

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

In the Matter of)	
)	
The 4.9 GHz Band Transferred from)	
Federal Government Use)	WT Docket No. 00-32
)	
To: The Commission)	

**REPLY COMMENTS
OF THE
NEW YORK STATE OFFICE FOR TECHNOLOGY
STATEWIDE WIRELESS NETWORK**

October 2, 2003

I. INTRODUCTION

1. The New York State Office for Technology Statewide Wireless Network (SWN) supports the National Public Safety Telecommunications Council (NPSTC) Petition for Reconsideration in response to the Commission’s *Memorandum Opinion and Order and Third Report and Order*, FCC 03-99, Adopted April: 23, 2003 and Released: May 2, 2003 (*Report and Order*), in the above-captioned proceeding. In particular SWN supports NPSTC’s petition in the areas of:

- The adoption of a relaxed spectrum mask for low power operations, to enable the use of a wide variety of industry standard technologies, and allow competitive pricing and timely equipment availability, and
 - The need for a more organized spectrum management structure within the band.
2. The New York State Office for Technology, on behalf of the State of New York, is in the process of procuring a new Statewide Wireless Network for State, Federal and Local Governmental entities that operate within New York State's geographic borders. SWN will provide an integrated mobile radio communications network that will be utilized by both the Public Safety and Public Service agencies of New York State. It will provide a digital, trunked architecture and offer both voice and data capabilities. SWN will serve in day-to-day operations, as well as disaster and emergency situations, and will effectively and efficiently coordinate the deployment of all levels of government resources to such incidents. It will also enhance international coordination along the US/Canadian border, and will play a critical role in supporting the homeland defense efforts of the State of New York.

II. RELAXED SPECTRUM MASK

3. With the choice of a narrow emission mask¹, the FCC has limited the technology options available to public safety. Our ability to use many open standards-based technologies in this band will be significantly diminished, as will our capability to leverage the wider commercial market in order to reduce equipment costs. Furthermore, the creation of a

¹ See Final Rule § 90.210 Emission masks. In the Matter of The 4.9 GHz Band Transferred from Federal Government Use, WT Docket No. 00-32, MEMORANDUM OPINION AND ORDER AND THIRD REPORT AND ORDER, Adopted: April 23, 2003, Released: May 2, 2003.

niche broadband Public Safety market will tend to stifle innovation within this spectrum allocation - ultimately limiting Public Safety's access to new technologies and capabilities.

4. The use of a scaled 802.11-OFDM based emissions mask would enable Public Safety to utilize mature technologies that are the result of years of work on behalf of standards developing bodies. The example of the 802.11 suite of standards and European technologies such as HiperLAN are just one example. These 802.11 standards are also a progressive, forward looking technology set that does not stagnate with time. Currently, there is IEEE 802.11 work in progress that will provide even greater capabilities to Public Safety operations; an enhanced Media Access Control (MAC) with priority, authentication, and quality of service (QoS) (802.11e); enhanced security (802.11i); the addition of power control and dynamic channel selection (802.11h/k); 10 MHz Channels at 4.9 GHz (802.11j); and more. There is even ongoing discussion on OFDM utilization at 5 MHz bandwidths, an option that would allow enhanced cellular reuse² within the Public Safety 4.9 GHz allocation. Other exciting standards-based technologies may also help in 4.9 GHz, including 802.16, for site interconnect, and 802.16e and 802.20 for wide-area mobile operations.
5. NPSTC has taken the initiative to become involved with IEEE 802 activities in order to ensure that Public Safety's requirements are considered to the greatest extent possible. They are also working hard to allow Public Safety to have access to "next generation" capabilities that result from technology innovations inherent to a large market base.

² e.g. seven cell clusters plus one omnipresent channel.

Public Safety cannot have only limited options available to them; they need to leverage larger markets in order to obtain economies of scale as well as enhanced capabilities. New York State fully supports these efforts.

6. The Commission must note that issues of interference are not confined to the emission mask. NPSTC and others have been attacking the problem of interference mitigation within this band in multiple ways - including through local agency coordination, and the use of advanced physical, MAC and antenna technologies. The Commission should also note that there are ways to maintain tight adjacent channel and out-of-band emissions without limiting technology options. The 802.11a/DSRC-A emissions mask is by far the best choice for low power operations (<20-dBm-transmitter power), and the DSRC-C and D masks are excellent options for higher power levels. In fact, it appears clear that the DSRC Class C and D masks not only allow scaled 802.11 OFDM-technology, but also offer reduced adjacent channel and out-of-band emissions with respect to the mask that the Commission has selected^{3 4}.

7. If the current FCC mask is necessary in order to provide protection to Radio Astronomy and Military operations⁵, then it could still be applied to the outer 1 MHz channels of the allocation. Allowing both types of masks to operate in this band is a win-win compromise for public safety, and the Commission - who both are interested in promoting spectrum efficient technologies. The Commission has a golden opportunity before it by permitting the use of existing standards based technologies, and encouraging

³ See para. 12, NPSTC Petition for Reconsideration on FCC Docket 00-32, July 30, 2003

⁴ See Appendix A, NPSTC Petition for Reconsideration on FCC Docket 00-32, July 30, 2003

new technologies. Incentives could even be offered to manufacturers by the Commission to develop more spectrally efficient technologies for future benefit.

