INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE (CISPR)

Guidance for users of the CISPR Standards (January 2024)

1 Introduction

This document provides guidance on the selection of appropriate CISPR EMC Standards applicable to products, systems and installations. This document also gives an overview of the published CISPR Standards covering EMC aspects of products, systems and installations.

The document is annually updated and expanded.

The Standards are divided into the following categories, in line with IEC Guide 107:

1.1 Basic Standards

Basic EMC Standards give the general and fundamental conditions or rules for the assessment of EMC and related performance of all products, systems or installations, and serve as reference documents for CISPR Generic and Product (Family) Standards. Basic Standards are general and hence are not dedicated to specific product families or products; they relate to general information, to the disturbing phenomena and to the measurement or testing techniques. They do not contain any prescribed limits or any product/system related performance specifications. However, methods and guidance on how to generate appropriate limits for the protection of radio reception are given.

1.2 Generic Standards

Generic EMC Standards are Standards related to a particular environment, which specify the set of essential EMC requirements and test procedures, applicable to all the products or systems intended for operation in this environment, if no specific EMC Standards for a particular product family, product, system or installation exist. Limits are included, and reference is made to the test procedures given in the relevant Basic Standards.

1.3 Product (Family) Standards

Product (Family) Standards define the specific EMC requirements, test procedures and limits for particular products, systems or installations.

2 List of available current CISPR Standards

2.1 General

This clause lists the CISPR standards available. CISPR 16 “Specification for radio disturbance and immunity measuring apparatus and methods” is published in multiple parts and sub-parts:

Part 1: Specification for radio disturbance and immunity measuring apparatus
Part 2: Methods of measurement of disturbances and immunity
Part 3: CISPR Technical Reports
Part 4: Uncertainties, statistics and limit modelling

Note: For details of the latest issues and to view the scopes of the following standards, please go to the IEC Webstore : http://webstore.iec.ch

2.2 CISPR Basic EMC Standards

Publication	Description	Sub-Committee
CISPR 16-1-1	Part 1-1: Measuring apparatus	CIS/A
CISPR 16-1-2	Part 1-2: Coupling devices for conducted disturbance measurements	CIS/A
CISPR 16-1-3	Part 1-3: Ancillary equipment – Disturbance power	CIS/A
CISPR 16-1-4	Part 1-4: Antennas and test sites for radiated disturbance measurements	CIS/A
CISPR 16-1-5	Part 1-5: Antenna calibration sites & reference test sites for 5 MHz to 18 GHz	CIS/A
CISPR 16-1-6	Part 1-6: EMC antenna calibration	CIS/A
CISPR 16-2-1	Part 2-1: Conducted disturbance measurements	CIS/A
CISPR 16-2-2	Part 2-2: Measurement of disturbance power	CIS/A
CISPR 16-2-3	Part 2-3: Radiated disturbance measurements	CIS/A
CISPR 16-2-4	Part 2-4: Immunity measurements	CIS/A
CISPR 16-4-2	Part 4-2: Measurement instrumentation uncertainty	CIS/A
CISPR 17	Methods of measurement of the suppression characteristics of passive radio interference filters and suppression components	CIS/A
IEC 61000-4-20	Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	CIS/A & SC77B
IEC 61000-4-21	Testing and measurement techniques - Reverberation chamber test methods	CIS/A & SC77B
IEC 61000-4-22	Testing and measurement techniques - Radiated emissions and immunity measurements in fully anechoic rooms (FARs)	CIS/A & SC77B

2.3 CISPR Generic EMC Standards

Publication	Description	Sub-Committee
IEC 61000-6-3	Part 6-3: Generic standards - Emission standard for residential environments	CIS/H
IEC 61000-6-4	Part 6-4: Generic standards - Emission standard for industrial environments	CIS/H
IEC 61000-6-8	Part 6-8: Generic standards - Emission standard for professional equipment in commercial and light-industrial locations	CIS/H

2.4 CISPR Product Standards

Publication	Description	Sub-Committee
CISPR 11	Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement	CIS/B
CISPR 12	Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of off-board receivers	CIS/D
CISPR 14-1	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission	CIS/F
CISPR 14-2	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard	CIS/F
CISPR 15	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment	CIS/F
CISPR 25	Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of on-board receivers	CIS/D
CISPR 32	Electromagnetic Compatibility of multimedia equipment – Emission requirements	CIS/I
CISPR 35	Electromagnetic Compatibility of multimedia equipment – Immunity requirements	CIS/I
CISPR 36	Electric and hybrid electric road vehicles - Radio disturbance characteristics - Limits and methods of measurement for the protection of off-board receivers below 30 MHz	CIS/D

2.5 CISPR Guidance documents

These documents are for guidance, not for compliance testing.

