SLOVENSKI STANDARD
SIST EN 55032:2015/A1:2021

01-februar-2021

Elektromagnetna združljivost večpredstavnostne opreme - Zahteve glede elektromagnetnega sevanja - Dopolnilo A1

Electromagnetic compatibility of multimedia equipment - Emission requirements - Fragment 1

Elektromagnetische Verträglichkeit von Multimediageräten und -einrichtungen - Anforderungen an die Störaussendung

Compatibilité électromagnétique des équipements multimédia - Exigences d'émission

Ta slovenski standard je istoveten z: **EN 55032:2015/A1:2020**

ICS:

33.100.10	Emisija	Emission
33.160.60	Večpredstavni (multimedijski) sistemi in oprema za telekonference	Multimedia systems and teleconferencing equipment

SIST EN 55032:2015/A1:2021 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 55032:2015/A1

December 2020

ICS 33.100.10

English Version

Electromagnetic compatibility of multimedia equipment - Emission requirements (CISPR 32:2015/A1:2019)

Compatibilité électromagnétique des équipements multimédia - Exigences d'émission (CISPR 32:2015/A1:2019)

Elektromagnetische Verträglichkeit von Multimediageräten und Einrichtungen - Anforderungen an die Störaussendung (CISPR 32:2015/A1:2019)

This amendment A1 modifies the European Standard EN 55032:2015; it was approved by CENELEC on 2019-11-05. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 55032:2015/A1:2020 E

European foreword

The text of document CIS/I/617/FDIS, future CISPR 32/A1, prepared by CISPR SC I "Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers" of CISPR "International special committee on radio interference" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 55032:2015/A1:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-06-04
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-12-04

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Endorsement notice

The text of the International Standard CISPR 32:2015/A1:2019 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Replace Annex ZA of EN 55032:2015 *by the following one:*

Publication	Year	Title	EN/HD	Year
CISPR 16-1-1	2015	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	EN 55016-1-2	2014
+ A1	2017		+ A1	2018
CISPR 16-1-4	2010	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	EN 55016-1-4	2010
+ A1	2012		+ A1	2012
+ A2	2017		+ A2	2017
CISPR 16-1-5	2014	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-5: Radio disturbance and immunity measuring apparatus - Antenna calibration sites and reference test sites for 5 MHz to 18 GHz	EN 55016-1-5	2015
+ A1	2016		+ A1	2017

Publication	Year	Title	EN/HD	Year
CISPR 16-1-6	2014	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-6: Radio disturbance and immunity measuring apparatus - EMC antenna calibration	EN 55016-1-6	2015
+ A1	2017		+ A1	2017
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	EN 55016-2-1	2014
+ A1	2017		+ A1	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	EN 55016-2-3	2017
CISPR 16-4-2	2011	Specification for radio disturbance and immunity measuring apparatus and methods - Part 4-2: Uncertainties, statistics and limit modelling - Measurement instrumentation uncertainty	EN 55016-4-2	2011
+ A1	2014		+ A1	2014
+ A2	2018		+ A2	2018
IEC 61000-4-6	2008	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	-	-
ISO/IEC 17025	2005	General requirements for the competence of testing and calibration laboratories	-	-
IEEE Std 802.3	-	IEEE Standard for Ethernet	-	-

CISPR 32

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE
COMITÉ INTERNATIONAL SPÉCIAL DES PERTURBATIONS RADIOÉLECTRIQUES

AMENDMENT 1
AMENDEMENT 1

Electromagnetic compatibility of multimedia equipment – Emission requirements

Compatibilité électromagnétique des équipements multimédia – Exigences d'émission

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 33.100.10

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FOREWORD

This amendment has been prepared by subcommittee CISPR I: Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers, of IEC technical committee CISPR: International special committee on radio interference.

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

FDIS	Report on voting
CIS/I/617/FDIS	CIS/I/623/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website 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.

1 Scope

Delete the second paragraph starting with "Equipment within the scope..".

Replace the fourth paragraph with the following:

The emission requirements in this standard are not intended to be applicable to the intentional transmissions from a radio communication device operated in accordance with the ITU-R Radio Regulations, nor to any spurious emissions related to these intentional transmissions.

Replace the fifth paragraph with the following:

Equipment for which emission requirements in the frequency range covered by this publication are explicitly formulated in other CISPR publications is excluded from the scope of this publication.

