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

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

To: The Commission

SECOND REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULE MAKING

COMMENTS OF:

Statewide Wireless Network

New York State Office for Technology

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July 8, 2002

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EXECUTIVE SUMMARY

These comments from the New York State Office for Technology Statewide Wireless Network Project Office represent the position of the State with regard to Commission's 2nd Report and Order and Further Notice of Proposed Rulemaking in WT Docket No. 00-32, FCC 02-47. We believe this allocation of the 4.940 - 4.990 GHz band (4.9 GHz band) as spectrum that will be used for new technologies intended for short-range communications in voice, data and telemetry. We do not view this band as substitute for spectrum relief that public safety entities need for wide area land mobile network communications. We note that the Public Safety Wireless Advisory Committee was seeking mobile communication channels below 2000 MHz[1] to meet the 95 MHz of additional spectrum for public safety through the year 2010, plus 2.5 MHz below

512 MHz for Interoperability channels. We view this allocation as the augmentation of the need for public safety to get the "last mile" solution from mobile based units in ad hoc types of operations.

We recommend to the Commission that the channel plan for this band be simple and flexible and that the band be divided basically into two channels of 20 MHz and two channels of 5 MHz, in a 5-20-20-5 configuration. This will serve to mitigate potential interference with the Navy on the one end and Radio Astronomy on the other. It will also leverage commercial technologies that are used in the nearby unlicensed 5 GHz band.

We believe that this band will be implemented for ad hoc or short-range networks, or as short-range links to a larger network and that this band will have a multiplicity of users, which will require collision avoidance signaling protocols. Local committees will be needed to prevent harmful interference amongst users. The same methodology used for management of the 700 MHz Public Safety band's FCC designated interoperability channels could be applicable here. Oversight planning and coordination of use of these 4.9 GHz channels should be made an adjunct function of the same committees that now have responsibility for the 700 MHz FCC designated interoperability channels. When a state does not designate an entity to perform this function, the responsibility would fall upon the Regional Planning Committee. Regardless of which committee takes on this responsibility, it will take subcommittees at the local level to be able to properly deal with the coordination of these ad hoc type short-range communications technologies.

[1] PSWAC Final Report, September 11, 1996, Appendix D Section 10.1, Page 49 (655).

I. INTRODUCTION

1. The State of New York supports the designation of the 4.9 GHz band for public safety purposes. This designation, as proposed in the Second Report & Order of this docket, indicates that use of this band will mainly be in the areas of Personal Area Network/Vehicular Area Network (PAN/VAN) systems. We also see future use of this band in small area Wireless Local Area Network (WLAN) systems.

2. Except for a dedicated service offering provided by a commercial provider, we believe that public safety needs in these areas will be met solely by public safety. The PAN/VAN systems offer public safety users on-scene local portable radio coverage and wireless peripheral links, such as bar code readers, printers and remote speaker microphones. High-speed data connectivity back to an operations center could be accomplished through nearby building or lamppost repeaters. A fixed infrastructure repeater system of this type could be linked back to an operations center using either owned or leased cable, fiber or microwave links operating in other bands.

3. WLAN systems could be offered by commercial radio common carriers as a way to increase the size of a service area for data transfer. We recommend, however, that the 4.9 GHz transmitters be licensed to public safety eligibles. The mixed use of WLAN systems with VAN/PAN systems in a community will present potential interference concerns that make Regional Planning Subcommittee coordination of such use mandatory.

4. Therefore, while this band does not in-itself offer the needed spectrum relief required by public safety, as recommended by PSWAC, the band does offer new capability and

flexibility that will prove very useful to the operational requirements for voice, data and telemetry needs of public safety users.

II. ELIGIBILITY

5. The State of New York believes that the eligibility for licensing in this band should follow the same requirements as defined in 47 C.F.R. 90.523.

6. In the Second R&O at paragraph 36, the Commission extended the notion that CMRS providers could utilize the band in order to serve public safety entities. Such operation should be under contractual arrangement, where the CMRS provider is providing a service dedicated to the public safety entity(ies). If the CMRS provider is concurrently providing a service to non-eligible entities, the problems of interference and priority contention could adversely impact the primary public safety purpose.

7. As far as Federal use of this band is concerned, we believe this is best handled as it was in the 700 MHz public safety band, where Federal entities enter into agreements with state or local government licensees for use of the spectrum. Such operation is authorized by the FCC in accordance with 90.421. We believe that Federal entities operating under such agreements would use this band to facilitate interoperability with local entities and to execute mutual operations in law-enforcement or other public safety/emergency services.

