

provisions of the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 *et seq.*

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2).

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by August 26, 2002. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. (See section 307(b)(2).)

#### List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

**Authority:** 42 U.S.C. 7401–7671q.

Dated: May 17, 2002.

**Robert Springer,**

*Acting Regional Administrator, Region 5.*

Part 52, chapter I, title 40 of the Code of Federal Regulations is amended as follows:

#### PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

#### Subpart YY—Wisconsin

2. Section 52.2570 is amended by adding paragraph (c)(106) to read as follows:

#### § 52.2570 Identification of plan.

\* \* \* \* \*

(c) \* \* \*

(106) Wisconsin submitted a revision to its State Implementation Plan for ozone on December 22, 2000. The rule requires major stationary sources of volatile organic compounds in the Milwaukee nonattainment area to pay a fee to the state if the area fails to attain the one-hour national ambient air quality standard for ozone by 2007.

(i) Incorporation by reference. The following section of the Wisconsin Administrative code is incorporated by reference: NR 410.06 as created and published in the (Wisconsin) Register January, 2001, No. 541, effective February 1, 2001.

[FR Doc. 02–15870 Filed 6–24–02; 8:45 am]

BILLING CODE 6560–50–P

## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Parts 2 and 15

[ET Docket 99–231; FCC 02–151]

#### Spread Spectrum Devices

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** This document amends the Commission's rules to improve spectrum sharing by unlicensed devices operating in the 2.4 GHz band (2400–2483.5 MHz), to provide for introduction of new digital transmission technologies, and eliminate unnecessary regulations for spread spectrum systems.

**DATES:** Effective July 25, 2002.

**FOR FURTHER INFORMATION CONTACT:** Neal McNeil, Office of Engineering and Technology, (202) 418–2408, TTY (202) 418–2989, e-mail: nmcneil@fcc.gov.

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's Second Report and Order, ET Docket 99–231, FCC 02–151, adopted May 16, 2002 and released May 30, 2002. The full text of this document is available for inspection and copying during regular business hours in the FCC Reference Center (Room CY-A257), 445 12th Street, SW., Washington, DC 20554. It is also available on the Commission's internet site at [www.fcc.gov](http://www.fcc.gov). The complete text of this document also may be purchased from the Commission's duplication contractor Qualex International, (202) 863–2893 voice, (202) 863–2898 Fax, [qualexint@aol.com](mailto:qualexint@aol.com) email, Portals II, 445 12th Street, SW, Room CY-B402, Washington, DC 20554.

## Summary of Second Report and Order

1. *Digital Systems.* In the *Further Notice of Proposed Rule Making* ("FNPRM") 66 FR 31585, June 12, 2001, in this proceeding, we observed that a number of new digital modulation technologies have been developed that have spectrum characteristics similar to direct sequence spread spectrum systems. The digital systems spread their transmitted energy across a wide bandwidth, thereby minimizing the amount of energy transmitted in any one portion of the occupied frequency band. Therefore, such digital modulation systems may exhibit no more potential to cause interference to other devices than direct sequence systems. However, because digital modulation systems do not meet the Commission's definition of a spread spectrum system, they have not been allowed to operate under § 15.247. In the FNPRM, we proposed to amend § 15.247 to provide for use of these new digital technologies in the 915 MHz, 2.4 GHz, and 5.7 GHz bands. We invited comment on whether these technologies should be allowed to operate at the same power levels as direct sequence spread spectrum systems, specifically 1 Watt maximum output power with a maximum power spectral density of 8 dBm per 3 kHz.

2. Based on analysis of the record, we conclude that systems using digital modulation techniques can operate under the same rules as direct sequence spread spectrum devices in the 915 MHz, 2.4 GHz, and 5.7 GHz band without posing additional risk of interference. Therefore, we will remove any regulatory distinction between direct sequence spread spectrum systems and systems using other forms of digital modulation. We amend part 15 to replace references to "direct sequence spread spectrum" with the term "digital modulation" and permit all types of digitally modulated systems to be regulated under § 15.247. "Digital modulation" in the context of 47 CFR 15.247 will have the same meaning as defined in 47 CFR 15.403(b). This change will permit the authorization of newly developing high data rate technologies. Under the new rules, digital modulation systems will be subject to the same power output maximum, 1 Watt, and power spectral density limits, 8 dBm per 3 kHz, as direct sequence spread spectrum systems.

