

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

| | | |
|---|---|----------------------|
| <i>In the Matter of</i> |) | |
| |) | |
| Amendment of Part 15 of the Commission's Rules |) | |
| Regarding Spread Spectrum Devices |) | ET Docket No. 99-231 |
| |) | |
| Wi-LAN, Inc. |) | DA 00-2317 |
| Application for Certification of an Intentional |) | |
| Radiator Under Part 15 of The Commission's |) | |
| Rules |) | |

REPLY COMMENTS OF SILICON WAVE, INC.

David L. Lyon, PhD.
Chairman and Chief Executive Officer
David A. Hytha
Vice President, Advanced Products

Scott Blake Harris
Karen L. Gulick
Damon C. Ladson

SILICON WAVE
6256 Greenwich Drive
Suite 300
San Diego, California 92122
(858) 453-9100

HARRIS, WILTSHIRE & GRANNIS, LLP
1200 18th Street, NW
Suite 1200
Washington, DC 20036
(202) 730-1300

For Silicon Wave

Introduction

Silicon Wave, Inc., (“Silicon Wave”), a leading designer and producer of on-chip RF devices for use in wireless and broadband systems, believes that with minor modifications and clarifications the Commission’s proposals in this proceeding should be adopted. These proposals will help ensure the continued growth and success of the Part 15 technologies and services. This proceeding well demonstrates the Commission’s continuing commitment to facilitating technological innovation by eliminating unnecessary regulatory barriers, and it should be brought to a rapid conclusion.

Silicon Wave Endorses the Commission’s Basic Proposals

In its initial comments, Silicon Wave fully endorsed the thrust of the Commission’s proposals, but noted two areas where the Commission would be wise to give further consideration prior to adopting final rules. Specifically, Silicon Wave fully supports the Commission’s proposal to permit reduced hop sets for frequency hopping spread spectrum systems (“FHSS”).¹ Silicon Wave also supports the expansion of the Commission’s rules to accommodate digital transmission systems (“DTS”). In addition, Silicon Wave supports the expansion of the upper portion of the U-NII band to 5850 MHz, thereby aligning it with the 5 GHz spread spectrum band.

Silicon Wave believes, however, that it would be wise to define the scope of DTS within the context of direct sequence spread spectrum systems (“DSSS”) and FHSS systems to avoid regulatory confusion.² Finally, Silicon Wave believes that any consolidation of Section 15.247 rules and U-NII rules is premature.

¹ Silicon Wave comments at 4.

² Silicon Wave comments at 7.

The Commission Should Not Be Deterred By Proxim's Objections

The large majority of the parties to this proceeding endorsed the Commission's efforts to modify its rules to allow new and exciting technologies better to share the Part 15 spectrum. Virtually alone, Proxim, Inc. ("Proxim") essentially argued for maintaining the status quo. Proxim's loneliness comes with good reason.

Proxim claims that the Commission's proposals could lead to increased interference because FHSS systems would be allowed to spread their signals over less bandwidth than is currently required.³ The remedy Proxim offers is to eliminate the minimum hopping channel requirement and replace it by a spectrum occupancy requirement. Specifically, citing the rules for the 5725-5850 MHz band, Proxim recommends that 2.4 GHz FHSS systems be required to span 60 percent of the 2400-2483.5 MHz band. In other words, Proxim proposes a slight reduction of the current requirement to span 75 MHz of the 83.5 MHz available at 2.4 GHz.

The Commission should reject Proxim's proposal. First, the Commission's proposed rules were designed to permit narrow band FHSS systems effectively to employ intelligent hopping techniques.⁴ The benefits of such techniques are obvious: if an FHSS system can avoid other spectrum users there will be less incidences of interference. However, to achieve the maximum benefits of intelligent hopping techniques, systems must not be forced to occupy more spectrum than is actually needed. Not only is an artificial occupancy requirement wasteful of spectrum, but also it is likely to increase the potential for interference.

Second, decreasing the amount of spreading FHSS systems must achieve does not automatically equate to an increase in interference potential. In fact, to ensure that the potential

³ Proxim comments at 3.

⁴ *Joint Petition For Clarification or, in the Alternative, Partial Reconsideration ("Joint Petition")* (October 25, 2000).

for interference does not increase, the Commission rightfully proposes a reduction in output power from 1 watt to 125 mW. Silicon Wave continues to believe that the power limit the Commission proposes is the appropriate one and that adopting it will ameliorate any potential for increased interference.⁵ Consequently, the Commission should reject Proxim's wasteful spectrum occupancy proposal.