III. FIXED AND MOBILE USE

8. We foresee that the 4.9 GHz band has potential in both fixed and mobile public safety operations. Mobile technologies that would most likely be used in this band would be for short-range, or "on scene" communications. However, the band could be useful to

provide connectivity back to a larger network, particularly in urban environments. We therefore foresee technologies that could support both PAN/VAN and WLAN communications that would require the application of both fixed and mobile infrastructures.

9. Additional uses could be wireless links within dispatch centers, temporary short-range surveillance activities, vehicle inventory and maintenance record keeping, etc.

IV. CHANNEL PLAN

10. We recommend that the Commission employ a channel plan that minimizes parsing the band in order to maximize the number of technological solutions that may satisfy the requirements of public safety users.

11. We recommend that the band be divided into two 20 MHz wide channels and two 5 MHz wide channels in a 5-20-20-5 configuration. This should mitigate potential interference with the adjacent Navy and Radio Astronomy bands and leverage commercial technologies in the nearby 5 GHz band.

12. Channel planning in any given area should be the result of some type of local level planning to prevent interference between agencies having concurrent jurisdiction. Such channel planning should permit channel splitting and aggregation to meet local needs.

13. The two 5 MHz channels would be available for mobile use only to mitigate interference to adjacent spectrum. These channels would best support the PAN/VAN ad hoc network

14. The two 20 MHz channels would be available for both fixed and mobile use. Fixed use of this band is most likely to occur in urban areas or campus type applications. WLAN solutions might consist of fixed Access Points (APs) providing connectivity back to a central office.

V. LICENSING

15. Because of the limited coverage of these transmitters, local planning to optimize use and minimize interference will be essential. If the plan used by the Commission at 700 MHz for Interoperability is utilized, the State Interoperability Executive Committee (SIEC) could, as an adjunct function, establish local committee groups to deal with the planning and coordination of these short-range or ad hoc types of systems. Failing the designation of a SIEC, the Regional Planning Committee (RPC) could be assigned to take on this task.

16. The States are responsible through the SIECs for administering the FCC designated Interoperability Channels, and the State, as a legal entity, can be a licensee. The States, therefore, are in a better position to apply for this spectrum directly to the FCC and the process would be simplified requiring no further coordination. The States, through the Local Planning and Coordination Committees, can enter into a Memorandum of Understanding with the each local entity to permit operation under the State's Geographic Area license. The States would also be in a better position to encourage and monitor the growth and expansion of the band by simplifying the process of making it available for use.

17. Should the Commission determine that state geographic licensing is not desirable, an alternative would be to assign this responsibility to the Regional Planning Committees. Since the RPC is not a legal entity, nor eligible to hold a license, individual geographic area licenses would be required.

18. The least desirable alternative would be to operate the band unlicensed, similar to the ISM band. This alternative is largely removes accountability, thus making planning and

interference control issues extremely difficult. Reliability of use in critical public safety applications would be questionable.

VI. TECHNICAL STANDARDS

19. The Commission has allocated 300 MHz of spectrum to the unlicensed national information infrastructure (U-NII) band at 5 GHz and the IEEE has developed an extension to the 802.11 standards for this allocation, known as "IEEE-802.11a". Further, in Europe a total of 455 MHz of spectrum has also been allocated in the 5 GHz band for WLAN use. The European Telecommunications Standards Institute (ETSI) has developed HIPERLAN/2 standard for use in this 5 GHz allocation. We believe that the broad commercial development of technology in this spectrum range will enable public safety to rapidly develop use of the 4.9 GHz band.

20. We believe that the Commission would give the public safety community and the public it protects, the greatest benefit from this allocation with channel plans and rules that encourage use of existing standards.

A. Justification for Both Technologies

21. The main differences between the IEEE 802.11a and HIPERLAN /2 standards are found in the medium access control (MAC) layer. In the IEEE 802.11a a distributed MAC protocol exists with a carrier sense multiple access with collision avoidance (CSMA/CA) that does not need centralized control. Within the HIPERLAN/2 MAC a TDMA/TDD approach is used which provides good service support to multi-media and real time applications.

22. The IEEE 802.11a with CSMA/CA and distributed MAC control makes the standard more useful for ad hoc networks with application needs that are not real time sensitive.

23. The HIPERLAN/2 standard may prove to be more suitable for transmissions involving a network where map and informational data-bases reside or there is a need for streaming video images to be transmitted. Both offer public safety greater operational utility, one for ad hoc transmission between units for greater interoperation and the other for network support to units in the field.