3. *Processing Gain.* The rules currently require direct sequence spread spectrum devices to have a processing gain of at least 10 dB. Processing gain represents the improvement to the received signal-to-noise ratio, after

filtering to the information bandwidth, from the spreading/dispersing function. The processing gain is also a measure of a direct sequence systems ability to withstand interference. In the *FNPRM* we stated that as the spread spectrum industry has matured, it is not clear that the processing gain requirement continues to be necessary. Manufacturers have an incentive to design their systems to include processing gain in order for their device to operate properly when located near other radio frequency devices. We further noted that it has become increasingly difficult to determine true processing gain of certain direct sequence spread spectrum systems due in part to a diversity of opinion within the industry as to the definition of processing gain for these systems and the proper way to measure it. We also noted that uncertainties about the processing gain requirement can be a significant impediment to the introduction of new technologies. In light of these factors, the *FNPRM* proposed to eliminate the processing gain requirement for direct sequence spread spectrum systems.

4. Consistent with our decision to allow operation of digital modulation systems with spectrum characteristics similar to those of spread spectrum systems, we find that it is no longer desirable to maintain the processing gain requirement for direct sequence systems. The processing gain requirement was incorporated into the rules to ensure that systems taking advantage of the higher power levels afforded spread spectrum systems were indeed direct sequence spread spectrum systems and therefore have some tolerance to interference. We believe that manufacturers have a market-driven incentive to design their systems with the ability to operate properly when located near other radio frequency devices.

5. *Frequency Hopping Spread Spectrum Systems.* We will allow frequency hopping spread spectrum systems to use as few as fifteen hopping channels with bandwidths up to 5 MHz and no minimum band occupancy requirements, provided output power is reduced to 125 mW. This modification of our regulations for frequency hopping systems will provide greater flexibility without significantly increasing the risk of interference to other users. In the *First Report and Order*, 66 FR 57557, September 25, 2000, in this proceeding, we determined that frequency hopping systems with bandwidths between 1 MHz and 5 MHz may operate in the 2.4 GHz band with a minimum of 15 hopping channels and 125 mW output

power with minimal interference potential. Nothing in the record of this proceeding demonstrates that frequency hopping systems with bandwidths of 1 MHz or less cannot also operate effectively with a minimum of fifteen hopping channels with a similar power reduction. The reduction of maximum peak power from 1 Watt to 125 mW will offset any increased potential for interference caused by use of the reduced hopset, regardless of channel bandwidth. We find it unnecessary to require frequency hopping systems to occupy a minimum percentage of the 2.4 GHz band. Our primary concern for the operation of devices in the 2.4 GHz band is interference avoidance. Although a minimum bandwidth occupancy requirement may, in some cases, reduce the interference potential of frequency hopping systems, it is not the only method by which the systems can efficiently share the band. Indeed, such a requirement may actually negate the possibility for system designers to implement more efficient spectrum sharing techniques as they see fit. The simple, unambiguous rules we are adopting in this *Second Report and Order* will allow manufacturers the freedom to design an array of frequency hopping systems that effectively share the 2.4 GHz band.

6. We will not require frequency hopping systems that use a reduced hopset to employ adaptive hopping techniques. The power reduction we are adopting for these devices is sufficient to mitigate any possible increase in interference potential due to the smaller number of hopping channels. Furthermore, operation pursuant to the modified rules will not pose a greater interference threat than systems authorized under our former rules. We note that § 15.247(h) of the rules permits the use of intelligent or adaptive hopping techniques in order to avoid transmitting on occupied frequencies. We believe that § 15.247(h) provides sufficient flexibility for manufacturers to design products which incorporate adaptive hopping in circumstances where it would be beneficial. The amended rules would permit manufacturers to build products that include adaptive techniques such as a product that includes both a digital and a frequency hopping transmitter, where the frequency hopping transmitter avoids or suppresses its transmissions when the digital transmitter is operating.

