CISPR 35

Edition 1.0 2016-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Electromagnetic compatibility of multimedia equipment – Immunity requirements

Compatibilité électromagnétique des équipements multimédia – Exigences d'immunité

CISPR 35:2016-08(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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ELECTROMAGNETIC COMPATIBILITY OF MULTIMEDIA EQUIPMENT – IMMUNITY REQUIREMENTS

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International Standard CISPR 35 has been prepared by CISPR subcommittee I: Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers.

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

FDIS	Report on voting
CISPR/I/522/FDIS	CISPR/I/527/RVD

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

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

The committee has decided that the contents of this 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- withdrawn,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.

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INTRODUCTION

This CISPR document establishes uniform requirements for the electromagnetic immunity of multimedia equipment. The test methods are given within this document or in referenced basic EMC immunity standards. This document specifies applicable tests, test levels, product operating conditions and assessment criteria.

ELECTROMAGNETIC COMPATIBILITY OF MULTIMEDIA EQUIPMENT – IMMUNITY REQUIREMENTS

1 Scope

NOTE Blue coloured text within this document indicates text aligned with CISPR 32. CISPR 32 contains the appropriate emission requirements above 150 kHz for the equipment within the scope of this document.

This document applies to multimedia equipment (MME) as defined in 3.1.24 and having a rated AC or DC supply voltage not exceeding 600 V.

MME within the scope of CISPR 20 or CISPR 24 is within the scope of this document.

MME with a broadcast reception function is within the scope of this document, see Annex A. MME with non-broadcast wireless interfaces is also within the scope of this document, however, compliance with this document does not require the assessment of the performance of these interfaces.

MME intended primarily for professional use is within the scope of this document.

MME for which immunity requirements in the frequency range covered by this document are explicitly formulated in other CISPR documents (except CISPR 20 and CISPR 24) are excluded from the scope of this document.

The objectives of this document are:

- to establish requirements which provide an adequate level of intrinsic immunity so that the MME will operate as intended in its environment in the frequency range 0 kHz to 400 GHz;
- to specify procedures to ensure the reproducibility of tests and the repeatability of results.

Due to technology convergence of the functions of MME, the performance criteria have been determined on a function-orientated basis rather than on an equipment-orientated basis.

2 Normative references

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.

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*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*
IEC 61000-4-3:2006/AMD 1:2007
IEC 61000-4-3:2006/AMD 2:2010

IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*[1]

IEC 61000-4-6:2008, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*[2]

IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-4-20: 2010, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

IEC 61000-4-21:2011, *Electromagnetic compatibility (EMC) – Part 4-21: Testing and measurement techniques – Reverberation chamber test methods*

ISO 9241-3:1992, *Ergonomic requirements for office work with visual display terminals (VDTs) – Part 3: Visual display requirements*

IEEE Standard 802.3, *IEEE Standard for Ethernet, Section Three*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

NOTE Terms and definitions related to EMC and to relevant phenomena are given in IEC 60050-161. Attention is drawn to the fact that a common set of definitions has been written for both CISPR 32 and CISPR 35. It is noted that some terms and definitions will only be used in one of these two documents but for purposes of consistency they are intentionally included in both.

3.1.1
AC mains power port
port used to connect to the mains supply network

Note 1 to entry: Equipment with a DC power port which is powered by a dedicated AC/DC power converter is defined as AC mains powered equipment.

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1 2nd edition (2005). This 2nd edition has been replaced in 2014 by a 3rd Edition IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*.

2 3rd edition (2008). This 3rd edition has been replaced in 2013 by a 4th Edition IEC 61000-4-6:2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*.

3.1.2
analogue/digital data port
signal/control port (3.1.32), antenna port (3.1.3), wired network port (3.1.34), broadcast receiver tuner port (3.1.8), or optical fibre port (3.1.25) with metallic shielding and/or metallic strain relief member(s)

3.1.3
antenna port
port, other than a broadcast receiver tuner port (3.1.8), for connection of an antenna used for intentional transmission and/or reception of radiated RF energy

3.1.4
arrangement
physical layout and orientation of all the parts of the EUT, AE and any associated cabling, located within the test area

3.1.5
associated equipment
AE
equipment needed to exercise and/or monitor the operation of the EUT

Note 1 to entry: The AE may be either local (within the measurement or test area) or remote.

