

FCC MAIL SECTION

Before the
Federal Communications Commission
Washington, D.C. 20554
JUL 10 11 23 AM '92

DISPATCHED BY
ET Docket No. 92-152

In the Matter of

Revision of Part 15
of the Rules to harmonize
the standards for digital
devices with international standards.

NOTICE OF PROPOSED RULE MAKING

Adopted: July 10, 1992;

Released: July 30, 1992

Comment Date: October 21, 1992

Reply Comment Data: November 13, 1992

By the Commission:

INTRODUCTION

1. By this action, the Commission proposes to amend Part 15 of its rules to permit the manufacturers of digital devices to demonstrate compliance with either FCC requirements or international standards for radio frequency emissions. The objective of this proposal is to ensure that U.S. manufacturers have reasonable opportunities to compete fairly and effectively in the international marketplace.

BACKGROUND

2. Part 15 of the Commission's rules governs the operation of radio frequency (RF) devices without an individual license. Digital devices, such as computers, generate and use RF energy. These devices are subject to the provisions

contained in Part 15 limiting radio noise emitted by unintentional radiators.¹ Part 15 was recently revised to establish uniform standards for unintentional radiators.²

3. The standards in Part 15 apply only to products used in the United States. Many other countries, most notably the European community countries, are in the process of requiring digital devices to comply with standards developed by the International Special Committee on Radio Interference (CISPR) for controlling interference.³ CISPR is a voluntary standards-making organization under the auspices of the International Electrotechnical Commission (IEC). CISPR adopts recommendations for limits and methods of measurement to control radio interference generated by computers and various other devices. CISPR Publication 22 contains limits and methods of measurements for Information Technology Equipment, which includes the same equipment that the FCC defines as digital devices. CISPR has been considering several changes to its standards on digital devices, and release of a new Publication 22 is expected in the near future.⁴

4. In Petitions for Reconsideration of the *Report and Order* adopting the new Part 15 rules, the Computer and Business Equipment Manufacturers Association (CBEMA) and NCR Corporation (NCR) asked the Commission to harmonize its technical standards for digital devices with the international standards contained in CISPR Pub. 22.⁵ CBEMA indicates that many members of the computer industry have developed multi-national markets. It submits that these companies must comply with the CISPR standards for equipment marketed in European and the Far East. These same companies must also demonstrate compliance with the Commission's standards for equipment marketed within the U.S. To reduce design and testing burdens and costs, CBEMA and NCR urge the Commission to conform its standards for digital devices to the CISPR standards.⁶ Alternatively, CBEMA requests that the Commission accept demonstration of compliance with the CISPR standards in lieu of compliance with the Commission's limits.⁷

5. In a separate matter, CBEMA also requests that Part 15 be amended to reflect the 13 dB relaxation of the emissions limits for broadband emissions conducted onto the AC power lines that is specified in the Commission's measurement procedures. The regulations specify limits on

¹ See 47 CFR Section 15.3(z) and 47 CFR Sections 15.107-15.117.

² See *First Report and Order*, GEN Docket No. 87-389, 4 FCC Rcd 3493 (1989) ("*Report and Order*").

³ Japan also has adopted voluntary standards based on CISPR recommendations, and other countries are in the process of aligning their requirements with the CISPR standards.

⁴ CISPR Pub. 22 was first printed in 1985. Since then several amendments to CISPR Pub. 22 have been adopted after having been published as Draft International Standards (DISs) -- see documents CISPR/G (Central Office) 2, CISPR/G (Central Office) 9, CISPR/G (Central Office) 11, CISPR/G (Central Office) 12, CISPR/G (Central Office) 13, and CISPR/G (Central Office) 14. It is expected that these changes will be incorporated into a new Second Edition of CISPR Pub. 22, which should be released in the near future. The First Edition of CISPR Pub. 22 and the above documents are available for purchase from: the American National Standards Institute (ANSI), Sales Department, 11 West 42nd Street, New York, NY 10036, (212) 642-4900. Copies of CISPR Pub. 22 and the above documents will be placed into the record and may be inspected (but not duplicated) during normal business hours at the Federal Communications Commission,

Office of Engineering and Technology, 2025 M Street NW, Room 7317, Washington, DC.

