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Project No. 2019/03656

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

Interested committees:

Title: Draft BS EN 55011:2015/AMD 1:2019 Fragments 4-5 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement

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

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- 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 |
|------------------|------------------------|

| 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/758/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:  
**CISPR 11/FRAG5 ED7**

DATE OF CIRCULATION:  
**2021-01-29**

CLOSING DATE FOR COMMENTS:  
**2021-04-23**

SUPERSEDES DOCUMENTS:  
**CIS/B/742/CD, CIS/B/753/CC**

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 5: Requirements for wired network ports**

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## 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 continue maintenance with a CD2 for the following fragments (with the 1<sup>st</sup> CD circulated as):

- f2: general maintenance issues, as for example revision of definitions and annexes (circulated as B/739/CD)
- f3: requirements for radio beam wireless power transfer (WPT-AAD) equipment (circulated as B/740/CD, B/750/CC)
- f4: requirements when performing emission measurements on robots (circulated as B/741/CD, B/751/CC)
- f5: requirements for wired network ports (circulated as B/742/CD, B/753/CC)
- f6: requirements for Group 1 equipment in the frequency range above 1 GHz (circulated as B/743/CD, B/755/CC)
- f7: requirements for radio enabled products (circulated as B/744/CD, B/756/CC)

The work on f1 is done in AHG 4 with currently finalizing the observations to the comments received on B/749/CD.

This document covers CD2 of fragment f5 with a proposal for the introduction of requirements for conducted emissions on wired network ports. It takes into account the information in the documents B/725/DC and B/732A/INF as well as the comments received on CD 1 (B/742/CD and B/753/CC).

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

**Amendment to CISPR 11 – Requirements for wired network ports  
Committee Draft (CD) – Fragment 5 (f5)**

*Start of the instruction list*

## **2 Normative references**

*Add the following normative reference:*

CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment - Emission requirements*

CISPR 32:2015/AMD 1:2019

## **3 Terms and definitions**

*Add the following definitions:*

### **3.x1**

#### **wired network port**

port for the connection of a communication device/system intended to be interconnected to widely dispersed systems by direct connection to a single-user or multi-user network

Note 1 to entry: Examples of communication through the network include voice, data and signalling transfers.

Note 2 to entry: Examples of these networks include CATV, PSTN, ISDN, xDSL, LAN and similar.

Note 3 to entry: These ports may support screened or unscreened cables and may also carry AC or DC power where this is an integral part of the telecommunication specification.

Note 4 to entry: A port generally intended for interconnection of components of a system under test (e.g. RS-232, RS-485, field buses in the scope of IEC 61158, IEEE Standard 1284 (parallel printer), Universal Serial Bus (USB), IEEE Standard 1394 ("Fire Wire"), etc.) and used in accordance with its functional specifications (e.g. for the maximum length of cable connected to it), is not considered to be a wired network port.

Note 5 to entry: In many product standards, this port was defined as a telecommunications or network port.

#### **6.2.1.3 Frequency range 150 kHz to 30 MHz**

*Add after the second paragraph and in front of Table 2 the following paragraph:*

Limits for the disturbance voltage at wired network ports in the frequency range 150 kHz to 30 MHz for equipment measured on a test site are given in Table X.1.

Add after the existing Table 19 the following Table X.1:

**Table X.1 – Disturbance limits for wired network ports for group 1 equipment measured on a test site**

| Frequency range<br>MHz | Class B equipment |        |                |        | Class A equipment<br>≤ 20kVA |        |                |        | Class A equipment<br>> 20kVA (a) |        |                |        |
|------------------------|-------------------|--------|----------------|--------|------------------------------|--------|----------------|--------|----------------------------------|--------|----------------|--------|
|                        | Voltage limits    |        | Current limits |        | Voltage limits               |        | Current limits |        | Voltage limits                   |        | Current limits |        |
|                        | QP                | AV     | QP             | AV     | QP                           | AV     | QP             | AV     | QP                               | AV     | QP             | AV     |
|                        | dB(μV)            | dB(μV) | dB(μA)         | dB(μA) | dB(μV)                       | dB(μV) | dB(μA)         | dB(μA) | dB(μV)                           | dB(μV) | dB(μA)         | dB(μA) |
| 0,15                   | 84                | 74     | 40             | 30     | 97                           | 84     | 53             | 40     | 110                              | 94     | 66             | 50     |
| to                     | to                | to     | to             | to     | to                           | to     | to             | to     | to                               | to     | to             | to     |
| 0,5                    | 74                | 64     | 30             | 20     | 87                           | 74     | 43             | 30     | 100                              | 84     | 56             | 40     |
| 0,5                    | 74                | 64     | 30             | 20     | 87                           | 74     | 43             | 30     | 100                              | 84     | 56             | 40     |
| to                     |                   |        |                |        |                              |        |                |        |                                  |        |                |        |
| 30                     |                   |        |                |        |                              |        |                |        |                                  |        |                |        |

