

Before the
Federal Communications Commission
Washington, D.C. 20554

NEWS RELEASE

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SUMMARY OF PROPOSED CHANGES TO PART 15 OF THE REGULATIONS

On September 17, 1987, in Gen. Docket No. 87-389, FCC 87-300 the Commission adopted a Notice of Proposed Rule Making to amend Part 15 of its regulations. Due to the extent of the revisions to the regulations proposed in this item, the attached appendices are issued to allow manufacturers and consumers to rapidly determine specific areas of this proposal that may affect them. Appendix A contains a brief summary of the proposed changes. Appendix B shows the existing transmitter regulations and compares those regulations to the proposed changes, based on the frequency of the transmitter. Appendix C provides the same comparison for receivers. Appendix D contains a list of the proposed restricted frequency bands and the allocated radio service that is being protected.

Any questions regarding the proposals in this rule making action should be directed to Mr. John Reed, Room 7122, Technical Standards Branch, FCC, Washington, D. C. 20554, (202) 653-6288.

This is an unofficial announcement of the Commission's action. Release of the full text of the Commission's order constitutes official action. See *MCI v. FCC*, 515 F. 2d 385 (D. C. Circ. 1975).

APPENDIX A Summary of Proposed Changes

General:

- Marketing regulations for verified equipment and computing devices are proposed to be clarified
- All of the equipment authorization procedures would be contained in Part 2 (currently, some of the certification procedures are in Part 15)
- Only one FCC identifier number would be required for equipment containing multiple devices
- FCC Form 740 (importation) would no longer be required for devices with a power consumption of less than 6 nW, musical greeting cards, quartz watches and clocks, modules of quartz watches and clocks, and battery operated hand-held calculators (including some low clock rate personal computers and peripherals) and electronic games not requiring connection to the AC power lines
- A special temporary authorization or experimental license would no longer be required for testing devices to determine compliance with the regulations
- The technical standards pertaining to measurements to determine compliance would be contained in the regulations instead of in the measurement procedure bulletins

- With certain exceptions, field strength limits and conducted emission limits below 1000 MHz would be specified using a CISPR quasi-peak detector, and emission limits above 1000 MHz would be specified in peak values

- All kits are proposed to be subject to the regulations, including the equipment authorization procedures

- Verification of compliance or a grant of equipment authorization would be required for all Part 15 devices except: incidental radiators, home built devices that are not marketed (excluding kits), power line carrier systems, subassemblies, and certain exempted digital devices

- Labelling would be required for all verified or authorized Part 15 devices

- Special accessories that are not readily obtainable from multiple sources and that are needed to enable equipment to comply with the regulations would be required to be included with the equipment when it is marketed (this formerly applied only to computing devices)

- Devices that are operated with a peripheral(s) (external or internal accessories) would be tested for compliance using the type of peripheral with which the equipment will be marketed or operated.

Digital Devices:

- Devices with a power consumption of less than 6 nW, quartz watches and clocks, modules of quartz watches and clocks, musical greeting cards, and battery powered hand-held calculators and electronic games not requiring connection to the AC power lines would no longer be subject to the technical regulations

- Portable personal computers with a low power consumption and a low clock rate and their peripherals would be considered to be calculators

- The distinction between personal computer peripheral equipment requiring certification and subassemblies which require no testing for compliance would be defined in the regulations

- The permissive change regulations would be clarified

- Emission limits above 1000 MHz are proposed to be applied in the event that digital device clock rates exceed 108 MHz.

Other Unintentional Radiators:

- A power line conducted limit of 250 microvolts in the frequency range of 450 kHz to 30 MHz is proposed for all devices except carrier current systems operating in that frequency band

- Emission limits for receivers would be established above 1000 MHz

- The radiated emission limit for CB receivers would be relaxed

- The emission limit within the frequency range of 30 to 960 MHz is proposed to be tightened to the Class B digital device limits and the limit above 1000 MHz is proposed to be 500 uV/m at 3 meters; however, this requirement would be gradually phased-in

- Radiated limits for receivers would be measured with the antenna terminals shielded and an antenna conduction limit is proposed (unless the receiver uses a permanently attached antenna)

Section 15.249 Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

(a) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

(b) Field strength limits are specified at a distance of meters.

(c) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

FOOTNOTES

¹ See RM-5193 on video transmitters in the 902-928 MHz band, RM-5250 regarding improvement in the AM broadcasting service, and RM-5575 concerning TV interface devices.

² The limit applied to these early devices was 15 microvolts/meter (uV/m) at a distance equivalent to the wavelength of the operating frequency divided by 2 Pi. This limit is currently shown in Section 15.7.