⁵ In a *Memorandum, Opinion and Order* addressing petitions for reconsideration of the *Report and Order*, the Commission indicated that it would address harmonization of its standards in a future proceeding. See *Memorandum, Opinion and Order*, GEN Docket No. 87-389, 6 FCC Rcd 1683 (1991) ("*MO&O*").

⁶ The CISPR Pub. 22 standards were derived from FCC requirements that were first adopted in 1979. See *First Report and Order - Technical Standards for Computing Equipment*, Docket No. 20780, 44 Fed. Reg. 59530, October 16, 1979. Although FCC staff and other U.S. representatives actively participate in the CISPR standards-making process, the standards in CISPR Pub. 22 have, over the years, been amended to meet changing international requirements.

⁷ CBEMA's petition suggests that compliance with the CISPR standards be accepted as *de facto* compliance with the Part 15 requirements. However, as discussed below, some of the CISPR standards are more lenient than the Part 15 requirements. Thus, we believe CBEMA meant that compliance with the CISPR standards be considered as an acceptable alternative to compliance with the Part 15 requirements.

emissions conducted onto the AC power lines over the frequency band 450 kHz to 30 MHz.⁸ Testing to this standard is performed using a CISPR quasi-peak detector.⁹ However, the Commission's measurement procedures permit a 13 dB increase in the emission limit if the difference between the emission levels measured with a quasi-peak detector and with an average detector is 6 dB or greater.¹⁰ This relaxation to the AC power line conducted limits is not contained in the regulations.

DISCUSSION

6. We concur with CBEMA and NCR that harmonization of the U.S. standards for digital devices with the standards in CISPR Pub. 22 could be advantageous for many equipment manufacturers. Harmonization would permit products manufactured for sale within the U.S. to be marketed in those countries following the CISPR specifications, with minimal additional testing and product design modifications.¹¹

7. We propose to harmonize our digital device standards with those in CISPR Pub. 22, as amended, by revising Part 15 to state that we will accept a demonstration of compliance with the CISPR Pub. 22 standards in lieu of compliance with the Part 15 standards. In general, the CISPR standards are somewhat more stringent than the current Part 15 standards.¹² Thus, the CISPR standards should be adequate to ensure that digital devices do not cause harmful interference to authorized radio services. Allowing manufacturers to demonstrate compliance with either the existing FCC standards or the CISPR standards should be possible without substantial changes by manufacturers of digital devices to the design of their products. Thus, changing the regulations in this manner would be least disruptive to equipment manufacturers. It would also provide the desired benefits of reducing design and testing burdens and, at the same time, serve the Commission's interference control objectives. Comments are invited on the suitability of this approach and on any possible increased interference concerns for those CISPR standards that are less stringent than the Part 15 standards. Comments are also invited on the suitability of the measurement procedures contained in CISPR Pub. 22 and whether we should require that CISPR Pub. 22 measurements be made using the measurement procedures currently specified in our rules.

8. We are reluctant to amend Part 15 to specify the CISPR Pub. 22 standards as mandatory for all digital devices. While amending Part 15 in this manner would avoid possible confusion by ensuring that all digital devices are

designed to comply with the same limits, the existing limits appear to be adequate for products used within the U.S. Further, many digital devices are not marketed internationally, yet the manufacturers would be forced to comply with the more stringent CISPR standards under this method of regulation. We also do not wish to return to regulations that apply different standards to different Part 15 devices, as existed prior to finalization of the *Report and Order* in GEN Docket No. 87-389.¹³ The former Part 15 rules were confusing and inconsistent and subjected different products to different standards even though the products had the same potential for causing interference to other radio operations.

