

January 19, 2001

BY HAND DELIVERY

Ms. Magalie R. Salas, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: ET Docket 99-231
Amendment of Part 15 of the Commission's
Rules Regarding Spread Spectrum Devices
--- *Ex Parte Filing*

Dear Madam Secretary:

On December 14, 2000, Texas Instruments ("TI") filed an *ex parte* letter in the above-referenced docket with an attachment captioned "High Performance Wireless Local Area Networks in the 2.4 GHz ISM Band," by Chris Heergard, Ph.D. In his presentation, Mr. Heergard argues that TI's 22 Mbps Packet Binary Convolutional Coding (PBCC) system should be permitted under the Commission's current Part 15 rules. This letter responds to Mr. Heergard's presentation.

Mr. Heergard appears to base his argument on the following three assertions: (i) "Spectrum is rare and valuable"; (ii) any "test that CCK-11 passes will be passed by PBCC-22"; and (iii) the "TI solution is the leading contender for the new IEEE 802.11g wireless Ethernet standard."¹ These assertions do not warrant certification of the PBCC-22 device under current Part 15 rules.

The relevant rule section, 47 C.F.R. § 15.247(a), provides that, "[o]peration under the provisions of this Section is limited to frequency hopping and direct sequence spread spectrum intentional radiators." Once this threshold question is answered in the affirmative, the rule sets forth certain additional performance tests that must be met, such as the processing gain test under Section 15.247(e), before the equipment will be certified.

The PBCC-22 device is neither frequency hopping spread spectrum ("FHSS") technology nor direct sequence spread spectrum ("DSSS") technology.

¹ Slides 5, 25, & 38. As to the last assertion regarding PBCC's becoming the wireless Ethernet standard, TI seems to be attempting to make this a self-fulfilling prophecy by offering royalty-free licenses for PBCC, almost daring the FCC to refuse certification of the "industry standard." (see attached TI press release dated January 10, 2001)

Indeed, TI does not make a serious claim that PBCC-22 is either. Instead, TI argues that the PBCC-22 device should be treated as reasonably equivalent to DSSS technology because, TI claims, the precise definition of “spread spectrum” is not important under the rule.

Further, to escape the plain language of the rule, TI suggests (by quoting out of context the title of a slide used by Proxim in an earlier presentation to the FCC staff) that DSSS is not capable of meaningful definition. Although DSSS certainly is not self-defining, Proxim has provided the FCC with reasonable, common-sense guidelines, based on multiple “defining characteristics,” for identifying systems that qualify as DSSS.

Essentially, in order to determine whether a technology is DSSS, the channel symbol waveform must be identified. In DSSS, the channel symbol waveform is processed coherently in a correlator or matched filter; it is the minimum unit of signal energy having information content. A key characteristic of DSSS is that the spreading operates *within* a channel symbol waveform to change its occupied bandwidth.

This can be contrasted to a system, like PBCC, which makes extensive use of forward error correction (FEC) coding. These systems operate *over a sequence* of channel symbol waveforms. The FEC algorithm computes the likelihood of sequences of channel symbol waveforms, and these sequences can be non-coherent or quasi-coherent, depending upon whether the local oscillator is phase-locked or not, and algorithms abound for computing the information pattern. These kinds of FEC systems, therefore, are not DSSS. That should be the end of the Commission’s certification inquiry. It is irrelevant whether PBCC-22 would be a good neighbor or contribute to “robust communications” in the 2.4 GHz band.

The importance of limiting Part 15 certification to technologies that meet the current rules cannot be overstated. The 2.4 GHz band is used for a wide variety of unlicensed communications technologies. The only way to assure co-existence of the various technologies in the band is to assure that all technologies employ a common set of technical characteristics so that all users can have reasonable expectations regarding the interference environment. It is equally essential that these requirements dictating these technical characteristics be set out in the FCC rules and are not changed except in an open rulemaking proceeding with full notice and public participation.

With respect to another issue, TI understood and took full advantage of the opportunity for notice and public comment afforded by a rulemaking proceeding. In that instance, TI objected to changes in the rules to allow for new

technologies to be introduced into the 2.4 GHz band. In a July 14, 2000 *ex parte* letter submitted in ET Docket No. 99-231, George Barber, Vice-President, Texas Instruments stated:

“According to Chris Heegard, the CEO of Alantro, the proposed rule changes for WBFH allow the introduction of signals with spectral characteristics that were formerly disallowed under the existing rules. This means that the large base of current products that were built under the existing rules are threatened with interference that was not previously allowed or anticipated. From a fairness position, this is unjust.”

It would be much more unfair to introduce TI’s non-compliant PBCC technology into the 2.4 GHz unlicensed band without benefit of an open rulemaking proceeding, thus denying other affected parties the same opportunity afforded to TI and the public at large.

Respectfully submitted,

/s/ Henry Goldberg
Henry Goldberg
Attorney for Proxim, Inc.

cc: Julius Knapp
Karen Rackley
Neal McNeil
John Reed