## Final Regulatory Flexibility Analysis

7. As required by the Regulatory Flexibility Act ("RFA"),<sup>1</sup> an Initial Regulatory Flexibility Analysis ("IRFA") was incorporated in the Further Notice of Proposed Rule Making ("FNPRM") in this proceeding, ET Docket 99-231.<sup>2</sup> The Commission sought written public comment on the proposals in the *FNPRM*, including comment on the IRFA. As described more fully below, we find that the rules we adopt in the *Second Report and Order* will not have a significant economic impact on a substantial number of small entities.<sup>3</sup> We have nonetheless provided this Final Regulatory Flexibility Analysis ("FRFA") to provide a fuller record in this proceeding. This FRFA conforms to the RFA.<sup>4</sup>

### A. Need for and Objective of the Rules

8. The Commission's spread spectrum rules have been a tremendous success. A wide variety of devices have been introduced under these rules for business and consumer use including cordless telephones and computer local area networks. Moreover, the past few years have witnessed the development of industry standards, such as IEEE 802.11b, Bluetooth, and Home RF, that promise to greatly expand the number and variety of devices that will operate in the 2.4 GHz band. We anticipate the introduction of wireless headsets and computer connections for cellular and PCS phones, wireless computer peripherals such as printers and keyboards, and a host of new wireless Internet appliances that will use this band.

9. The rules adopted in the *Second Report and Order* provide for the introduction of new digital transmission technologies, eliminate unnecessary regulations for spread spectrum systems, and improve spectrum sharing by unlicensed devices operating in the 915 MHz (902-928 MHz), 2.4 GHz (2400-2483.5 MHz), and 5.7 GHz (5725-5850 MHz) bands. Specifically, the *Second Report and Order* revises § 15.247 of the Commission's rules to allow new digital transmission technologies and direct sequence spread spectrum systems to operate under the same rules in the 915 MHz, 2.4 GHz,

<sup>1</sup> See 5 U.S.C. 603. The RFA, see 5 U.S.C. 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Public Law 104-121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> See ET Docket 99-231, FCC 01-158, 66 FR 31585, June 12, 2001.

<sup>3</sup> Thus, we could certify that an analysis is not required. See 5 U.S.C. 605(b).

<sup>4</sup> See 5 U.S.C. 604.

and 5.7 GHz bands.<sup>5</sup> We also remove the requirement that direct sequence spread spectrum systems must demonstrate at least 10 dB of processing gain. Finally, the *Second Report and Order* modifies the rules for frequency hopping spread spectrum systems operating in the 2.4 GHz band to reduce the amount of spectrum that must be used with certain types of operation. We take these actions to facilitate the continued development and deployment of new wireless devices for businesses and consumers.

*B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA*

10. Only the Information Technology Industry Council ("ITI") filed comments in response to the IRFA.<sup>6</sup> ITI supports the Commission's proposal. They state that the proposals contained in the *FNPRM* will significantly improve sharing of the spectrum by wireless devices operating in the 2.4 GHz band.

11. ITI supports the proposal to modify § 15.247 of the Commission's rules governing frequency hopping spread spectrum devices in the 2.4 GHz band to allow as few as fifteen hopping channels. However, ITI requests that the Commission consider further modifications to permit even fewer than fifteen channels. It states that wireless devices using less than fifteen channels can be designed not to interfere with other equipment. It further states that adopting a minimum limit of hopping channels is contrary to the Commission's intent to improve flexibility for manufacturers and does not contribute to additional clarifying rulemakings.

12. ITI also supports the Commission's other proposals. Specifically, ITI urges the Commission to modify its rules to accommodate new digital modulation systems in the 915 MHz, 2.4 GHz, and 5.7 GHz bands. It states that the changes will provide manufacturers with flexibility to design non-interfering products for these bands without the need for frequent rule changes to address each new technology. Finally, ITI supports the proposal to remove the requirement that direct sequence spread spectrum systems must demonstrate at least 10 dB of processing gain. It states that the requirement is no longer necessary since manufacturers have an incentive to include processing gains to ensure that their devices operate properly when located near other radio frequency devices.