9. We are also reluctant to amend the general emission standards applicable to all Part 15 devices to conform to the standards in CISPR Pub. 22. This method of regulation would maintain uniformity of the Part 15 standards. However, we do not believe that more stringent standards are needed in Part 15 to reduce interference to the authorized radio services. We note, in particular, that it has only been a little more than three years since the Part 15 regulations and limits were completely reviewed and modified in GEN Docket No. 87-389. The adoption of further changes to the emission standards at this time would have a major impact on hundreds of Part 15 products, imposing an unnecessary economic burden on a significant number of manufacturers and, consequently, on the public as well. Further, while the adoption of the CISPR Pub. 22 standards may promote the international trade of digital devices, this is not necessarily applicable to other Part 15 devices. Accordingly, we do not believe that such a major revision to the general standards in Part 15 is justified at this time.

Implementation:

10. While we are proposing to amend the rules to permit compliance with either CISPR Pub. 22 or Part 15 standards, we are concerned that the CISPR standards do not specify limits for radio frequency emissions above 1000 MHz. We believe that the existing FCC limits for emissions above 1000 MHz need to be maintained in order to protect against potential interference to existing and planned radio services above 1000 MHz. We observe that the clock frequencies used in digital devices are increasing, with a resulting increase in emissions at higher frequencies. Thus, we also propose that, when necessary, manufacturers of digital devices must continue to demonstrate compliance with the current Part 15 emission limits above 1000 MHz.¹⁴ Further, for emissions below 1000 MHz we propose that manufacturers of digital devices be required to demonstrate complete compliance with either the

⁸ See 47 CFR Section 15.107.

⁹ See 47 CFR Section 15.35.

¹⁰ This 13 dB allowance is provided because of the difference in interference potential between broadband and narrowband emissions. See "FCC Procedure for Measuring RF Emissions from Computing Devices," FCC/OET MP-4, July 1987, Section 4.2.2, Note 2, and ANSI C63.4-1991. Effective May 1, 1994, MP-4 may no longer be employed. See 47 CFR Section 15.31(a) and *Report and Order*, GEN Docket No. 89-44, 7 FCC Rcd 3128 (1992).

¹¹ We note, however, that the use of different power line voltages and frequencies in some countries requires changes to the power supply used in the digital device. Substitution with a different power supply or modifications to an existing power supply generally necessitates additional testing.

¹² A detailed comparison of the current FCC limits and the CISPR Pub. 22 limits is provided in Appendix B. The CISPR standards were taken from the First Edition of CISPR Pub. 22 and the adopted amendments listed in footnote 4 above. In general, the CISPR limits are similar or slightly more stringent than the Part 15 standards. They are more lenient only with regard to conducted emissions for one class of equipment (Class A, business and commercial) and for one narrow frequency band (450-500 kHz). Also, the FCC has standards for emissions above 1000 MHz, whereas CISPR does not. However, the FCC Rules do not require emissions above 1000 MHz to be measured unless the digital device generates or uses signals at 108 MHz or higher. See 47 CFR Section 15.33(b).

¹³ See footnote 2, *supra*.

¹⁴ See footnote 11, *supra*.

CISPR standards or the Part 15 standards. Intermixing between the FCC standards and the CISPR standards will not be permitted.¹⁵

11. As described above, we propose to amend Part 15 of the regulations to state that manufacturers of digital devices may, in lieu of demonstrating compliance with the emission standards below 1000 MHz in Sections 15.107 and 15.109, demonstrate compliance with the emission standards in CISPR Pub. 22. Since this change to the regulations should not have an adverse impact on any manufacturer of digital devices, we propose that these changes to the regulations become effective upon the date the resulting Report and Order is published in the Federal Register.¹⁶

12. CISPR has not yet published its new, amended Pub. 22.¹⁷ Nevertheless, we are making our proposal at this time because developments in Europe and elsewhere regarding computer emissions standards are moving ahead, and we want to be ready to permit manufacturers to quickly take advantage of being able to build computers to a single emissions standard.

Conducted Emissions Standards:

13. We agree with CBEMA that the dual standards for AC powerline conducted emissions from broadband and narrowband emissions should be contained in the regulations and not solely in the measurement procedures. Accordingly, for any Part 15 device, including non-digital devices, we also propose to amend the regulations to indicate that when the difference between the emission levels measured with a quasi-peak detector and an average detector is 6 dB or greater, a 13 dB allowance may be added to the Part 15 powerline conducted limit.