³ The Commission is tasked under Sections 302 and 303 of the Communications Act of 1934, as amended, to establish regulations necessary to prevent harmful interference to the authorized radio services.

⁴ The Commission has traditionally attempted to keep emissions from all Part 15 devices to the minimum level necessary for operation. Furthermore, the Commission has expressed its desire to minimize the level of interference received by the authorized radio services. See, for example, "Report on the Status of the AM Broadcast Rules", Federal Communications Commission, April 3, 1986.

⁵ In most instances, we propose a period of ten years for devices to come into compliance with the new standards. We believe that this should provide sufficient time to redesign equipment within manufacturers' normal redesign.

⁶ Another category of devices addressed under Part 15 is incidental radiators. These are devices that do not intentionally incorporate the generation of radio frequency energy in their design but generate RF energy as a by-product of their operation. Examples include electric motors, light dimmers, and certain home appliances. In this proceeding, we are not proposing any standards for such devices with the exception that these devices operate on a non-interference basis.

⁷ See 47 CFR 15.4(f), (j), (k), (l).

⁸ See 47 CFR 15.4(n).

⁹ See 47 CFR 15.61

¹⁰ The energy conducted back into the power line can radiate from the power line. This type of interference usually occurs in the spectrum below 30 MHz. Limits on the amount of RF energy conducted back into the power line protects services such as AM broadcasting, amateur radio, and public safety.

¹¹ The dividing line between the 1000 uV and 3000 uV conducted limits is proposed to be changed from 1.6 MHz to 1.705 MHz to reflect the projected expansion of the AM broadcasting service.

¹² The proposals contained in the paragraphs concerning the "Detector Functions of Measuring Instruments" as well as the proposed regulations concerning "Measurement procedures" and "Emission limits" will affect these proposed field strength limits.

¹³ See "Technical Subcommittee (TSC) Review of The Federal Communications Commission's Draft Notice of Proposed Rule Making in the matter of Revision of Parts 2 and 15 of the Rules Regarding the Operation of Non-Licensed Radio Frequency Devices", National Telecommunications and Information Administration, U. S. Department of Commerce, November 5, 1986. It should be noted that this report recommends lower emission limits in the frequency bands below 960 MHz than the limits proposed in this Notice. A copy of this report will be placed in the docket file for this proceeding.

¹⁴ Under the current regulations, restricted bands apply to control and security alarm devices operating under the provisions of Sections 15.181-15.187 and 15.201-15.215 of the regulations, 47 CFR 15.181-15.187, 15.201-15.215. As these regulations are the only ones that permit large numbers of consumer devices within the frequency bands allocated to the U.S. Government without control as to the exact frequency location, it was necessary to restrict the operating frequencies in order to avoid interference to certain sensitive operations.

¹⁵ See the reference in footnote 13. The NTIA report recommends lower emission limits in the restricted bands than those proposed in this Notice.

¹⁶ Under Sections 302 and 303 of the Communications Act of 1934, as amended, the Commission is tasked to establish regulations necessary to prevent harmful interference to the authorized radio services. In order to carry out this obligation, the Commission has attempted to keep emissions from all Part 15 devices to the minimum level practicable or necessary for operation.

¹⁷ These limits are identical to the field strength limits proposed for intentional radiators above 30 MHz. We see no justification as to why unintentional radiators, primarily receivers, should be allowed to continue to operate at a higher field strength limit than what is proposed for intentional radiators, especially since unintentional radiators tend to be left on, and emitting radio frequency signals, for longer periods of time than intentional radiators.

¹⁸ See 47 CFR 15.59. CB receivers employing antenna terminals are required to meet a conducted limit at those terminals of 0.2 nW.

¹⁹ Presently, Subpart C of Part 15 specifies emission limits only for CB receivers and receivers that operate (tune) within the frequency ranges of 30-901 MHz and 935-940 MHz.

²⁰ Home satellite receivers usually downconvert the received frequency to an intermediate frequency above 900 MHz. The increasing popularity of such receivers has caused a rapid increase in their proliferation, thereby increasing their potential for causing interference, particularly to the aeronautical radionavigation services.

²¹ On May 13, 1987, the Commission released a Public Notice deleting the requirement to file FCC Form 740 for musical greeting cards, quartz watches and clocks, modules of quartz watches and clocks, and battery powered hand-held calculators and electronic games not requiring connection to the AC power lines. This Notice proposes to detail these exemptions in the regulations.