*C. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply*

13. The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the rules adopted.<sup>7</sup> The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdictions."<sup>8</sup> In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.<sup>9</sup> A "small business concern" is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) meets any additional criteria established by the Small Business Administration ("SBA").<sup>10</sup>

14. The Commission has not developed a definition of small entities specifically directed toward manufacturers of unlicensed communications devices. Therefore, we will utilize the SBA definition applicable to manufacturers of Radio and Television Broadcasting and Communications Equipment. According to the SBA regulations, unlicensed transmitter manufacturers must have 750 or fewer employees in order to qualify as a small business concern.<sup>11</sup> Census Bureau data indicates that there are 858 U.S. companies that manufacture radio and television broadcasting and communications equipment, and that 778 of these firms have fewer than 750 employees and would be classified as small entities.<sup>12</sup> This action will not have a negative impact on small entities that manufacture unlicensed spread spectrum devices.

15. According to SBA regulations, an electronic computer manufacturer must have 1,000 or fewer employees in order to qualify as a small entity.<sup>13</sup> Census Bureau data indicates that there are 716 firms that manufacture electronic

computers. Of those, 659 have fewer than 500 employees and qualify as small entities.<sup>14</sup> The remaining 57 firms have 500 or more employees; however, we are unable to determine how many of those have 1,000 or fewer employees and therefore also qualify as small entities under the SBA definition.

16. According to SBA regulations, a computer terminal manufacturer must have 1,000 or fewer employees in order to qualify as a small entity.<sup>15</sup> Census Bureau data indicates that there are 757 firms that manufacture computer terminals. Of those, 162 have fewer than 500 employees and qualify as small entities.<sup>16</sup> The remaining 11 firms have 500 or more employees; however, we are unable to determine how many of those have 1,000 or fewer employees and therefore also qualify as small entities under the SBA definition.

17. According to SBA regulations, a computer peripheral equipment manufacturer must have 1,000 or fewer employees in order to qualify as a small entity.<sup>17</sup> Census Bureau data indicates that there are 757 firms that manufacture computer terminal equipment. Of those, 701 have fewer than 500 employees and qualify as small entities.<sup>18</sup> The remaining 56 firms have 500 or more employees; however, we are unable to determine how many of those have 1,000 or fewer employees and therefore also qualify as small entities under the SBA definition.

18. According to SBA regulations, a manufacturer of household appliances must have 500 or fewer employees in order to qualify as a small entity.<sup>19</sup> Census Bureau data indicates that there are 55 firms that manufacture household equipment in the "catch all" category for such data. Of those, 42 have fewer than 500 employees and qualify as small entities.<sup>20</sup> The remaining 13 firms have

<sup>14</sup> U.S. Small Business Administration 1995 Economic Census Industry and Enterprise Report, Table 3, NAICS Code 334111. (Bureau of the Census data adapted by the Office of Advocacy of the U.S. Small Business Administration).

<sup>15</sup> 13 CFR 121.201, NAICS Code 334111.

<sup>16</sup> U.S. Small Business Administration 1995 Economic Census Industry and Enterprise Report, Table 3, NAICS Code 334111. (Bureau of the Census data adapted by the Office of Advocacy of the U.S. Small Business Administration).

<sup>17</sup> 13 CFR 121.201, NAICS Code 334119.

<sup>18</sup> U.S. Small Business Administration 1995 Economic Census Industry and Enterprise Report, Table 3, NAICS Code 334119. (Bureau of the Census data adapted by the Office of Advocacy of the U.S. Small Business Administration).

<sup>19</sup> 13 CFR 121.201, NAICS Code 333298.

<sup>20</sup> U.S. Small Business Administration 1995 Economic Census Industry and Enterprise Report, Table 3, NAICS 333298 (Bureau of the Census data adapted by the Office of Advocacy of the U.S. Small Business Administration).

<sup>7</sup> 5 U.S.C. 604(a)(3).

<sup>8</sup> 5 U.S.C. 601(6).