III. RAPID DEPLOYMENT OF STANDARDS BASED TECHNOLOGY

8. The availability of cost competitive state-of-the-art standards based technologies is of vital importance to ensuring the highest performance capabilities at the best price. *Time is of the essence* in making available communications hardware that will provide substantial cost savings to the taxpayers of New York. It should be noted that 4.9 GHz 802.11 OFDM equipment is available now in Japan, giving a huge market to leverage. There is also a huge global chipset market for 802.11a and HiperLAN at 5 GHz; and at baseband these chips can also be used at 4.9 GHz. Intelligent Transportation Systems (ITS) Dedicated Short-Range Communications (DSRC) equipment will also utilize scaled 802.11 OFDM. In fact, DSRC will not only operate on 10 MHz channels, but will allow Public Safety to harmonize with yet another tremendous market. Work is also underway to leverage Public Safety spectrum at 4.9 and 5.9 GHz, so that National emergency response capabilities can be enhanced for first responders.

9. The need to allow 802.11a standards-based technologies is also supported by industry. Cisco Corporation has submitted comments in favor of the NPSTC Petition for Reconsideration, citing “we believe the modification of the emission mask to include OFDM modulation will allow the 802.11 manufacturers to provide low

⁵ And this is doubtful, as the geographic separation should serve as the limiting factor here, not 10 dB of increased OOB.

cost, high data rate systems to the Public Safety community.”⁶ No such claim has been made by any other manufactures concerning the current FCC mask. This causes us grave concern.

IV. NEED FOR A SOUND REGULATORY PLAN

10. The NPSTC Petition for Reconsideration wisely calls upon the Commission to make mandatory a Regional Plan on a geographic basis⁷. Unfortunately the adopted Commission Rules do not include the mandatory requirement. Inasmuch as the Commission has already commenced issuing licenses for 4.9 GHz operation, we respectfully urge the Commission to require that all licensees be required to come into compliance with the 4.9 GHz Regional Plan for their area upon its completion.
11. In order to coordinate the spectrum with regard to interference and interoperability, the Regional Planning Committees (RPC) should at least have interaction with those using it. Since the spectrum is being licensed first, what is the incentive to work with the RPC? Without question, agencies having overlapping jurisdictions must work out interoperability and interference mitigation plans. Otherwise these jurisdictions may end up interfering with each other's communications at the scene of an incident without even understanding the cause. The band should not be allowed to degenerate to this.
12. Coming up with an interoperability and spectrum management plan ahead of time can be as simple as understanding that "Agency A will use this half and Agency B will use that

⁶ Cisco Comments, submitted on 8/5/03, page 1.

⁷ NPSTC Petition for Reconsideration, page 19.

half if both appear on a scene simultaneously". This kind of predefined cooperation is necessary in order to support time critical applications such as the control of robotic bomb squad equipment. It would be an extremely undesirable situation to suddenly lose control of a robot (e.g. via interference causing a telemetry to be disrupted) just when it is about to defuse or otherwise interact with a bomb. Clearly, it is imperative that overlapping jurisdictions be required by Commission Rules and Regional Planning to both discuss and plan for spectrum sharing, so that the spectrum can be shared at an incident without causing harmful interference.

13. Furthermore, we believe that through their position and decisions, the Commission seems to imply the use of a Commons model, as identified in the NPSTC Petition for Reconsideration⁸. We believe that the Spectrum Policy Task Force's push toward frequency sharing to be the wrong approach for Public Safety, generally, and will result in a multitude of problems ranging from lack of protection of licensed services, to a deleterious effect upon the noise floor. We feel requiring a conservative mask, while at the same time requiring "mandatory coordination amongst users in the same geographic area" – the Commons model, to be counter productive to efficient spectrum utilization⁹. Mission and time critical operations cannot be supported under such a model; therefore, these types of operations, required for the protection of life and property, cannot be assured that necessary spectrum will be available at 4.9 GHz based when it is required.
14. We also concur with the NPSTC concern that a means of resolving disputes which occur either within a region or between regions, needs to be considered and added to the

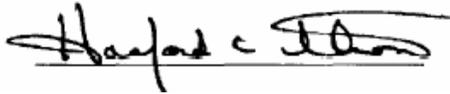
⁸ Ibid, page 19.

regulatory plan for the 4.9 GHz band. We respectfully urge the Commission to make the necessary changes to the Final Order to provide this regulatory safeguard.

V. CONCLUSION

15. We thank the Commission for the opportunity to express these reply comments in support of the NPSTC Petition for Reconsideration and look forward to inclusion of these points in a revised Final Order.

Respectfully Submitted,



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⁹ NPSTC Petition for Reconsideration page 19.