PROCEDURAL MATTERS

14. This is a non-restricted notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in the Commission's rules. See generally 47 CFR Sections 1.1202, 1.1203, and 1.1206(a).

15. *Initial Regulatory Flexibility Analysis.* As required by Section 603 of the Regulatory Flexibility Act, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the expected impact on small entities of the proposals suggested in this document. The IRFA is set forth in Appendix A. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments on the rest of the Further Notice, but they must have a separate and distinct heading designating them as responses to the Initial Regulatory Flexibility Analysis. The Secretary

¹⁵ We believe that the relatively few relaxations contained in CISPR Pub. 22 are acceptable only if they are offset by the other more stringent requirements of CISPR Pub. 22.

¹⁶ In accordance with 5 USC Section 553(d), a 30 day period from the time of publication to the effective date is not required.

¹⁷ CISPR continues to consider several additional amendments to Pub. 22. As these changes are developed, they will be published by CISPR as DISs and will be available from ANSI (see footnote 4 above). It should be recognized that such DISs are not always adopted by CISPR. Nevertheless, we invite comment as to whether compliance with such pending changes should be

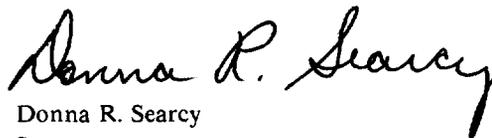
shall send a copy of this Further Notice of Proposed Rule Making, "including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with paragraph 603(a) of the Regulatory Flexibility Act. Pub. L. No. 96-354, 94 Stat. 1164, 5 U.S.C. Section 601 *et seq* (1981).

16. *Comment Dates.* Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. Sections 1.415 and 1.419, interested parties may file comment on or before **October 21, 1992** and reply comments on or before **November 13, 1992**. To file formally in this proceeding, you must file an original and five copies of all comments, reply comments, and supporting comments. If you want each Commissioner to receive a personal copy of your comments, you must file an original plus nine copies. You should send comments and reply comments to Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the Dockets Reference Room of the Federal Communications Commission, 1919 M Street, N.W., Washington, D.C. 20554.

17. The proposed action is authorized under Sections 4(i), 301, 302, 303(e), 303(f), 303(r), 304 and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), 303(r), 304 and 307.

18. For further information regarding this *Notice of Proposed Rule Making*, contact John Reed, Office of Engineering and Technology, (202) 653-6288.

FEDERAL COMMUNICATIONS COMMISSION


Donna R. Searcy
Secretary

APPENDIX A

INITIAL REGULATORY FLEXIBILITY ANALYSIS

Reason for Action

This rule making proceeding is initiated to obtain comment as to whether the Commission should amend Part 15 of its rules to accept a demonstration of compliance with the CISPR Pub. 22 standards for a digital device as an alternative to the demonstration of compliance with the standards contained in Part 15.

required by the Commission when permitting a manufacturer to comply with CISPR Pub. 22. To ensure that future amendments to CISPR Pub. 22 do not change the standards applicable to digital devices marketed in the U.S. without notice and comment required through rule making, we propose to reference a specific CISPR Pub. 22 edition and specific amendments, if appropriate. We note that CISPR is investigating standards affecting the ability of a digital device to reject unwanted interference (EMC immunity) and the ability of a digital device to withstand static discharges. These changes will be published in a separate CISPR publication, and we are not proposing to implement these portions of the CISPR standards.

Objectives

The objective of this proposal is to facilitate the international marketing of digital devices, particularly computers.

Legal Basis

The proposed action is authorized under Sections 4(i), 301, 302, 303(e), 303(f), 303(r), 304 and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), 303(r), 304 and 307.

Reporting, Recordkeeping and Other Compliance Requirements

There are no changes to reporting, recordkeeping and other compliance requirements beyond what is already required under the current regulations.

Federal Rules Which Overlap, Duplicate or Conflict With These Rules

None.