²² See *Order Granting Limited Waiver*, adopted April 23, 1985, released April 26, 1985, FCC 85-204, in response to RM-4840.

- The frequency range over which receivers are subject to the technical standards and equipment authorization procedures would be expanded to include the frequency bands of 901 to 935 MHz and 940 to 1000 MHz

- The conducted signal limits, except for the limit on the antenna transfer switch and emissions conducted on the power lines, for a TV interface device would be deleted

- The inclusion of video distribution systems and cable terminal devices under the same standards as applied to TV interface devices would be clarified.

Intentional Radiators:

- A power line conducted limit of 250 microvolts in the frequency range of 450 kHz to 30 MHz is proposed for all devices except carrier current systems operating in that frequency band

- With certain exceptions, antennas would be either permanently attached or use a unique coupler

- Spurious emissions would be measured to the higher of either the 10th harmonic or the range specified for unintentional radiators

- General emission limits are proposed to be established at which any form of operation is permitted on almost any frequency - these limits are equivalent to the Class B digital device limits above 30 MHz, the existing limits below 1.705 MHz, and new limits between 1.705 and 10 MHz and above 960 MHz

- Restricted bands related to safety-of-life and sensitive authorized services, *e.g.*, radio astronomy and satellite down links, are proposed within which only spurious emissions are permitted

- The existing Part 15 frequency "windows" within which higher field strength limits are permitted would be retained

- External input signals on cordless telephones would be permitted

- The requirement to use a microphone to directly modulate a transmitter in the 88 to 108 MHz band would be deleted and these transmitters would be subject to certification

- A tunnel radio system is proposed to be established to permit any form of operation within a tunnel or mine without limiting the level of emissions within that tunnel or mine

- Campus radio AM broadcast systems would be recognized

- General use, higher field strength bands without channelization or bandwidth restrictions are proposed to be established on the following frequency bands: 13.553-13.567 MHz, 26.96-27.28 MHz, 40.66-40.70 MHz, 49.82-49.90 MHz, 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz

- Specific regulations for devices that measure the characteristics of a material (except for the 890-940 MHz band) and some telemetering devices would be deleted to be replaced by the general limits, the general use, higher field strength bands, or other frequency bands designed in the item

- Comments are requested on the feasibility of applying field strength limits to the currently permitted frequency hopping and direct sequence spread spectrum systems instead of the present limit on output power

- Automated vehicle identification systems operating in the 2.9 to 4.1 GHz band would be deleted

- The existing channelized operations at 27 MHz and 49 MHz would be phased-out in favor of the general use bands, and the spurious emission limits for cordless telephones, as well as for general operation in the 27 MHz and 49 MHz bands, would be tightened over a grandfather period

- Peak emissions from periodic transmitters operating above 70 MHz, including control and security alarm devices, would be limited to 20 dB above the permitted average field strength limits.

APPENDIX B

Non-licensed Intentional Radiators - Part 15

Frequency Band/Rules (MHz)	Standards	Proposed Changes/Rules*
0.009-.490 (15.111)	2400/f(kHz) uV/m @ 300m, spurious under same formula, certification required	Spurious may not exceed the general emission limits in 15.209 (15.209)
0.16-.19 (15.112)	1 W input, 15 m ant., spurious outside of band @ -20dB, certifi- cation required	No changes (15.217)
0.49-.51 (15.7)	15 uV/m @ $\Lambda/2\pi$	Operation not permitted in this band (15.205)
0.51-1.705 (15.111)	24000/f(kHz) uV/m @ 30m, spurious under same formula, certifi- cation required	Spurious may not exceed the general emission limits in 15.209 (15.209) and campus radio system added for 535-1705 kHz (15.219)
0.51-1.705 (15.113)	0.1 W input, 3m ant., spurious outside of band at -20dB, conducted in band @ 200 uV, certification required	No changes (15.219)
<p>* Under the proposed regulations, all intentional radiators, except carrier current systems operating from 450 kHz to 30 MHz, must limit their conducted emissions to 250 uV within the frequency range of 450 kHz to 30 MHz (see proposed 15.207). Unless otherwise stated, spurious emissions must be attenuated to the limits shown in the proposed Section 15.209. In addition, the range of frequencies over which spurious and harmonic emissions are investigated is proposed to be increased for some intentional radiators (see proposed 15.33). Further, there are a number of frequency bands on which operation is not permitted (see proposed 15.205).</p>		
1.705-10 (15.114)	15-100 uV/m @ 3m depending on bandwidth, spurious outside of band from 10-20 uV/m @ 30m depending on frequency, certification required	30-100 uV/m @ 30m depending on bandwidth, (15.223)
10-26.99 (15.7)	15 uV/m @ $\Lambda/2\pi$	30 uV/m @ 30m, certification required (15.209)
13.553-13.567 (15.191- 15.194)	15 uV/m @ 30m, spurious at 0.5 uV/m @ 30m, certification required, restricted to devices that measure the charac- teristics of a material	10000 uV/m @ 30m, +0.01% frequency tolerance, restriction deleted (15.225)
26.99-27.26 (15.116)	10000 uV/m @ 3m, 6 channels of 20 kHz bandwidth, spurious of 500 uV/m @ 3m, con- ducted below 25 MHz of 100 uV, no voice or CW, certification required	Gradually phased-out in favor of band shown below (15.227(c))