2 Normative references

Replace the existing reference to CISPR 16-1-1:2010 and its amendments with:

CISPR 16-1-1:2015, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

Replace the existing reference to CISPR 16-1-2:2003 and its amendments with:

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/AMD1:2017

Add to CISPR 16-1-4:2010 the following amendment:

CISPR 16-1-4:2010/AMD2:2017

Replace the existing reference to CISPR 16-2-1:2008 and its amendments with:

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/AMD1:2017

Replace the existing reference to CISPR 16-2-3:2010 and its amendments with:

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*

Add to CISPR 16-4-2:2011 the following amendments:

CISPR 16-4-2:2011/AMD1:2014

CISPR 16-4-2:2011/AMD2:2018

Delete the normative reference to ANSI C63.5-2006

Add the following new references to the existing list:

CISPR 16-1-5:2014, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-5: Radio disturbance and immunity measuring apparatus – Antenna calibration sites and reference test sites for 5 MHz to 18 GHz*
CISPR 16-1-5:2014/AMD1:2016

CISPR 16-1-6:2014, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-6: Radio disturbance and immunity measuring apparatus – EMC antenna calibration*
CISPR 16-1-6:2014/AMD 1:2017

As a consequence of the above updates to CISPR 16 normative references the following references throughout the standard require updating as follows. NOTE: some of these may already be addressed with other changes given in this document:

Location of reference	Replace the existing reference	by the following new reference
Clause 2 Footnote 1 to References	CISPR 16-1-2	Delete Footnote 1 related to CISPR 16-1-2
Clause 2 Footnote 2 to References	CISPR 16-2-1	Delete Footnote 2 related to CISPR 16-2-1
3.1.9	CISPR 16-2-1	3.1.28 of CISPR 16-2-1:2014/AMD1:2017
Clause 9	Table 1 of CISPR 16-4-2:2011	Table 1 of CISPR 16-4-2: 2011/ AMD1:2014/AMD2:2018
Clause 11	CISPR 16-4-2	CISPR 16-4-2: 2011/AMD1:2014/AMD2:2018, Clauses 5, 7 and 8
Table A.1, footnote to table	CISPR 16-1-4:2010 /AMD1:2012	Delete Note to Table
Table A.1, footnote to table	CISPR 16-2-3:2010/ AMD1:2010	Delete Note to Table
Table A1.1	5.3 of CISPR 16-1-4:2010/AMD1:2012	5.3 of CISPR 16-1-4:2010/AMD1:2012
Table A1.1	7.3 of CISPR 16-2-3:2010	7.3 of CISPR 16-2-3:2016
Table A1.2	5.2 of CISPR 16-1-4:2010/AMD1:2012	5.2 of CISPR 16-1-4:2010/AMD1:2012
Table A1.2	7.3 of CISPR 16-2-3:2010	7.3 of CISPR 16-2-3:2016
Table A1.3	8.3 of CISPR 16-1-4:2010/AMD1:2012	8.3 of CISPR 16-1-4:2010/ AMD1:2012/AMD2:2017
Table A1.3	7.6.6 of CISPR 16-2-3:2010	7.6.6 of CISPR 16-2-3:2016
Table A1.4	5.4.7 of CISPR 16-1-4:2010/AMD1:2012	5.4.7 of CISPR 16-1-4:2010/AMD1:2012
Table A1.4	Annex C and 7.4 of CISPR 16-2-3:2010	7.4 of CISPR 16-2-3:2016
Table A.8, footnote to table	CISPR 16-1-2:2003/AMD1:2004/ AMD 2:2006	Delete Note to Table
Table A.8, footnote to table	CISPR 16-2-1:2008/AMD1:2010 /AMD2:2013	Delete Note to Table
Table A8.1	Clause 4 of CISPR 16-1-2:2003	Clause 4 of CISPR 16-1-2:2014/ AMD1:2017
Table A8.1	Clause 7 of CISPR 16-2-1:2008	Clause 7 of CISPR 16-2-1:2014/ AMD1:2017
Table A8.2	Clause 7 of CISPR 16-1-2:2003	Clause 7 of CISPR 16-1-2:2014
Table A8.2	Clause 7 of CISPR 16-2-1:2008	Clause 7 of CISPR 16-2-1:2014/ AMD1:2017
Table A8.3	5.1 of CISPR 16-1-2:2003	5.1 of CISPR 16-1-2:2014
Table A8.3	Clause 7 of CISPR 16-2-1:2008	Clause 7 of CISPR 16-2-1:2014/ AMD1:2017
Table A8.4	5.2.2 of CISPR 16-1-2:2003	5.2.2 of CISPR 16-1-2:2014
Table A8.4	Clause 7 of CISPR 16-2-1:2008	Clause 7 of CISPR 16-2-1:2014/ AMD1:2017
Table C.1 row 6	CISPR 16-1-2:2003/AMD1:2004/ AMD2:2006, Figure 5 and Figure 6	CISPR 16-1-2:2014/AMD1:2017, Figure 5
C.2.2.1	CISPR 16-1-1:2010, Clause 2	CISPR 16-1-1:2015, Clauses 4, 5, 6 and 7
C.2.2.1	CISPR 16-1-1:2010, Clause 6	CISPR 16-1-1:2015, Clause 6
C.2.2.3	Annex A of CISPR 16-2-3:2010/ AMD1:2010	Annex A of CISPR 16-2-3:2016
C.2.2.4	Tables 1 and 2 of CISPR 16-1-4:2010/ AMD1:2012	Tables 8, 9 and 10 of CISPR 16-1-4:2010/ AMD1:2012
C.3.5	6.5.1 of CISPR 16-2-1:2008/ AMD1:2010/AMD 2:2013	6.5.1 of CISPR 16-2-1:2014
C.3.6	6.5.1 of CISPR 16-2-1:2008/ AMD1:2010/AMD 2:2013	6.5.1 of CISPR 16-2-1:2014