Description, Potential Impact and Number of Small Entities Involved

The actions proposed in this proceeding should assure reasonable opportunities for U.S. manufacturers of digital devices to compete fairly and effectively in the international marketplace. There should be no adverse impact on any small manufacturers of these products.

Any Significant Alternatives Minimizing the Impact on Small Entities Consistent with Stated Objectives

No adverse impact on small entities is expected.

APPENDIX B

COMPARISON OF CURRENT LIMITS WITH CISPR STANDARDS

Based on First Edition of CISPR Pub. 22, as amended by CISPR/G (Central Office) 2, CISPR/G (Central Office) 9, CISPR/G (Central Office) 11, CISPR/G (Central Office) 12, CISPR/G (Central Office) 13, and CISPR/G (Central Office) 14

Limits on AC Powerline Conducted Emissions

Class A Digital Devices

FCC Limits			CISPR Limits	
Frequency (MHz)	Voltage Quasi-peak	(dBuV) * Average	Voltage Quasi-Peak	(dBuV) Average
0.15-0.45	No Limits		79	66
0.45-0.5	60	None	79	66
0.5-1.705	60	None	73	60
1.705-30	69.5	None	73	60

Class B Digital Devices

FCC Limits			CISPR Limits	
Frequency (MHz)	Voltage Quasi-peak	(dBuV) * Average	Voltage Quasi-Peak	(dBuV) Average
0.15-0.45	No Limits		66-56.9 **	56-46.9 **
0.45-0.5	48	None	56.9-56 **	46.9-46 **
0.5-5	48	None	56	46
5-30	48	None	60	50

* The comparison of the FCC and CISPR conducted limits must take into account the differences in measurement procedures. While the FCC does not have a limit on the average value of conducted emissions, the measurement procedures permit the FCC quasi-peak limits to be raised by 13 dB if the difference between quasi-peak and average measurements is 6 dB or greater. Under this condition, the limit for Class B digital devices becomes 61 dBuV (quasi-peak) and 55 dBuV (average, representing the minimum 6 dB difference). Similarly, for Class A devices the limits become 73 dBuV (quasi-peak) and 67 dBuV (average) for the band 0.45-1.705 MHz and 82.5 dBuV (quasi-peak) and 76.5 dBuV (average) for the band 1.705-30 MHz.

** The limit decreases linearly with the logarithm of the frequency.

Limits on Radiated Emissions

Class A Digital Devices

FCC Limits *	CISPR Limits *	
Frequency (MHz)	Field Strength (dBuV/m) @10m	Field Strength (dBuV/m) @10m
30-88	39	40
88-216	43.5	40
216-230	46.4	40
230-960	46.4	47
960-1000	49.5	47
> 1000	49.5	No Limit

Class B Digital Devices

FCC Limits *	CISPR Limits *	
Frequency (MHz)	Field Strength @3m (dBuV/m) @10m	Field Strength (dBuV/m) @10m**
30-88	40	30
88-216	43.5	30
216-230	46	30
230-960	46	37
960-1000	54	37
> 1000	54	No Limit

* The FCC Class B limits were converted to 10 meters using an inverse linear distance extrapolation fraction (20 dB/decade), as specified in 47 CFR Section 15.31(f)(1). CISPR limits and FCC limits ≤ 1000 MHz are based on quasi-peak measurements. FCC limits above 1000 MHz are based on the use of an average detector. For emissions above 1000 MHz, 47 CFR Section 15.35 also limits the

emissions, measured with a peak detector, to 20 dB above the stated average limit, e.g., peak emissions above 1000 MHz for Class A devices, measured at a distance of 10 meters, shall not exceed 3000 uV/m (69.5 dBuV/m). Measurements above 1000 MHz are required under 47 CFR Section 15.33 when the digital device contains an oscillator operating at 108 MHz or higher.

** CISPR Publication 22 states that if the field strength measurement at 10 meters can not be made because of high ambient noise levels or for other reasons measurements may be made at a closer distance, for example 3 meters. An inverse proportionality factor of 20 dB per decade should be used to normalize the measured data to the specified distance for determining compliance. Care should be taken in measurement of large test units at 3 meters at frequencies near 30 MHz due to near field effects.