Publication	Description	Sub-Committee
CISPR/TR 16-2-5	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-5: In situ measurements for disturbing emissions produced by physically large equipment	CIS/H
CISPR/TR 16-3	CISPR technical reports	CIS/A
CISPR/TR 16-4-1	Uncertainties in standardized EMC tests	CIS/A
CISPR/TR 16-4-3	Statistical considerations in the determination of EMC compliance of mass-produced products	CIS/A
CISPR/TR 16-4-4	Statistics of complaints and a model for the calculation of limits	CIS/H
CISPR/TR 16-4-5	Conditions for the use of alternative test methods	CIS/A
CISPR/TR 18-1	Radio interference characteristics of overhead power lines and high voltage equipment. Part 1: Description of phenomena	CIS/B
CISPR/TR 18-2	Radio interference characteristics of overhead power lines and high voltage equipment. Part 2: Methods of measurement and procedures for determining limits	CIS/B
CISPR/TR 18-3	Radio interference characteristics of overhead power lines and high-voltage equipment - Part 3: Code of practice for minimizing the generation of radio noise	CIS/B
CISPR/TR 28	Industrial, scientific and medical equipment (ISM) - Guidelines for emission levels within the bands designated by the ITU	CIS/B
CISPR/TR 29	Television broadcast receivers and associated equipment - Immunity characteristics - Methods of objective picture assessment	CIS/I
CISPR/TR 30-1	Test method on electromagnetic emissions- Part 1: Electronic control gear for single- and double-capped fluorescent lamps	CIS/F
CISPR/TR 30-2	Test method on electromagnetic emissions - Part 2: Electronic control gear for discharge lamps excluding fluorescent lamps	CIS/F
CISPR/TR 31	Provisions for the inclusion of new information the Radio Services Database on the characteristics of radio services (Note: The Database itself is available in the IEC EMC Zone)	CIS/H

3 Examples of products and standards to be applied

The following table gives an overview of typical equipment covered by CISPR Standards, or by IEC or ISO standards that make reference to CISPR standards. It is not a comprehensive list of all products and if a particular product is not included, the scope of the CISPR standards should be consulted to determine if one of them applies. If there is an IEC product standard that covers a particular product, then that standard is applicable instead of the CISPR product family standard.

Product	**In scope of CISPR Standard(s) or other standards that reference CISPR standard(s)**								
	11	**12/25**	**14-1**	**14-2**	**15**	**32**	**35**	**36**	**Remarks**
Accelerators (medical)	✓								
Agricultural machinery		✓						✓	Speed dependent. See also ISO 14982.
Arc Welding equipment	✓								
Audio Equipment						✓	✓		
Automatic Teller Machine						✓	✓		
Battery Chargers – other than WPT	✓		✓	✓					
Battery Chargers – wireless power transfer (WPT) mode	✓		✓	✓					CISPR 14-1 and 14-2 cover only Inductive Power Transfer (IPT) appliances
Battery powered floor professional finishing machines		✓							
Boats (<15m in length)		✓							
Broadcast radio receivers (AM/FM/DAB etc)						✓	✓		
Cap lights for mines					✓				
Car radios		✓				✓	✓		
CD / DVD / BD Player						✓	✓		
Centrifuges for laboratories	✓								
Copying Machine						✓	✓		
Data Display: CRT, plasma, LED, Liquid crystal						✓	✓		
Data Input Device: Keyboard, mouse Magnetic card reader Optical character reader Image scanner, pen						✓	✓		
Data Plotter						✓	✓		
Data Printer: Dot matrix, laser, LED						✓	✓		
Data Processing Equipment						✓	✓		
Data Processor: Computer, calculator						✓	✓		
Data Scanner						✓	✓		
Data Storage Device						✓	✓		
Converters (AC/DC, DC/DC)	✓								
Decoders NTSC, PAL, SECAM						✓	✓		
Demultiplexers						✓	✓		
Digital Still Camera						✓	✓		
Digital Video Camera						✓	✓		
Earth moving and building construction machinery		✓						✓	See ISO 13766
EDM equipment	✓								Electro-Discharge Machining equipment

Product	In scope of CISPR Standard(s) or other standards that reference CISPR standard(s)								
	11	12/25	14-1	14-2	15	32	35	36	Remarks
Education entertainment service robot						✓	✓		As described in the CISPR guidance on Robots available at https://iec.ch/emc
Encoders NTSC, PAL, SECAM						✓	✓		
Forestry Equipment		✓						✓	See ISO 14982
Gas analyser	✓								
Household appliances			✓	✓					
Induction cooking appliances			✓	✓					
Industrial Equipment	✓								
Industrial robots (including Automated Guided Vehicles; inspection, medical, old-age support service and security robots)	✓								As described in the CISPR guidance on Robots available at https://iec.ch/emc
Internal combustion engine devices: (electric generators, pumps, lawn mowers, garden tools, chain saws, etc.)		✓							
IPT Appliances			✓	✓					Inductive Power Transfer appliances
Kitchen machines			✓	✓					
Lighting equipment					✓				
Local Area Network devices						✓	✓		
Magnetic Tape Device						✓	✓		
Magnetic Disk Device						✓	✓		
Medical electrical equipment or system	✓								
Memory Device						✓	✓		
Microwave oven	✓			✓					
Modem (all types)						✓	✓		
MP3 player						✓	✓		
Optical Disk Device						✓	✓		
PC radio and TV Tuner Cards						✓	✓		
Personal Electric Transporters (PeT's)		✓							
Record Players						✓	✓		
Rectifier diode power supplies			✓	✓					
Point of Sale Terminal						✓	✓		
Power Supplies – other than WPT mode	✓	✓	✓	✓	✓	✓	✓		Standard is selected depending for what type of equipment the power supply is intended.
Power Supplies – wireless power transfer (WPT) mode	✓		✓	✓					CISPR 14-1 and 14-2 cover only Inductive Power Transfer (IPT) appliances
Power tools (including battery powered)			✓	✓					
Public service robots (including Personal safety robots or intelligent housekeeper; Domestic helper robots, Hotel, Bank, Venue and Catering service robots)			✓	✓					As described in the CISPR guidance on Robots available at https://iec.ch/emc
RF amplifiers						✓	✓		
RF converters						✓	✓		