Location of reference	Replace the existing reference	by the following new reference
C.3.7	6.5.1 of CISPR 16-2-1:2008/ AMD1:2010/AMD 2:2013	6.5.1 of CISPR 16-2-1:2014
C.3.8	6.5.1 of CISPR 16-2-1:2008/ AMD1:2010/AMD 2:2013	6.5.1 of CISPR 16-2-1:2014
C.4.1.4	5.1 of CISPR 16-1-2:2003/ AMD1:2004/AMD 2:2006	5.1 of CISPR 16-1-2:2014
C.4.1.5	5.2.2 of CISPR 16-1-2:2003/ AMD1:2004/AMD 2:2006	5.2.2 of CISPR 16-1-2:2014
C.4.4	CISPR 16-1-4:2010/AMD1:2012	CISPR 16-1-4:2010/AMD1:2012, 5.4
D.1.2	5.5.2 of CISPR 16-1-4:2010/ AMD1:2012	5.5.2 of CISPR 16-1-4:2010/ AMD1:2012
G.2.3	5.2.2 of CISPR 16-1-2:2003/ AMD1:2004/AMD 2:2006	5.2.2 of CISPR 16-1-2:2014
Annex E	Annex B of CISPR 16-2-1:2008/ AMD1:2010/AMD 2:2013	Annex B of CISPR 16-2-1:2014

3.1 Terms and definitions

3.1.30
signal/control port

Replace the existing Note 1 to entry with the following note:

Note 1 to entry: Examples include RS-232, Universal Serial Bus (USB), High-Definition Multimedia Interface (HDMI), IEEE Standard 1394 (“Fire Wire”), and waveguide ports used for interconnecting MME.

3.2 Abbreviations

Add the following abbreviation to the existing list:

PSD Power Spectral Density

6.2 Host systems and modular EUT

Replace the third bullet with the following new bullet:

- a plug-in module, for example a portable memory drive;

9 Test report

Replace, in the second bullet point of the last existing list, "Table 1 of CISPR 16-4-2:2011" *by* "Table 1 of CISPR 16-4-2:2011/AMD1:2014/AMD2:2018".

10 Compliance with this publication

Replace last sentence of the second existing paragraph with the following new sentence:

Requirements for conducted emission measurements are defined in Table A.7 and Table A.9 to Table A.13 with the restrictions defined in Table A.8.

