency bands allocated for sensitive radio services from Annex G to the end of sub-clause E.3.

Extend the table from Annex F (now table in sub-clause E.2) with the following information:

Frequency MHz	Allocation/use
136 – 200 360 – 520 746 – 870	Project 25
380 – 430 450 – 470 870 – 888 915 – 933	TETRA1
850 – 860 905 – 915 1453 – 1477 1501 – 1525	IDRA
806 – 821 851 – 866	DIMRS
70 – 520 746 – 870 870 – 888 915 – 933	TETRAPOL
136 – 174 380 – 512 806 – 821 851 – 866 896 – 901 935 – 940	EDACS
806 – 821 851 – 866 896 – 901 935 – 940	FHMA
410 – 420 420 – 430 450 – 460 460 – 470 870 – 876 915 – 921	CDMA-PAMR
410 – 415	GoTa

420 – 425	
452 – 457.5	
462 – 467.5	
806 – 821	
851 – 866	
824 – 849	
869 – 894	
1 850 – 1 910	
1 930 – 1 990	
1 920 – 1 980	
2 110 – 2 170	
380 – 385	Air-Ground-Air operation (AGA)
390 – 395	

250

251 *Editor's note: the information in the annexes F and G are related to the content of Annex E*
 252 *and hence should be placed at those locations in the document where the information from*
 253 *both annexes F and G is discussed, i.e. in Annex E. For the additional frequency bands and*
 254 *services to be added, see comment NO-01 in B/670/INF.*

255

256 *Correct in Annex G (now table in sub-clause E.3) all instances of "Amateur Radio Service" to*
 257 *Amateur Radio Services*

258

259 *Correct in Annex G (now table in sub-clause E.3) the following entry "2320 – 2450 Amateur*
 260 *Radio Service" to*

261 2 300 – 2 450 Amateur Radio Services

262

263 *Add to Annex G (now table in sub-clause E.3) the following entry:*

264 6 650 – 6 675,2 Radio Astronomy

265

Annex H
(informative)

**Statistical assessment of series produced equipment
against the requirements of CISPR standards**

Delete this Annex H from CISPR 11.

Editor's note: the topic of "Statistical assessment" has become controversial with respect to some regulatory schemes and hence can be considered as regulatory statement. CISPR/B WG 1 proposes to delete this annex; However, NCs are invited to submit their opinion, whether this annex shall be finally removed from CISPR 11.