26.96-27.28 (15.191-15.194)	32 uV/m @ 30m, spurious at 1 uV/m @ 30m, certification required, restricted to devices in that measure the characteristics of a material	10000 uV/m @ 3m, spurious outside this band at general limits 15.209, restriction deleted (15.227)
27.28-30 (15.7)	15 uV/m @ Lambda/2Pi	30 uV/m @ 30m, certification required (15.209)
30-41 (15.7)	15 uV/m @ Lambda/2Pi	100 uV/m @ 3m, certification required (15.209)
38-41 (15.172)	10 uV/m @ 15m, 200 kHz bandwidth, spurious at 10 uV/m @ 3m, certification required, restricted to biomedical telemetry	100 uV/m @ 3m, restriction deleted (15.209)
40.66-40.70 (15.122, 15.191-15.194, 15.201-15.215, 15.310)	Ranges from 50 uV/m @ 30m with spurious at 1.5 uV/m @ 30m to 2250 uV/m @ 3m with spurious at 225 uV/m at 3m depending on application, certification required, restricted to devices that measure the characteristics of a material, perimeter protection and periodic operation	1000 uV/m @ 3m, + 0.01% frequency stability, restrictions deleted (15.229)
41-46.6 (15.7)	15 uV/m @ Lambda/2Pi	100 uV/m @ 3m, certification required (15.209)
46.6-46.98 (15.231-15.237)	10000 uV/m @ 3m with spurious from 100 to 200 uV/m @ 3m depending on frequency, conducted below 30 MHz of 100 uV, certification required, restricted to cordless telephone base	External input signals permitted (15.231)
46.98-49.82 (15.7)	15 uV/m @ Lambda/2Pi	100 uV/m @ 3m, certification required (15.209)
49.66-50.0 (15.231-15.237)	10000 uV/m @ 3m with spurious from 100 to 200 uV/m @ 3m depending on frequency, conducted below 30 MHz of 100 uV, certification required, restricted to cordless telephone mobile	External input signals permitted (15.231)
49.82-49.90 (15.117-15.118)	10000 uV/m @ 3m with spurious at 500 uV/m @ 3m, 5 channels of 20 kHz bandwidth, conducted below 25 MHz of 100 uV, certification required	Channelization and bandwidth limits deleted, spurious outside this band at general limits under 15.209, existing standards permitted for a grandfather period (15.233)

49.82-49.90 (15.119)	0.1 W input, 1m ant., harmonics suppressed 20 dB, restricted to home built in quantities less than 5 with no marketing	No changes (15.233)
49.90-70 (15.7)	15 uV/m @ $\Lambda/2P_i$	100 uV/m @ 3m, certification required (15.209)
70-130 (15.122)	500 uV/m @ 3m with spurious at 50 uV/m @ 3m, maximum bandwidth of 0.25% of operating frequency, conducted from .45-30 MHz of 250 uV, certification required, restricted to periodic operation of 30:1 with maximum on time of 1 second and minimum off of 10 seconds	Spurious need not be attenuated below the general limits in 15.209 (15.235(d))
70-130 (15.201- 15.215)	1250 uV/m @ 3m with spurious at 125 uV/m @ 3m, spurious of 15 uV/m @ 3m within 73-75.4, 108-118 and 121.4-121.6 MHz, maximum bandwidth of .25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to control and security alarm devices	Spurious need not be attenuated below the general limits in 15.209 (15.235)
70-88 (none)	Not permitted	100 uV/m @ 3m, certification required (15.209)
72-73 and 75.4- 76 (15.331-15.337)	8000 uV/m @ 30 m with spurious at 150 uV/m @ 30m, channelized with 50 kHz and 200 kHz bandwidths, certification bandwidth permitted at required, restricted to auditory assistance to the hearing handicapped	80000 uV/m @ 3m with spurious at 1500 uV/m @ 3m, channelization deleted, 200 kHz
88-108 (15.161- 15.164, 15.174, 15.335)	50 uV/m @ 15m with spurious at 40 uV/m @ 3m, 200 kHz bandwidth, no conducted limit, type approval (15.161- 15.164, 15.174) or certification (15.335) required, restricted to wireless microphones, telemetry and auditory assistance devices	all frequencies (15.237)
88-216 (none)	Not permitted	250 uV/m @ 3m, no microphone input requirement, certification required, restrictions deleted (15.239)
		150 uV/m @ 3m, certifi- cation required (15.209)