<sup>9</sup> 5 U.S.C. 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. 632). Pursuant to 5 U.S.C. 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the *Federal Register*."

<sup>10</sup> 15 U.S.C. 632.

<sup>11</sup> See 13 CFR 121.201, (NAICS) Code 334220.

<sup>12</sup> See U.S. Dept. of Commerce, 1992 Census of Transportation, Communications and Utilities (issued May 1995), NAICS Code 334220.

<sup>13</sup> 13 CFR 121.201, NAICS Code 334111.

<sup>5</sup> 47 CFR 15.247.

<sup>6</sup> See Information Technology Industry Council comments.

500 or more employees, and therefore, unless one or more has exactly 500 employees do not qualify as small entities under the SBA definition.

*D. Description of Projected Reporting, Recordkeeping and Other Compliance Requirements*

19. Part 15 transmitters are already required to be authorized under the Commission's certification procedure as a prerequisite to marketing and importation. See 47 CFR 15.101, 15.201, 15.305, and 15.405. The new regulations will add permissible methods of operation for frequency hopping spread spectrum systems and permit systems that use digital modulation techniques to operate in the bands formerly reserved for spread spectrum operation. No new reporting or recordkeeping requirements will be required for the manufacturers of frequency hopping spread spectrum devices or systems using digital modulation.

20. This *Second Report and Order* removes the requirement that direct sequence spread spectrum systems exhibit a minimum 10 db of processing gain. Therefore, manufacturers will no longer be required to test products and submit confirmation of compliance with this regulation.

*E. Steps Taken To Minimize Significant Economic Impact on Small Entities and Significant Alternatives Considered*

21. The rule modifications made in this *Second Report and Order* will facilitate the continued development and deployment of new wireless devices for business and consumers. These actions will benefit manufacturers of digitally modulated unlicensed devices and direct sequence and frequency hopping spread spectrum devices, including small entities.

24. In the *FNPRM*, we proposed to amend § 15.247 of the Commission's rules to provide for the use of systems which use new digital modulation technologies. Specifically, we proposed to allow these devices to operate in the 915 MHz, 2.4 GHz, and 5.7 GHz bands under the same technical requirement as spread spectrum systems. We invited comment on whether these technologies should be allowed to operate at the same power levels as direct sequence spread spectrum systems, specifically 1 Watt maximum output power with a maximum power spectral density of 8 dBm per 3 kHz. We also noted that the proposals for new digital devices are similar to the rules for Unlicensed National Information Infrastructure (U-NII) devices contained in Subpart E of part 15, and sought comment on

whether these new digital technologies could be accommodated under those rules.

25. Based on analysis of the record, including comments from small business concerns, we have concluded that systems using digital modulation technologies may operate in the 915 MHz, 2.4 GHz, and 5.7 GHz bands under the same rules as direct sequence spread spectrum devices without posing a risk of creating additional interference. We declined to regulate these devices under an alternative set of rules.

26. The *FNPRM* also proposed to remove the requirement that direct sequence spread spectrum systems demonstrate a minimum of 10 dB of processing gain. One alternative the Commission considered was to decline to remove the requirement. However, we determined that retaining the requirement would unnecessarily hinder the introduction of new non-interfering devices in the bands.

27. The *First Report and Order* ("First R&O") in this proceeding amended the spread spectrum rules to allow frequency hopping spread spectrum systems in the 2.4 GHz band to use bandwidths greater than 1 MHz but less than 5 MHz at a reduced power output of up to 125 mW.<sup>21</sup> These wideband frequency hopping systems are allowed to use as few as fifteen non-overlapping channels provided that the total span of hopping channels is at least 75 MHz. Frequency hopping systems with a bandwidth of up to 1 MHz were still required to use at least 75 non-overlapping hopping channels. In response to the *First R&O*, thirteen parties filed a Joint Petition for Clarification or, in the Alternative, Partial Reconsideration ("Joint Petition").<sup>22</sup> The Joint Petition requested that the Commission clarify the rules adopted in the *First R&O* to specify a minimum of 15 hopping channels for any system that uses adaptive hopping techniques to avoid operating on occupied frequencies and limits its output power to 125 mW, regardless of hopping channel bandwidth.<sup>23</sup> In the *FNPRM*, we

<sup>21</sup> First Report and Order in ET Docket 99-231, 15 FCC Rcd 16244 (2000), 65 FR 57557, September 25, 2000.