3.1.6
audio equipment
equipment which has a primary function of either (or a combination of) generation, input, storage, play, retrieval, transmission, reception, amplification, processing, switching or control of audio signals

3.1.7
broadcast receiver equipment
equipment containing a tuner that is intended for the reception of broadcast services

Note 1 to entry: These broadcast services are typically television and radio services, including terrestrial broadcast, satellite broadcast and/or cable transmission.

3.1.8
broadcast receiver tuner port
port intended for the reception of a modulated RF signal carrying terrestrial, satellite and/or cable transmissions of audio and/or video broadcast and similar services

Note 1 to entry: This port may be connected to an antenna, a cable distribution system, an RF modulator output port (3.1.31) or similar device.

3.1.9
common mode impedance
asymmetrical mode (see CISPR 16-2-1:2014) impedance between a cable attached to a port and the Reference Ground Plane (RGP)

Note 1 to entry: The complete cable is seen as one wire of the circuit, and the RGP is seen as the other wire of the circuit. The common mode current flowing around this circuit can lead to the emission of radiated energy from the EUT.

3.1.10
configuration
operational conditions of the EUT and AE, consisting of the set of hardware elements selected to comprise the EUT and AE, the mode of operation (3.1.23) used to exercise the EUT and arrangement (3.1.4) of the EUT and AE

3.1.11
converted common mode current
asymmetrical mode current converted from differential mode current by the unbalance of an attached cable and/or network

3.1.12
DC network power port
port, not powered by a dedicated AC/DC power converter and not supporting communication, that connects to a DC supply network

Note 1 to entry: Equipment with a DC power port which is powered by a dedicated AC/DC power converter is defined as AC mains powered equipment.

Note 2 to entry: DC power ports supporting communication are considered to be wired network ports (3.1.34), for example Ethernet ports which include power over Ethernet (POE).

3.1.13
enclosure port
physical boundary of the EUT through which electromagnetic fields may radiate or may enter

3.1.14
entertainment lighting control equipment
equipment generating or processing electrical signals for controlling the intensity, colour, nature or direction of the light from a luminaire, where the intention is to create artistic effects in theatrical, televisual or musical productions and visual presentations

3.1.15
Equipment Under Test
EUT
multimedia equipment (MME) being evaluated for compliance with the requirements of this document

3.1.16
formal measurement
measurement used to determine compliance

Note 1 to entry: This is often the final measurement performed. It may be carried out following a prescan measurement. It is the measurement recorded in the test report.

3.1.17
function
operation carried out by an MME

Note 1 to entry: Functions are related to basic technologies incorporated in the MME such as: displaying, recording, processing, controlling (including control of lighting operations, see 3.1.14), reproducing, transmitting, or receiving single medium or multimedia content. Where relevant the content may be data, audio or video, either individually or in combination.

3.1.18
highest internal frequency
F_x
highest fundamental frequency generated or used within the EUT, or highest frequency at which it operates

Note 1 to entry: This includes frequencies which are solely used within an integrated circuit.

3.1.19
information technology equipment
ITE
equipment having a primary function of either (or a combination of) entry, storage, display, retrieval, transmission, processing, switching, or control of data and/or telecommunication

messages and which may be equipped with one or more ports typically for information transfer

Note 1 to entry: Examples include data processing equipment, office machines, electronic business equipment and telecommunication equipment.

3.1.20
launched common mode current
asymmetric mode current produced by internal circuitry and appearing at a wired network port of the EUT

Note 1 to entry: Measurement of the launched common mode current requires the EUT port to be loaded by a perfectly balanced termination.

3.1.21
LNB
low noise block converter which amplifies and converts broadcast satellite frequencies to frequencies usable by a satellite receiver

3.1.22
local AE
AE located within the measurement or test area

3.1.23
mode of operation
set of operational states of all functions of an EUT during a test or measurement

3.1.24
multimedia equipment
MME
equipment that is information technology equipment (3.1.19), audio equipment (3.1.6), video equipment (3.1.33), broadcast receiver equipment (3.1.7), entertainment lighting control equipment (3.1.14) or a combinations of these

3.1.25
optical fibre port
port at which an optical fibre is connected to an equipment

3.1.26
outdoor unit of home satellite receiving systems
outdoor unit which typically consists of a reflecting surface (or antenna) and an LNB

Note 1 to entry: This excludes the intermediate frequency amplifier and the demodulator included in the indoor receiver.

3.1.27
port
physical interface through which electromagnetic energy enters or leaves the EUT

Note 1 to entry: See Figure 1.