130-174 (15.122)	500-1500 uV/m @ 3m with spurious of 50-150 uV/m @ 3m (linear interpolation), maximum bandwidth of 0.25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to periodic operation of 30:1 with maximum on time of 1 second and minimum off of 10 seconds	Spurious need not be attenuated below the general limits in 15.209 (15.235(d))
130-174 (15.201-15.215)	1250-3750 uB/m @ 3m with spurious of 125-375 uV/m @ 3m (linear interpolation), spurious of 15 uV/m @ 3m from 156.7-156.9 MHz, maximum bandwidth of 0.25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to control and security alarm devices	Spurious need not be attenuated below the general limits in 15.209 (15.235)
174-216 (15.176)	150 uV/m @ 30m with spurious at 15 uV/m @ 30m, 200 kHz bandwidth, certification required, restricted to biomedical telemetry	1500 uV/m @ 3m (15.241)
174-216 (15.122)	1500 uV/m @ 3m with spurious @ 150 uV/m @ 3m, maximum bandwidth of 0.25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to periodic operation of 30:1 with maximum on time of 1 second and minimum off of 10 seconds	Spurious need not be attenuated below the general limits in 15.209 (15.235(d))
174-216 (15.201-15.215)	3750 uV/m @ 3m with spurious @ 375 uV/m @ 3m, maximum bandwidth of .25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to control and security alarm devices	Spurious need not be attenuated below the general limits in 15.209 (15.235)
216-960 (none)	Not permitted.	200 uV/m @ 3m, certification required (15.209)

216-260 (15.122)	1500 uV/m @ 3m with spurious @ 150 uV/m @ 3m, maximum bandwidth of .25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to periodic operation of 30:1 with maximum on time of 1 second and minimum off of 10 seconds	Spurious need not be attenuated below the general limits in 15.209 (15.235(d))
216-260 (15.201-15.215)	3750 uV/m @ 3m with spurious @ 375 uV/m @ 3m, spurious of 15 uV/m @ 3m in the band 240-260 MHz, maximum bandwidth of 0.25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to control and security alarm devices	Spurious need not be attenuated below the general limits in 15.209 (15.235)
260-470 (15.122)	1500-5000 uV/m @ 3m with spurious of 150-500 uV/m @ 3m (linear interpolation), maximum bandwidth of 0.25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to periodic operation of 30:1 with maximum on time of 1 second and minimum off of 10 seconds	Spurious need not be attenuated below the general limits in 15.209 (15.235(d))
260-470 (15.201-15.215)	3750-12500 uV/m @ 3m with spurious at 375-1250 uV/m @ 3m (linear interpolation), spurious of 15 uV/m @ 3m in the bands 260-285, 328.6-335.4, and 404-406.2 MHz, maximum bandwidth of 0.25%, conducted from .45-30 MHz of 250 uV, certification required, restricted to control and security alarm devices	Spurious need not be attenuated below the general limits in 15.209, restricted bands changed (15.235)
Above 470 (15.122)	5000 uV/m @ 3m with spurious at 500 uV/m @ 3m, maximum bandwidth of 0.25% below 900 MHz and 0.5% above 900 MHz, conducted from .45-30 MHz of 250 uV, restricted to periodic operation of 30:1 with maximum on time of 1 second and minimum off of 10 seconds	Spurious need not be attenuated below the general limits in 15.209 (15.235(d))