11 Measurement uncertainty

Replace the existing clause with the following new heading and text:

11 Measurement instrumentation uncertainty

Where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2: 2011/AMD1:2014/AMD2:2018, Clauses 5, 7 and 8, except for measurements in accordance with C.4.1.6.4, this shall be followed and for these measurements the determination of compliance with the limits in this standard shall take into consideration the measurement instrumentation uncertainty in accordance with CISPR 16-4-2: 2011/AMD1:2014 clause 4. For measurements in accordance with C.4.1.6.4, the measurement instrumentation uncertainty shall not be taken into account in the determination of compliance.

For all measurements where guidance for the calculation of measurement instrumentation uncertainty is given in CISPR 16-4-2: 2011/AMD1:2014/AMD2:2018, Clauses 5, 7 and 8, this shall be used and reported as described in Clause 9. Calculations to determine the measurement result and any adjustment of the test result required when the test laboratory uncertainty is larger than the value for U_{cispr} given in CISPR 16-4-2:2011/AMD1:2014/AMD2:2018, Table 1 shall be included in the test report as described in Clause 9.

For measurements where no guidance for the calculation of the instrumentation uncertainty is specified in CISPR 16-4-2: 2011/AMD1:2014/AMD2:2018 the measurement instrumentation uncertainty shall not be taken into account for determining compliance with the limits in this standard.

Annex A
(normative)

Requirements

A.1 General

Add, after the first paragraph of this clause, the following new paragraph:

When the excluded transmissions from a radio communication device (as defined in Clause 1) appear in a measured conducted or radiated emission spectrum, those signals do not need to be reported and shall not be considered in identifying the top six emissions for reporting (see Clause 9). The test report may indicate that the signals were observed and were identified as being excluded transmissions.

Replace the existing fourth paragraph of this clause starting with "Other measurement methods.." *with:*

Other measurement methods and associated limits for RVCs and GTEM cells are presented in Annex I for information, however, they cannot be used for demonstrating compliance with this publication.

A.2 Requirements for radiated emissions

Replace the existing second paragraph of this clause by the following new text and new figure:

Measurements for showing compliance shall only be performed at measurement distances for which the test site is compliant with the appropriate test site validation requirements and restrictions defined in Table A.1. In addition, for facilities covered by Table clause A1.1, this includes any receive antenna position between (and including) R1 to R2 as given in Figure A.2 that results in a test distance meeting the requirements defined in Table D.2. These antenna positions are those used during the test site validation.

In Figure A.2, the circle defines the maximum allowable EUT volume from the test site validation.

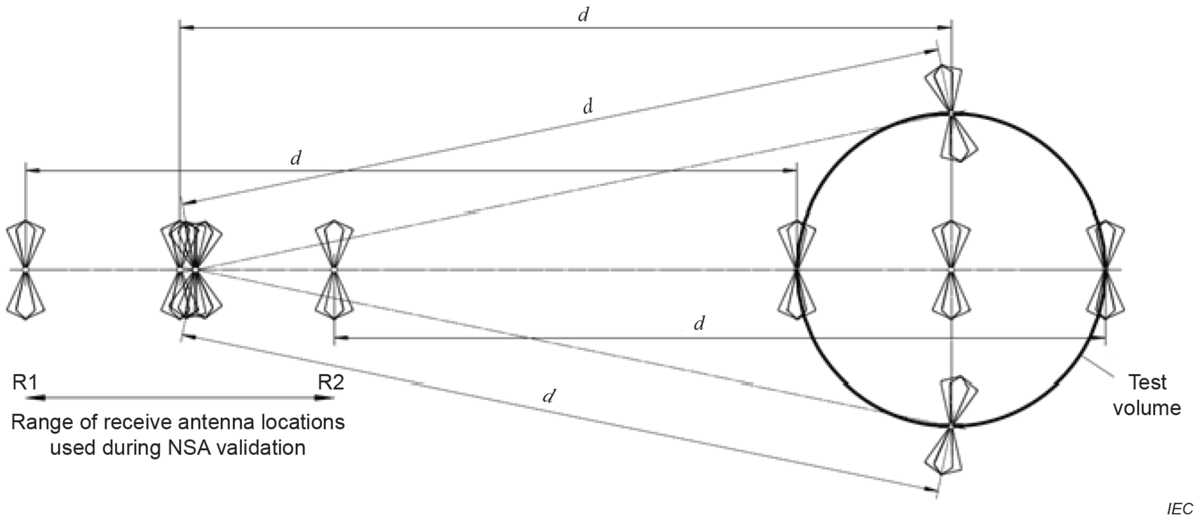

Figure A.2 – Example of the range of receive antenna locations used during NSA validation of a weather-protected OATS or SAC

