



**Federal Communications Commission
Office of Engineering and Technology
Laboratory Division**

July 9, 2018

**APPLICABILITY OF CISPR STANDARDS
FOR APPROVAL OF PART 15 UNINTENTIONAL RADIATORS**

1. CE MARK

The CE Mark is used by the European Commission to indicate that a product meets the applicable European directives. The CE Mark is not an indication that the product complies with the FCC requirements and as such is not sufficient to demonstrate compliance with U.S. regulations. For FCC compliance demonstration purposes, it is necessary that unintentional-radiator radio-frequency devices and equipment be tested using the required FCC measurement methods, and shown to meet the FCC limits. Radio-frequency devices are required to be authorized using the appropriate FCC equipment authorization procedure, *i.e.*, certification or Supplier's Declaration of Conformity (or both, for example for some composite-system equipment), as applicable.¹

2. CISPR 22 RADIATED EMISSION LIMITS

Section 15.109(g) provides, as an alternative, compliance to the CISPR 22 (Third Edition) radiated emission limits in the 30 MHz to 1000 MHz range.² The relevant radiated emission (also known as radiated disturbance) limits are shown below as Table 5 and Table 6 (numbering same as in Clause 6 of CISPR 22:1997). Use of the CISPR 22:1997 radiated emission limits for FCC compliance demonstration purposes is conditioned on:

- a) use of the ANSI C63.4-2014 measurement procedures;
- b) compliance with the FCC radiated emission limits above 1000 MHz in Sections 15.109(a) and 15.109(b) (see also Section 3); and
- c) compliance with the FCC AC power line conducted limits in Section 15.107.

¹ Section 15.101, *et seq.*, covers Part 15 unintentional radiator equipment authorization requirements, and Sections 15.31(h), 15.31(k), and 2.947(f) pertain to composite-system equipment.

² The Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, *Information Technology Equipment-Radio Disturbance Characteristics-Limits and Methods of Measurement*, referred to herein as CISPR 22:1997, is incorporated by reference into 47 CFR at Section 15.38(b)(2). For FCC purposes, "information technology equipment" is generally synonymous with "digital device" as defined in Section 15.3(k).

We note that CISPR 22 has been replaced by CISPR 32.³ However, the FCC rules only allow for alternative use of the CISPR 22 (Third Edition) limits, as described in the preceding paragraph.

Table 5 – Limits for radiated disturbance of class A ITE at a measuring distance of 10 m (from CISPR 22:1997)

Frequency range MHz	Quasi-peak limits dB(μ V/m)
30 to 230	40
230 to 1000	47
NOTE 1 – The lower limit shall apply at the transition frequency.	
NOTE 2 – Additional provisions may be required for cases where interference occurs.	

Table 6 – Limits for radiated disturbance of class B ITE at a measuring distance of 10 m (from CISPR 22:1997)

Frequency range MHz	Quasi-peak limits dB(μ V/m)
30 to 230	30
230 to 1000	37
NOTE 1 – The lower limit shall apply at the transition frequency.	
NOTE 2 – Additional provisions may be required for cases where interference occurs.	

³ At present the latest edition is CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment – Emission requirements*.

3. RADIATED EMISSION MEASUREMENTS ABOVE 1 GHz

For Part 15 unintentional radiators, the radiated emission measurement method in ANSI C63.4-2014 shall be followed for compliance testing above 1 GHz.⁴ The measurement method referenced in CISPR 22⁵ for making electric field radiated emission measurements above 1 GHz, does not satisfy FCC requirements to maximize the radiated emission field strength levels above 1 GHz.⁶

Measurement procedures for electric field strength radiated emissions above 1 GHz are covered in Clause 8 of ANSI C63.4-2014. The ANSI C63.4-2014 measurement procedure consists of both exploratory testing and final compliance measurements. Exploratory testing is used to determine the frequency of all significant emissions, then final compliance measurements are made using the EUT cable and wire arrangements and mode of operation that produces the highest amplitude emissions relative to the limit, based on the findings from the exploratory testing. When making final compliance measurements it is necessary to maximize the measured radiated emission field strength levels. Subclause 8.3.2.2 of ANSI C63.4-2014 states that the measurement is to be made “while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emission.”

CHANGE NOTICE

06/12/2015: 746324 D01 Alternative CISPR 22 Limit v02 replaces 746324 D01 E Field Measurements above 1 GHz v01 (3/9/2007).

07/09/2018: 746324 D01 Alternative CISPR 22 Limit v02r01 replaces 746324 D01 E Field Measurements above 1 GHz v02. Added text on use of CISPR 32; also miscellaneous citations and editorial clarifications added.

⁴ Section 15.31(a)(4) specifies the use of the measurement procedure ANSI C63.4-2014, *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* [incorporated by reference into 47 CFR at Section 15.38(g)(2)]. See also KDB Publication 300643 on general measurement procedures for Part 15 devices.

⁵ CISPR 22:2005/AMD1:2005, *Amendment 1 - Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement*, at 10.6 included “The measurement method shall be as specified in 7.3 of CISPR 16-2-3.” The latter cross-reference was originally to CISPR 16-2-3:2003/AMD1:2005, *Amendment 1 Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*. CISPR 32:2015 in the row “Table clause ... A1.3” of Table A.1 includes “Measurement ... Procedure ... 7.6.6 of CISPR 16-2-3:2010.” The 2005 and 2010 CISPR 16-2-3 measurement procedures are the same, thus the discussion in Section 3 paragraph 1 above also applies for CISPR 32:2015.

⁶ See, e.g., Sections 15.31(f) and 15.31(g).