<sup>22</sup> Joint Petition For Clarification or, in the Alternative, Partial Reconsideration, submitted on October 25, 2000, by 3Comm, Apple Computer, Cisco Systems, Dell Computer, IBM, Intel Corporation, Intersil, Lucent Technologies, Microsoft, Nokia Inc., Silicon Wave, Toshiba America Information Systems, and Texas Instruments.

<sup>23</sup> Adaptive hopping is accomplished by the incorporation of intelligence within a frequency hopping spread spectrum system that permits the

proposed to adopt the changes requested in the Joint Petition.

28. The majority of the commenters support the proposal to allow frequency hopping systems to use as few as fifteen hopping channels with output power not exceeding 125 mW.<sup>24</sup> The commenters generally agree that a reduction in maximum allowed power from 1 Watt to 125 mW is an acceptable compromise in exchange for using fewer hopping channels.

29. Proxim objects to allowing as few as fifteen hopping channels for systems in the 2.4 GHz band. Proxim believes that this proposal could lead to frequency hopping systems that do not spread their energy through a wide portion of the band, and therefore increase interference potential to other receivers. It points to the 5.7 GHz band and notes that systems operating in that band use up to 60% of the available bandwidth.<sup>25</sup> Proxim proposes that frequency hopping systems in the 2.4 GHz band also be required to use at least 60% of the available band. It contends that the 60% threshold would serve the needs of manufacturers while preserving the underlying sharing philosophy of the part 15 rules. Ademco also proposes that a minimum amount of bandwidth be used. Although Ademco does support the proposed reduction in the minimum number of hopping channels, it states that the fifteen channels should be required to be spread over a minimum of 90% of the band.<sup>26</sup> It submits that such a requirement would prevent any segment of the 2.4 GHz band from being over used.

30. We will allow frequency hopping spread spectrum systems to use as few as fifteen hopping channels with bandwidths up to 5 MHz and no minimum band occupancy requirements, provided output power is reduced to 125 mW. This modification of our regulations for frequency hopping systems will provide greater flexibility without significantly increasing the risk

system to recognize other users within the band so that it individually and independently chooses and adapts its hopset to avoid occupied channels.

<sup>24</sup> See, e.g., comments of Adtran, Inc.; The Wireless Communications Association International; Silicon Wave, Inc.; Wi-LAN, Inc.; WIDCOMM; Agere; Intel Corporation; Bluetooth SIG; Intel Corporation; and Apple Computers. See also reply comments of Telecommunications Industry Association.

<sup>25</sup> 125 MHz of spectrum is available at 5.7 GHz. A system using maximum a hopping channel bandwidth of 1 MHz would be required to use 75 MHz, or 60%, of the available spectrum.

<sup>26</sup> See Ademco comments at page 1.

of interference to other users. The reduction of maximum peak power from 1 Watt to 125 mW will offset any increased potential for interference caused by use of the reduced hopset, regardless of channel bandwidth. In addition, we find it unnecessary to require frequency hopping systems to occupy a minimum percentage of the 2.4 GHz band as Proxim and Ademco suggest. Our primary concern for the operation of devices in the 2.4 GHz band is interference avoidance. Although a minimum bandwidth occupancy requirement may, in some cases, reduce the interference potential of frequency hopping systems, it is not the only method by which the systems can efficiently share the band. Indeed, such a requirement may actually negate the possibility for system designers to implement more efficient spectrum sharing techniques as they see fit. The simple, unambiguous rules we are adopting in this *Second Report and Order* will allow manufacturers the freedom to design an array of frequency hopping systems that effectively share the 2.4 GHz band.