Proxim also contends that the Commission's proposed changes to the current language of Section 15.247(a)(1)(iii) "could be" interpreted as undercutting the rule changes adopted in the First Report and Order⁶ in this proceeding.⁷ According to Proxim, a system using 15 hopping channels and 5 MHz wide channels will occupy almost the entire 2.4 GHz band. Because of this, Proxim argues that there would be no room available for avoiding occupied channels as required by Section 15.247(g).⁸

Proxim is simply wrong. The First Report and Order provided rules that permit wideband FHSS systems that operate with as few as fifteen channels - such as the 5 MHz channel bandwidth, 15-channel system Proxim uses. The proposed rules would still permit a 5 MHz, 15-channel system.

Silicon Wave submits that to the extent Proxim's problem is a rule problem and not a system design problem, it should look not to the current or proposed Section 15.247(a)(1)(iii), but to Section 15.247(h).⁹ Section 15.247(h) is the rule that permits intelligence within an FHSS

⁵ Silicon Wave notes that wideband (5 MHz) hopping systems are already operating successfully at the 125 mW power limit. There is no reason to believe that narrower band hopping systems operating at 125 mW or less and with spectral characteristics similar to wideband systems would cause greater interference.

⁶ *See, Amendment of the Commission's Rules Regarding Spread Spectrum Devices*, 15 FCC Rcd 16244 (2000).

⁷ Proxim comments at 1.

⁸ Proxim comments at 4.

⁹ Because of other proposed rule sections, in the FNPRM the current Section 15.247(h) is relabeled "15.247(g)." However, the text of the rule remains unchanged.

system so that it can recognize other spectrum users and modify its hop set to avoid occupied channels. If Proxim believes that the language of that rule part prevents its system from being implemented it should change its system design or petition for a rule change.¹⁰

Minor Modifications to the 1-Watt DTS Proposal

Despite its unfounded assertions that the Commission’s adaptive hopping FHSS proposals will increase the potential for interference in the 2.4 GHz band, Proxim supports permitting DTS systems that can be operated at up to 1-watt output power. However, Proxim does not propose other important technical parameters, such as an appropriate power spectral density (“PSD”) limit. An appropriate PSD limit is a crucial element for crafting successful DTS rules.

In its comments Silicon Wave provided a variety of reasons for why the Commission should further define DTS and its associated operating parameters. A prime reason for making minor modifications to the DTS proposal is that absent additional operating parameters an applicant could classify just about any digital technology as “DTS” in order to take advantage of the 1 watt output power. By way of example, Silicon Wave noted that if the Commission’s proposals are adopted as-is, it would be possible to submit a 1 watt, reduced hop set FHSS system and claim that the proposed Section 15.247(b)(1) governs its usage.¹¹

Consequently, should the Commission ultimately adopt the 1 watt output power limit for DTS, Silicon Wave believes the Commission would be wise to make minor modifications to its

¹⁰ For example, if a HomeRF-based 5 MHz per channel, 15-channel system is unable to hop effectively, Proxim could propose language that exempts its system. However, the Commission’s proposed rules are entirely appropriate for narrow band FHSS systems.

¹¹ Silicon Wave comments at note 9.

proposal by distinguishing DTS from FHSS and DSSS and by adopting an appropriate DTS power spectral density limit to prevent higher-powered narrow band interferers.

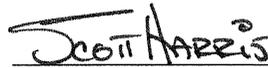
Conclusion

Silicon Wave reiterates its support for the goals of the Commission's FNPRM. Silicon Wave believes that with minor modifications, prompt action on the Commission's adaptive hopping and DTS proposals will promote new and valuable technologies, allow greater coexistence in the 2.4 GHz band, and ultimately benefit both consumers and industry.

Respectfully submitted,



David L. Lyon, PhD.
Chairman and Chief Executive Officer
6256 Greenwich Drive
Suite 300
San Diego, California 92122
(858) 453-9100



Scott Blake Harris
Karen L. Gulick
Damon C. Ladson
Harris, Wiltshire & Grannis, LLP
1200 18th Street, NW
Suite 1200
Washington, DC 20036
(202) 730-1300

For Silicon Wave