Above 470 (15.201-15.215)	12500 uV/m @ 3m with spurious of 1250 uV/m @ 3m, spurious in restricted bands (see 15.205) below 1000 MHz of 15 uV/m @ 3m and above 1000 MHz of 125 uV/m @ 3m, maximum bandwidth 0.25% below 900 MHz and 0.5% above 900 MHz, conducted from .45-30 MHz of 250 uV, certification required, restricted to control and security alarm devices	Spurious need not be attenuated below the general limits in 15.209, restricted bands changed (15.235)
890-940 (15.191-15.194)	500 uV/m @ 30m with harmonics at 50 uV/m @ 30m and spurious at 15 uV/m @ 30m, certification required, restricted to devices that measure the characteristics of a material	Spurious, including harmonics, may not exceed the general limits in 15.209 (15.243)
902-928 (none)	Not permitted	50 mV/m @ 3m with harmonics at 500 uV/m @ 3m and spurious outside the frequency band at -50 dB or the general limits under 15.209, certification required (15.249)
902-928 (15.126)	1 W peak output, certification required, restricted to frequency hopping and direct sequence spread spectrum systems	No changes, but comments requested on the specification of field strength limits (15.247)
902-928 (15.301-15.324)	50 mV/m @ 30m with harmonics at 160 uV/m @ 30m and spurious at -50dB or 15 uV/m @ 30m, certification required, restricted to field disturbance sensors	500 mV/m @ 3m with harmonics at 1.6 mV/m @ 3m and spurious at -50 dB or the general limits under 15.209 (15.245)
Above 960 (none)	Not permitted	500 uV/m @ 3m, certification required (15.209)
2400-2483.5 (15.126)	1 W peak output, certification required, restricted to frequency hopping and direct sequence spread spectrum systems	No changes, but comments requested on the specification of field strength limits (15.247)
2400-2500 (15.191-15.194)	0.5 mV/m @ 30m with harmonics at 50 uV/m @ 30m and spurious at 15 uV/m @ 30m, certification required, restricted to devices that measure the characteristics of a material	Deleted, may operate under the general provisions shown below

Frequency Band/Rules (GHz)	Standards Proposed	Changes/Rules
2.4-2.4835 (none)	Not permitted	50 mV/m @ 3m with harmonics at 500 uV/m @ 3m and spurious outside the band at -50 dB or the general limits under 15.209, certification required (15.249)
2.435-2.465 (15.301-15.324)	50 mV/m @ 30m with harmonics at 160 uV/m and spurious at -50dB or 15 uV/m @ 30m, certification required, restricted to field disturbance sensors	500 mV/m @ 3m with harmonics at 1.6 mV/m @ 3m and spurious outside the band at -50 dB or the general limits in 15.209 (15.245)
2.9-4.1 (15.221-15.228)	3 mV/m/MHz @ 3m with spurious of 100 uV/m/MHz @ 3m, conducted limit of 200 uV from .45-30 MHz, certification required, restricted to automatic vehicle identification system (other standards regarding sweep rate, etc. also exist)	Deleted
5.725-5.85 (15.126)	1 W peak output, certification required, restricted to frequency hopping and direct sequence spread spectrum systems	No changes, but comments requested on the specification of field strength limits (15.247)
5.725-5.875 (15.191-15.194)	0.5 mV/m @ 30m with harmonics at 50 uV/m @ 30m and spurious at 15 uV/m @ 30m, certification required, restricted to devices that measure the characteristics of a material	Deleted, may operate under the general provisions shown below
5.725-5.875 (none)	Not permitted	50 mV/m @ 3m with harmonics at 500 uV/m @ 3m and spurious outside the frequency band at -50 dB or the general limits in 15.209, certification required (15.249)
5.785-5.815 (15.301-15.324)	50 mV/m @ 30m with harmonics at 160 uV/m @ 30m and spurious at -50dB or 15 uV/m @ 30m, certification required, restricted to field disturbance sensors	500 mV/m @ 3m with harmonics at 1.6 mV/m @ 3m and spurious outside the band at -50 dB or the general limits under 15.209 (15.245)

10.5-10.55 (15.301-25.324)	250 mV/m @ 30m with harmonics at 2.5 mV/m @ 30m and spurious at -50dB or 15 uV/m @ 30m, certification required, restricted to field disturbance sensors	2500 mV/m @ 3m with harmonics at 25 mV/m @ 3m and spurious outside the band at -50 dB or the general limits under 15.209 (15.245)
24.0-24.25 (none)	Not permitted	250 mV/m @ 3m with harmonics at 2.5 mV/m @ 3m and spurious outside the frequency band at -50 dB or the general limits under 15.209, certification required (15.249)
24.0-24.25 (15.191-15.194)	500 uV/m @ 30m with harmonics at 50 uV/m @ 30m and spurious at 15 uV/m @ 30m, certification required, restricted to devices that measure the characteristics of a material	Deleted, may operate under the general provisions shown above
24.075-24.175 (15.301-15.324)	250 mV/m @ 30m with harmonics at 2.5 mV/m @ 30m and spurious at -50dB or 15 uV/m @ 30m, certification required, restricted to field disturbance sensors	2500 mV/m @ 3m with harmonics at 25 mV/m @ 3m and spurious outside the band at -50 dB or the general limits under 15.209 (15.245)