VII. INTERFERENCE

24. New York believes that most users of this band will not be applying it in wide area networks. The propagation range in terrestrial network architectures will simply serve to prohibit wide area networking. We believe that the main application of this band will be in WLANs and ad hoc networks. Further, these networks, even in pico-cell and pico-cell like PAN/VAN applications, will experience little interference.

25. There will be applications in urban and campus environments where a number of access points are used in numerous locations throughout a city —the so called "hotspot" architecture. This sort of urban network using access points should be able to operate in close proximity to each other and not present a significant interference problem, even with OFDM employed in IEEE 802.11a and HIPERLAN/2 technologies.[2]

26. New York State recommends that the band be divided into two channels 20 MHz wide and two channels 5 MHz wide. This mitigates adjacent channel concerns for Navy CEC training areas and Radio Astronomy, as well as maximizing existing IEEE 802.11a and HIPERLAN/2 technologies.

[2] See Appendix 1

VIII. CONCLUSION

27. New York applauds the Commission for making 50 MHz of spectrum available at 4.940 - 4.990 GHz for public safety 21st century new technology applications.

28. We recommend that the Commission make the spectrum available in 4 channels of 5 - 20 - 20 - 5 MHz channel widths. The 5 MHz channels to be mobile only. The 20 MHz channels to be fixed and mobile. These channels may be subdivided and or aggregated to allow for new technology developments.

29. We recommend geographic area licensing to States with the State Interoperability Executive Committee assigned the responsibility to establish Local Planning and Coordination Committees to oversee the planning and coordination of use.

30. We recommend that existing technologies, such as IEEE 802.11a and HIPERLAN/2 be permitted in this band.

Respectfully Submitted,

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APPENDIX

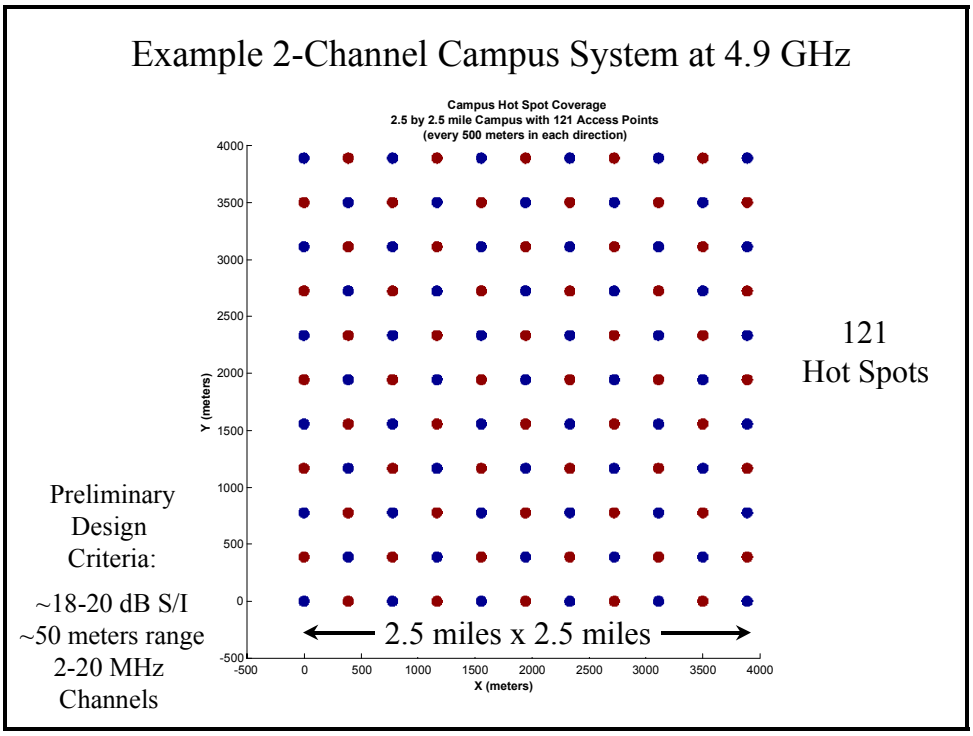
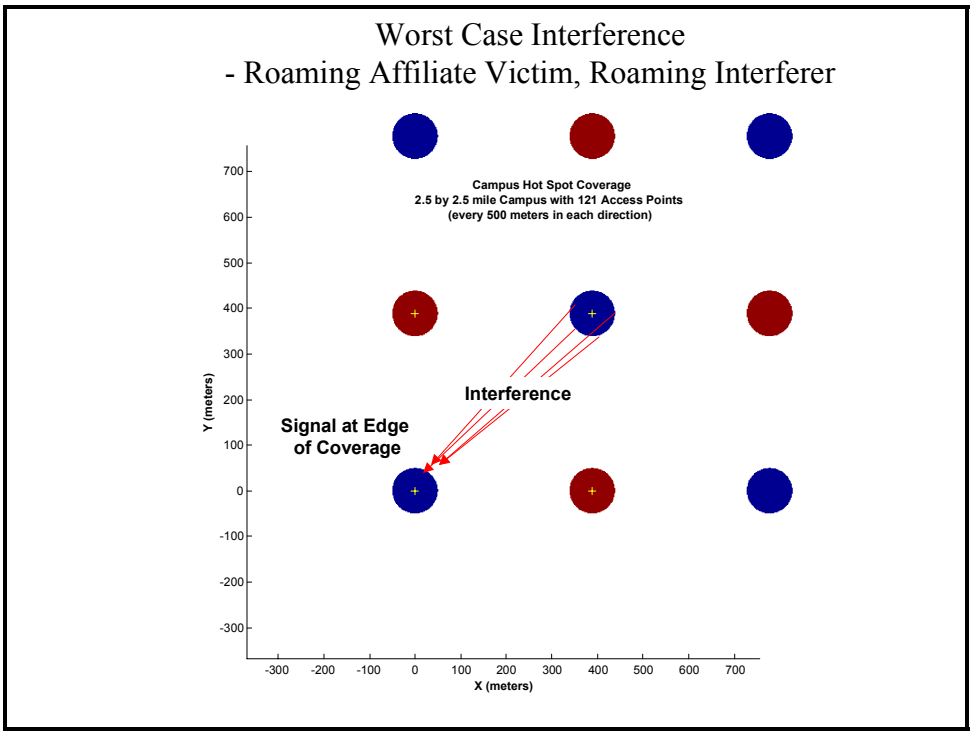