(a) see justification for the proposed limits below this table in the Editor's note

In the frequency range from 0,15 MHz to 0,5 MHz, the limits in this table decrease linearly with logarithm of frequency.

Limitations and restrictions:

- (1) For disturbance measurements at wired network ports the measurement specifications and networks as defined in CISPR 32 shall be applied.
- (2) The current and voltage disturbance limits are derived for use with an Asymmetric Artificial Network (AAN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the wired network port under test.
- (3) (3) The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to CISPR 32 Table C.1 for applicability.

**Editor's note: the following text in green gives the rationale for the proposed limits for Class A equipment > 20 kVA in the above Table 1. It is given here in order to allow easier reading and understanding. Please note that it will be removed from this sub-clause during further progress of this project**

**Justification for the limits for Class A equipment > 20kVA, proposed in Table X.1:**

The CISPR 11 specifies since publication of the 5<sup>th</sup> edition in 2009 requirements for conducted emissions according to the power rating of the equipment concerned and the environment where it is intended to be used. Hence, sets of limits for conducted disturbances are now specified for Class A equipment with a power rating up to 20 kVA and further sets of limits for equipment rated larger than 20 kVA. This concept applies to all ports considered up to now (i.e. AC power port and DC power port). The limits for Class A equipment with a power rating above 20 kVA are relaxed by 13 dB to 21 dB compared to the limits of equipment ≤ 20 kVA. The main rationale for this relaxation is based on the fact that:

(1) equipment is not to be operated in the residential environment

(2) the number of installations using such a power rating equipment is less frequent than those where equipment less than 20 kVA is used, and hence the interference potential of the equipment rated above 20 kVA (if using the same limits as for equipment below 20 kVA) is smaller. This allows the specification of less stringent emission limits to that extent that both categories of equipment have comparable interference potential.

Consistently with the above, it is proposed to apply this concept also to the newly introduced wired network port, shown in the right columns of Table 1, with the following justification:

- *a relaxation by 13 dB is proposed, i.e. the smallest value among the different relaxation values applied to the AC or DC power ports of equipment rated above 20 kVA.*
- *when there are already relaxed emission requirements for the various AC and DC ports of equipment rated above 20 kVA, it physically does not make sense to remain with much more stringent limits to a further port of the same equipment (which can be interpreted as an overdesign of that port without any sound justification when dealing with ratings above 20 kVA), in contrast, it is a rather consistent approach to have limits for all types of ports with comparable interference potential.*
- *the network lines (for example ethernet), connected to the wired network port, remains internal to the private installation rather will be terminated at a switch installed there and hence produce relevant emissions only inside an industrial installation. The switch, selected in consistency with the environment remains the only point of proximity between the private network and the public operator network which are kept segregated.*
- *from an immunity perspective, the proposed limits for equipment rated above 20 kVA are not an issue as the typical immunity levels in that frequency range are 140 dB(μV), i.e. in minimum 30 dB higher than the emission limits.*

### 6.3.1.3 Frequency range 150 kHz to 30 MHz

*Add after the fourth paragraph and in front of Table 8 the following paragraph:*

Limits for the disturbance voltage at wired network ports in the frequency range 150 kHz to 30 MHz for equipment measured on a test site are given in Table X.1. They also apply to group 2 equipment when being measured on a test site.

### 7.5.2 Interconnecting cables

*Add after NOTE 3 the following paragraph:*

The configuration of the EUT when performing measurements of conducted emissions on wired network ports shall be done according to CISPR 32.