APPENDIX C Receiver Standards - Part 15

Frequency Band (MHz)	Current Standards	Proposed Changes
0.45-25	TV rcvrs. = 100 uV conducted; all other rcvrs. = 100 uV conducted for .45-9 MHz, 1000 uV conducted for 10-25 MHz, and linear increase in conducted from 100 uV to 1000 uV for 9-10 MHz	250 uV conducted for all receivers, to be phased-in
25-70	32 uV/m @ 100 ft. except for rcvrs. associated with a periodic transmitter at 40.66-40.70 MHz which are 320 uV/m @ 3m	250 uV conducted for 25-30 MHz, 100 uV/m @ 3m for 30-70 MHz, to be phased-in
70-130	50 uV/m @ 100 ft. except for rcvrs. associated with a periodic transmitter which are 500 uV/m @ 3m	100 uVm @ 3m for 70-88 MHz, 150 uVm @ 3m for 88-130 MHz, to be phased-in
130-174	50-150 uV/m @ 100 ft. (linear interpolation) except for rcvrs. associated with a periodic transmitter which are 500 uV/m @ 3m	150 uV/m @ 3m, to be phased-in

174-260	150 uV/m @ 100 ft. except for rcvrs. associated with a periodic transmitter which are 500 uV/m @ 3m for 174-200 MHz and 500-707.7 uV/m @ 3m for 200-260 MHz (linear interpolation)	150 uV/m @ 3m for 174-216 MHz, 200 uV/m @ 3m for 216-260 MHz, to be phased-in
260-470	150-500 uV/m @ 100 ft (linear interpolation) except for rcvrs. associated with a periodic transmitter which are 707.7-1435 uV/m @ 3m (linear interpolation)	200 uV/m @ 3m, to be phased-in
470-1000	500 uV/m @ 100 ft. except for rcvrs. associated with a periodic transmitter which are 1435-3269 uV/m @ 3m (linear interpolation) and TV broadcast rcvrs. which are 350 uV/m @ 100 ft. average with no emission exceeding 750 uV/m @ 100 ft.	200 uV/m @ 3m for 470-960 MHz, and 500 uV/m @ 3m for 960-1000 MHz, to be phased-in
1000-1500	3269-5000 uV/m @ 3m (linear interpolation) (applies only to rcvrs. associated with a periodic transmitter)	500 uV/m @ 3m for all rcvrs., to be phased-in
Above 1500	5000 uV/m @ 3m (applies only to rcvrs. associated with a periodic transmitter)	500 uV/m @ 3m for all rcvrs., to be phased-in

APPENDIX D Proposed Restricted Bands - Part 15

Frequency (MHz)	Allocation/Use
0.49-0.51	Maritime distress frequency
2.1735-2.1905	Mobile distress frequency
8.362-8.366	Maritime and aeronautical survival craft search and rescue
13.36-13.41	Radio astronomy
25.5-25.67	Radio astronomy
37.5-38.25	Radio astronomy
73.0-75.4	73-74.6 MHz: Radio astronomy 74.6-75.4 MHz: Aeronautical radionavigation marker beacon (75.0 MHz) and guard bands (note - this band is currently restricted for control and security alarm devices (CSAD))
108-121.94	108-117.975 MHz: Aeronautical radionavigation (aircraft-to-tower) (note - currently restricted for CSAD) 117.975-121.9375 MHz: Aeronautical mobile for safety and regularity of flight 121.4-121.6 MHz: Search and rescue (SARSAT) (note - currently restricted for CSAD)
123-123.2	Coordinated search and rescue by mobile, land and aeronautical
123.58-138.0	123.5875-137 MHz: Aeronautical mobile for safety and regularity of flight 137-138 MHz: Satellite down link
149.9-150.05	Radionavigation satellite down link