Figure 1:



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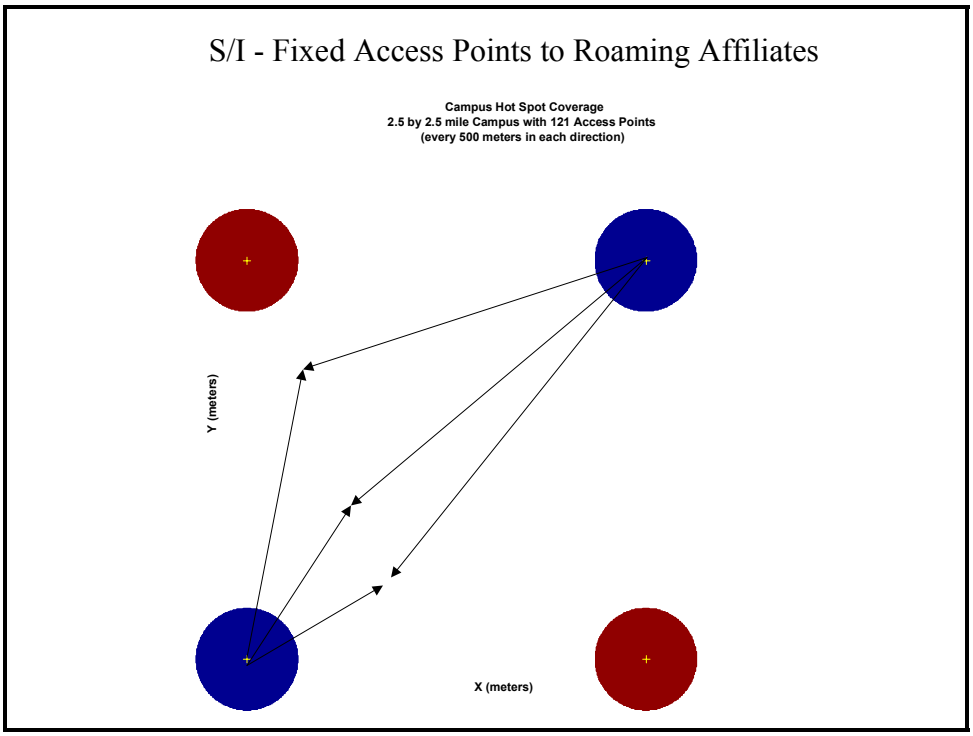