31. We will not require frequency hopping systems that use a reduced hopset to employ adaptive hopping techniques. We agree with those parties who contend that the power reduction we are adopting for these devices is sufficient to mitigate any possible increase in interference potential due to the smaller number of hopping channels. Furthermore, operation pursuant to the modified rules will not pose a greater interference threat than systems already authorized under our rules.<sup>27</sup> We also note that § 15.247(h) of the rules permits the use of intelligent or adaptive hopping techniques in order to avoid transmitting on occupied frequencies.<sup>28</sup> We believe that § 15.247(h) provides sufficient flexibility for manufacturers to design products which incorporate adaptive hopping in circumstances where it would be beneficial. In accordance with the rules, manufacturers may design devices that incorporate both a frequency hopping spread spectrum transmitter and a digital modulation transmitter. Each transmitter must individually comply with applicable rules. However, the frequency hopping transmitter may adapt its hopset in

order to avoid causing interference to the digital modulation transmitter.

32. *Report to Congress.* The Commission will send a copy of the *Second Report and Order*, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.<sup>29</sup> In addition, the Commission will send a copy of the *Second Report and Order*, including the FRFA, to the Chief Counsel for Advocacy of the SBA.<sup>30</sup>

33. Pursuant to the authority contained in Sections 4(i), 301, 302, 303(e), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), and 303(r), parts 2 and 15 of the Commission's rule are amended.

34. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, *shall send* a copy of this *Second Report and Order*, including the Final Regulatory Flexibility Act, to the Chief, Counsel for Advocacy of the Small Business Administration.

#### List of Subjects in 47 CFR Parts 2 and 15

Communications equipment.

Federal Communications Commission.

Marlene H. Dortch,  
Secretary.

#### Rule Changes

For the reasons set forth in the preamble, the Federal Communications Commission amends 47 CFR parts 2 and 15 as follows:

### PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for part 2 continues to read as follows:

**Authority:** 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

#### § 2.1033 [Amended]

2. Section 2.1033 is amended by removing paragraph (b)(10) and redesignating paragraphs (b)(11) and (b)(12) as paragraphs (b)(10) and (b)(11), respectively.

### PART 15—RADIO FREQUENCY DEVICES

3. The authority citation for part 15 continues to read as follows:

**Authority:** 47 U.S.C. 154, 302, 303, 304, 307, 336, and 544A.

4. Section 15.247 is amended as by:

A. Revising paragraphs (a) introductory text, (a)(1)(ii), (a)(1)(iii), (a)(2), (b)(1), (c), and (d).

B. Redesignating paragraphs (b)(3) and (b)(4) as paragraphs (b)(4) and (b)(5).

C. Adding a new paragraph (b)(3).

D. Removing and reserving paragraph (e).

F. Revising paragraph (f).

The additions and revisions read as follows:

#### § 15.247 Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.

(a) Operation under the provisions of this section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

(1) \* \* \*

(ii) Frequency hopping systems operating in the 5725–5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

(iii) Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

(b) \* \* \*

(1) For frequency hopping systems in the 2400–2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 Watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 Watt.

\* \* \* \* \*

(3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

\* \* \* \* \*

(c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated

<sup>27</sup> See 47 CFR 15.247(a)(1)(iii). The rules allow frequency hopping systems to use as few as fifteen hopping channels provided the total span of hopping channels is at least 75 MHz. These systems are not required to incorporate adaptive hopping techniques.

<sup>28</sup> 47 CFR 15.247(h).

<sup>29</sup> See 5 U.S.C. 801(a)(1)(A).

<sup>30</sup> See 5 U.S.C. 605(b).

intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

(d) For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

\* \* \* \* \*

(f) For the purposes of this section, hybrid systems are those that employ a combination of both frequency hopping and digital modulation techniques. The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4. The digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

\* \* \* \* \*

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## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Part 69

[CC Docket Nos. 96-262, 94-1; FCC 02-161]

### Cost Review Proceeding for Residential and Single-Line Business Subscriber Line Charge (SLC) Caps

**AGENCY:** Federal Communications Commission.

**ACTION:** Interpretation.

**SUMMARY:** This document concludes the cost review proceeding to verify that increases to the subscriber line charge (SLC) cap above \$5.00 are appropriate. The SLC is a flat-rated charge imposed by local telephone service providers on end users to recover the interstate-allocated portion of local loop costs. In

2000, the Commission adopted a schedule to reduce the implicit subsidies in access rates while gradually increasing the cap on the SLC. The Commission stated that it would conduct a cost review proceeding prior to the scheduled cap increases above \$5.00. Based on the record before us, we conclude that the increases are appropriate—and indeed necessary—to fulfill the Commission's access charge reform objectives. Therefore, the SLC cap will increase as scheduled in the Commission's rules, to \$6.00 on July 1, 2002, and to \$6.50 on July 1, 2003.