156.7-156.9	Search and rescue (maritime mobile distress and calling on 156.7625-156.8375 MHz) (note - currently restricted for CSAD)
164.43-164.72	Department of Interior for tracking of potentially dangerous animals
166.73-167.17	Department of Interior for telemetry operations for wildlife studies using sensitive receiving equipment
240-285	243 MHz: Search and rescue (SARSAT) Other: U. S. Government satellite down links, military satellites, glide slope indicators, instrument landing systems (note - currently restricted for CSAD)
322-335.4	322-328.6 MHz: Radio astronomy 328.6-335.4 MHz: Aeronautical radionavigation - instrument landing system glide path (note - 328.6-335.4 MHz currently restricted for CSAD)
399.9-410	399.9-400.05 MHz: Radionavigation satellite 400.05-400.15 MHz: Standard frequency and time signal 400.15-402 MHz: Satellite down link 402-406 MHz: Meteorological aids (radiosonde) 406-406.1 MHz: Emergency position-indicating radiobeacon (EPIRB) 406.1-410 MHz: Radio astronomy (note - 404-406.2 MHz currently restricted for CSAD)
608-614	Radio astronomy (note - currently restricted for CSAD)
960-1240	960-1215 MHz: Aeronautical radionavigation 1215-1240 MHz: Satellite down link (note - 960-1215 MHz currently restricted for CSAD)
1300-1427	1300-1350 MHz: Aeronautical radionavigation 1350-1400 MHz: Spectral line observations of neutral hydrogen 1400-1427 MHz: Radio astronomy (note - 1400-1427 MHz currently restricted for CSAD)
1530-1626.5	1530-1559 MHz: Satellite down link 1559-1610 MHz: Satellite down link and aeronautical radionavigation 1610-1626.5 MHz: Aeronautical radionavigation 1610.6-1613.8 MHz: Spectral line observations of OH radical (radio astronomy) (note - 1535-1660 MHz currently restricted for CSAD)
1660-1710	1660-1668.4 MHz: Radio astronomy 1668.4-1670 MHz: Radio astronomy and radiosonde 1670-1710 MHz: Satellite down link and radiosonde (note - 1660-1670 MHz currently restricted for CSAD)
2200-2300	Satellite down link
2483.5-2500	Radiodetermination satellite down link (Geostar)
2655-2900	2655-2690 MHz: Radio astronomy and satellite down link 2690-2700 MHz: Radio astronomy 2700-2900 MHz: Air traffic control radars (note - 2690-2700 MHz currently restricted for CSAD)
3260-3267	Spectral line observations (radio astronomy)
3332-3339	Spectral line observations (radio astronomy)
3345.8-3358	Spectral line observations (radio astronomy)
3600-4400	3600-4200 MHz: Satellite down link 4200-4400 MHz: Aeronautical radionavigation (note - 4200-4400 MHz currently restricted for CSAD)
4500-5250	4500-4800 MHz: Satellite down link 4800-5000 MHz: Radio astronomy 5000-5250 MHz: Aeronautical radionavigation (note - 4990-5250 MHz currently restricted for CSAD)
5350-5460	Aeronautical radionavigation
7250-7750	Satellite down link
8025-8500	Satellite down link

9000-9200	Aeronautical radionavigation
9.3-9.5	Radar transponders for maritime search and rescue; airborne weather and ground mapping radar for airborne radionavigation, particularly under poor visibility conditions
10.6-12.7	10.6-10.7 GHz: Radio astronomy 10.7-12.2 GHz: Satellite down link 12.2-12.7 GHz: Direct broadcast satellite (note - 10.68-10.7 GHz currently restricted for CSAD)
13.25-13.4	Aeronautical radionavigation
14.47-14.5	Spectral line observations (radio astronomy)
15.35-16.2	15.35-15.4 GHz: Radio astronomy 15.4-15.7 GHz: Shuttle landing system; airborne weather and ground mapping radar for radionavigation 15.7-16.2 GHz: Airport surface detection equipment used to locate and navigate aircraft while on the ground (note - 15.35-15.4 GHz currently restricted for CSAD)
17.7-21.4	Satellite down link
22.01-23.12	22.01-22.5 GHz: Radio astronomy 22.5-23.0 GHz: Broadcast satellite (22.81-22.86 GHz is also radio astronomy) 23.0-23.07 GHz: Fixed/inter-satellite/mobile (used to fill in the gap between frequency bands) 23.07-23.12 GHz: Radio astronomy
23.6-24.0	Radio astronomy
31.2-31.8	Radio astronomy (note - 31.3-31.5 GHz currently restricted for CSAD)
36.43-36.5	Radio astronomy
38.6-40.0	Satellite down link
Above 40.0	Numerous bands above 40 GHz should be restricted because of use in radio astronomy, satellite down links, etc. However, the state-of-the-art in measure- ment techniques generally limits measurement range to 40 GHz. Due to this lack of ability to perform measurements above 40 GHz and the present lack of consumer demand for operation above this frequency, operation of a Part 15 device on frequencies higher than 40 GHz is not proposed at this time.