Table A.1 – Radiated emissions, basic standards and the limitation of the use of particular methods

Replace the existing table by the following new table:

Table clause	Measurement facility	Validation method	Measurement		Limitations and clarifications
			Procedure	Arrangement	
A1.1	SAC or OATS with weather protection cover	5.2, 5.3.1, 5.4 of CISPR 16-1-4:2010/ AMD1:2012	7.3 of CISPR 16-2-3:2016	Annex D	The maximum width of the EUT, local AE and associated cabling shall be within the validated test volume as demonstrated during site validation. The validated test volume does not need to encompass any AE and associated cabling that are located below the ground plane or turntable, or remotely located, as described in D.1. During site validation the transmit and receive antennas shall not both be within the test volume at the same time. Theoretical NSA values for 5 m test sites are presented in Table C.3.
A1.2	OATS without weather protection cover	5.2 of CISPR 16-1-4:2010/ AMD1:2012	7.3 of CISPR 16-2-3:2016	Annex D	Theoretical NSA values for 5 m test sites are presented in Table C.3
A1.3	FSOATS	8.3 of CISPR 16-1-4:2010/ AMD1:2012/ AMD2:2017	7.6.6 of CISPR 16-2-3:2016	Annex D	A facility validated against the FSOATS requirements shall be used for measurements above 1 GHz. The EUT, local AE and associated cabling shall be within the validated test volume as demonstrated during the test site validation. An FSOATS may be a SAC/OATS with RF absorber on the ground plane or a FAR. The antenna used for emission measurements shall be either the same receive antenna that was used during the test site validation measurements, or another antenna of the same model number Independent of the antenna beamwidth or height of the EUT (including Local AE and interconnecting cables), the receiving antenna shall be height scanned continuously from 1 m to 4 m. Boresighting or tilting of the receive antenna is not required.

Table clause	Measurement facility	Validation method	Measurement		Limitations and clarifications
			Procedure	Arrangement	
A1.4	FAR	5.4.7 of CISPR 16-1-4:2010/ AMD1:2012	Annex C and 7.4 of CISPR 16-2-3:2016	Annex D	This table clause applies to radiated emission measurement up to 1 GHz for an EUT set-up in the table top arrangement as shown in Figure D.11 and Figure D.12. Where the same room is to be used for radiated emission testing above 1 GHz, apply table clause A1.3 and use the room as a FSOATS. The maximum width and height of an EUT, local AE including cables connected to local AE shall be less than half of the measurement distance as demonstrated during the test site validation. Where relevant, the height of the EUT includes 0,8 m of vertically exposed cable. Where relevant, the width of the EUT includes 0,8 m of horizontally exposed cable.
The arrangement of the EUT is defined within Annex D of CISPR 32 and not that given in CISPR 16-2-3:2016. Requirements defined within CISPR 16-2-3:2016 that conflict with or are in addition to the requirements of this standard shall not be followed.					

Table A.3 – Requirements for radiated emissions at frequencies above 1 GHz for class A equipment

Replace the existing table by the following new table:

Table clause	Frequency range MHz	Measurement			Class A limits dB(μV/m)
		Facility (see table A.1)	Distance m	Detector type / bandwidth	
A3.1	1 000 to 6 000	FSOATS	3	Average / 1 MHz	60
A3.2	1 000 to 6 000			Peak / 1 MHz	80
Apply A3.1 and A3.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1.					

Table A.5 – Requirements for radiated emissions at frequencies above 1 GHz for class B equipment

Replace the existing table by the following new table:

Table clause	Frequency range MHz	Measurement			Class B limits dB(μV/m)
		Facility (see table A.1)	Distance m	Detector type/ bandwidth	
A5.1	1 000 to 6 000	FSOATS	3	Average/ 1 MHz	54
A5.2	1 000 to 6 000			Peak/ 1 MHz	74
Apply A5.1 and A5.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1 . These requirements are not applicable to the local oscillator and harmonics frequencies of equipment covered by Table A.7.					