**FOR FURTHER INFORMATION CONTACT:** Jennifer McKee, Wireline Competition Bureau, Pricing Policy Division, (202) 418-1530, or via the Internet at [jmckee@fcc.gov](mailto:jmckee@fcc.gov).

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's Order in CC Docket Nos. 96-262 and 94-1 released on June 5, 2002. The full text of this document is available on the Commission's website in the Electronic Comment Filing System and for public inspection during regular business hours in the FCC Reference Center, Room CY-A257, 445 Twelfth Street, SW., Washington, DC 20554.

### Background

In the May 2000 *CALLS Order*, the Commission adopted comprehensive interstate access charge and universal service reforms for incumbent local exchange carriers (LECs) subject to price cap regulation. Consistent with the goals and principles of the Communications Act, the purpose of these reforms is to promote competition by removing implicit subsidies from access charges, while ensuring affordable and reasonably comparable rates through explicit universal service support. Among other things, the Commission adopted a schedule to reduce the implicit subsidies in access rates while gradually increasing the cap on the subscriber line charge (SLC), a flat-rated charge imposed by LECs on end users to recover the interstate-allocated portion of local loop costs. Under the rules adopted in the *CALLS Order*, the SLC cap for residential and single-line business lines will increase to \$6.00 on July 1, 2002, and to \$6.50 on July 1, 2003. To verify that the increases above the current \$5.00 cap are appropriate, the Commission stated that it would conduct a cost review proceeding prior to any scheduled increases above this cap to examine forward-looking cost information associated with the provision of retail voice-grade access to the public switched telephone network. The Commission subsequently

concluded that, if the cost review proceeding verified that increases were appropriate for price cap carriers, then the same increases were appropriate for carriers subject to rate-of-return regulation because these carriers generally have higher costs than price cap carriers.

Under the Communications Act, the Commission has a statutory duty to regulate the interstate rates of common carriers, including the interstate access rates charged by incumbent LECs. In performing that duty, the Commission is required to balance the Communications Act's goals of promoting competition and preserving and advancing universal service. More specifically, the Communications Act directs us to convert implicit subsidies, such as those found in access charges, into explicit support, while simultaneously promoting the goals of affordability and reasonable comparability of rates throughout the nation. To promote economically efficient competition and to avoid cross-subsidization, the Commission has recognized that, to the extent possible, LECs should recover costs of interstate access in the same way that they are incurred. Thus, traffic-sensitive costs should be recovered through corresponding per-minute access rates. Similarly, non-traffic-sensitive costs, such as loop costs, should be recovered through fixed, flat-rated fees.

To address the affordability concerns of universal service, however, the Commission has limited the amount of interstate costs that LECs can recover directly from residential and business customers through the flat-rated SLC. Specifically, the SLC is subject to a cap that, particularly for residential customers, is often too low to enable the LECs to recover the entire interstate-allocated cost of the local loop. The remaining loop costs that LECs cannot recover from the SLC are recovered through charges imposed on interexchange carriers (IXCs), which pass these charges on to their customers. Thus, long-distance customers subsidize the rates that LECs charge to residential and single-line business end users. In addition to the inefficient implicit subsidies in the rate structure, LECs historically have averaged their SLCs over relatively large geographic areas. Geographic rate averaging means that customers in low-cost areas are subsidizing the rates of customers in high-cost areas. To the extent the SLC cap is set below cost, it inhibits a LEC's ability to deaverage its SLC rates, thus maintaining implicit subsidies running from low-cost areas to high-cost areas.