Product	In scope of CISPR Standard(s) or other standards that reference CISPR standard(s)								
	11	12/25	14-1	14-2	15	32	35	36	Remarks
Road vehicles including passenger cars, trucks and busses powered by an internal combustion engine		✓							
Road vehicles including passenger cars, trucks and busses powered by an electric motor or hybrid technology		✓						✓	
Satellite tuner units (1st IF)						✓	✓		
Scientific equipment	✓								
Solar inverters	✓								
Telecommunication Terminal						✓	✓		
Television receivers						✓	✓		
Telephone						✓	✓		
TV set-top boxes (analog or digital)						✓	✓		
Video projector						✓	✓		
Video recorders						✓	✓		
X-ray devices	✓								

NOTE 1 For some types of products listed above there might be more specific product standards

NOTE 2 For any product where a CISPR product family standard or specific product standard does not exist, use the Generic EMC Emission standards IEC 61000-6-3, IEC 61000-6-4 or IEC 61000-6-8 and Generic EMC Immunity standards IEC 61000-6-1 or IEC 61000-6-2.

Annex A
Other considerations

To cover all EMC aspects and phenomena that are considered applicable to equipment in the scope of CISPR product family and generic standards, the following other EMC related standards may apply in their own right.

For products in scope of CISPR 11:

- IEC 61000-6-1 *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments.*
- IEC 61000-6-2 *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments.*
- IEC 61000-6-5 *Electromagnetic compatibility (EMC) - Part 6-5: Generic standards - Immunity for equipment used in power station and substation environment*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*
- IEC 61000-3-11 *Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low- voltage supply systems - Equipment with rated current < = 75 A and subject to conditional connection*
- IEC 61000-3-12 *Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and < = 75 A per phase*

NOTE 1: IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 61000-3-12 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

NOTE 2: Instead of the generic immunity standards IEC 61000-6-1, IEC 61000-6-2 and IEC 61000-6-5, the immunity requirements given in more specific product standards apply.

For products in scope of CISPR 14-1:

- CISPR 14-2 *Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

NOTE: IEC 61000-3-2 and IEC 61000-3-3 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of CISPR 14-2:

- CISPR 14-1 *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

NOTE: IEC 61000-3-2 and IEC 61000-3-3 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of CISPR 15:

- IEC 61547 *Equipment for general lighting purposes - EMC immunity requirements*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

NOTE: IEC 61000-3-2 and IEC 61000-3-3 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of CISPR 32:

- CISPR 35 *Electromagnetic Compatibility of multimedia equipment – immunity requirements*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*
- IEC 61000-3-11 *Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low- voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection*
- IEC 61000-3-12 *Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase*

NOTE: IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 61000-3-12are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of CISPR 35:

- CISPR 32 *Electromagnetic Compatibility of multimedia equipment- emission requirements*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*.
- IEC 61000-3-11 *Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low- voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection*
- IEC 61000-3-12 *Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase*

NOTE: IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 61000-3-12 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of IEC 61000-6-3:

- IEC 61000-6-1 *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*
- IEC 61000-3-11 *Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low- voltage supply systems - Equipment with rated current < = 75 A and subject to conditional connection*
- IEC 61000-3-12 *Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and < = 75 A per phase*

NOTE: IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 61000-3-12 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of IEC 61000-6-4:

- IEC 61000-6-2 *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*
- IEC 61000-3-11 *Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low- voltage supply systems - Equipment with rated current < = 75 A and subject to conditional connection*
- IEC 61000-3-12 *Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and < = 75 A per phase*

NOTE: IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 61000-3-12 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.

For products in scope of IEC 61000-6-8:

- IEC 61000-6-1 *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments*
- IEC 61000-3-2 *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*
- IEC 61000-3-3 *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*
- IEC 61000-3-11 *Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low- voltage supply systems - Equipment with rated current < = 75 A and subject to conditional connection*
- IEC 61000-3-12 *Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and < = 75 A per phase*

NOTE: IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 61000-3-12 are applicable in some regions for equipment that is intended to be connected directly to a public low-voltage network.