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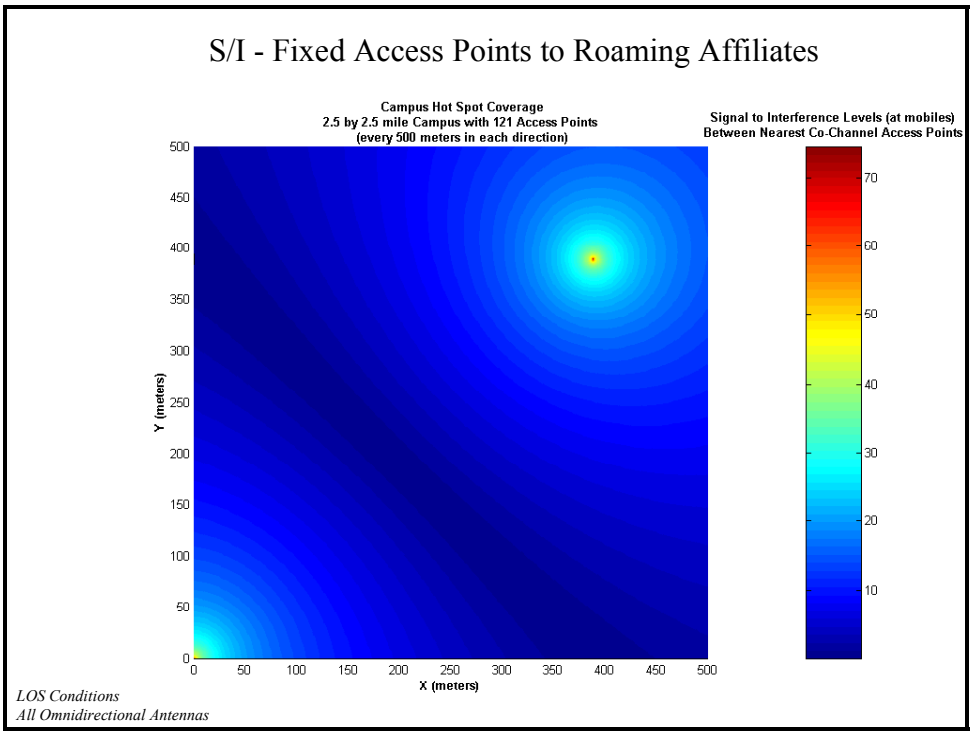

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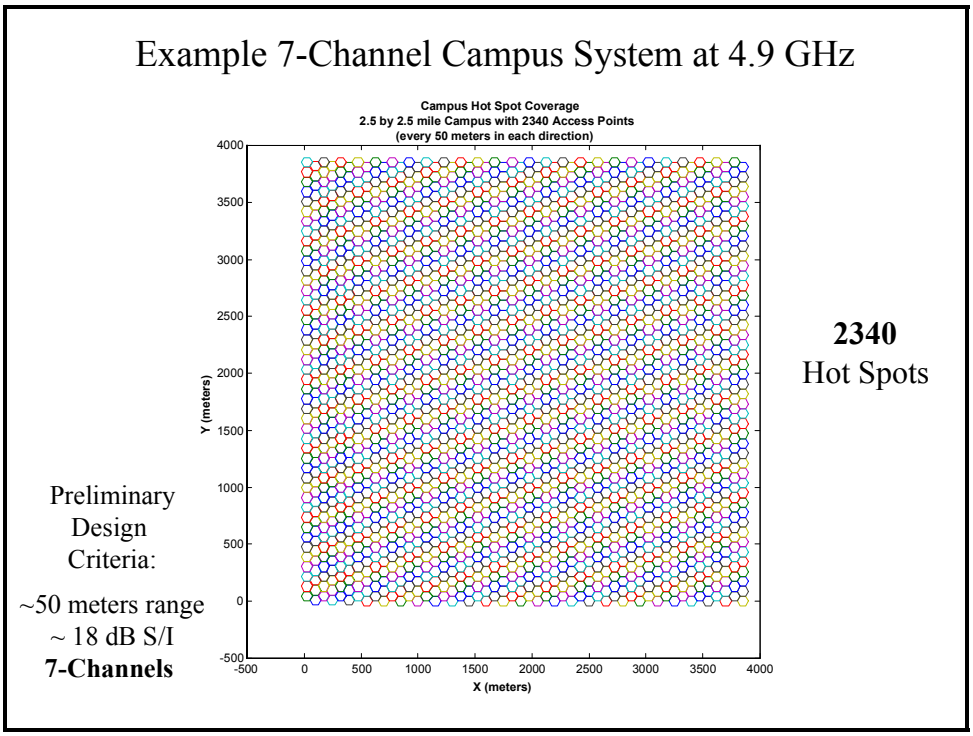

Figure 5: