

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

In the matter of)
)
)
Establishment of an Interference Temperature)
Metric to Quantify and Manage Interference)
and to Expand Available Unlicensed)
Operation in Certain Fixed, Mobile and)
Satellite Frequency Bands)

ET Docket No. 03-237

REPLY COMMENTS OF

Statewide Wireless Network

New York State Office for Technology

State Capitol, ESP

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May 6, 2004

I. INTRODUCTION

1. These reply comments from the New York State Office for Technology, Statewide Wireless Network (the State), are in response to the above captioned proceeding, FCC 03-289, released November 28, 2003.
2. The New York State Office for Technology, on behalf of the State of New York, is procuring a new Statewide Wireless Network (SWN) 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 Public Safety and Public Service agencies in New York State. SWN will be used in day-to-day operations, as well as for disaster and emergency situations, to more 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.
3. The State of New York has a large stake in the outcome of any policy decisions that will affect the cost or construction timeline of the SWN. Comments filed in this proceeding have provided many points for discussion and we thank the Commission for the opportunity to contribute to this process by including our comments on our needs and those of Public Safety.
4. A clear majority of the filings submitted were opposed to the deployment of the Interference Temperature Metric (ITM). After reviewing the numerous comments submitted we have concerns with a number of issues that could effect Public Safety communications.

II. THE INTERFERENCE TEMPERATURE METRIC POSES A DANGER TO PUBLIC SAFETY COMMUNICATIONS IN MANY AREAS

5. Today's Public Safety radio systems have very stringent requirements. Due to operational requirements, coverage must be ubiquitous through the agency's jurisdiction, and in our case must span large and rugged geographical areas. Voice quality must be consistent with the needs of Public Safety, typically with a delivered audio quality requirement of 3.4 or better. Data throughput must also be as high as possible, and content must be delivered securely and error free. To achieve these goals, one must contend with realities such as limited budgets and zoning issues. The deployment of radio systems under these constraints can be very challenging.
6. Due to these stringent requirements and the many related issues that affect Public Safety radio system engineering, the imposition of an interference temperature metric would be detrimental to Public Safety for a number of reasons. These reasons include concerns for incompatibility of present technology deployed in public safety bands, institutionalization of the interference limited design as a consequence of policy, reduction in performance, coverage, and voice quality, adverse effects upon commercial services supporting public safety, and DTV transition timelines.

III. PRESENT TECHNOLOGY DEPLOYED IN PUBLIC SAFETY BANDS IS INCOMPATIBLE WITH THE INTERFERENCE TEMPERATURE METRIC

7. Today's Public Safety communications technology is not designed for spectrum environments that allow sharing with unlicensed devices. Most Public Safety radio systems are based upon noise-limited designs, and Public Safety systems do not normally have to contend with secondary users. Therefore, currently technology has developed to provide maximum performance under the present rules governing this environment, in ways that at the same time are fiscally responsible. Transmitter and receiver technology has improved to

enable manufacturers to design high performance systems for Public Safety and meet their stringent requirements. Technology still is advancing, but if the Commission were to apply the ITM to Public Safety bands, we fear all of these advancements would be lost and the operational consequences would prove to be disastrous.

8. Luxon Wireless Inc., voiced similar concern over the inability of existing technology to support imposition of the interference temperature metric (ITM) within their comments¹. We concur with their assertion, and it is clear that Public Safety is not the only service that is concerned with the incompatibility of existing technologies and the imposition of the ITM. Cellular carriers employing code division multiple access (CDMA) technology also see their operations devastated if the ITM was introduced into their bands². Television broadcasters have also voiced their belief that broadcast spectrum is unsuitable for use for by unlicensed devices using the ITM³.

IV. INTERFERENCE TEMPERATURE METRIC WOULD INSTITUTIONALIZE THE INTERFERENCE LIMITED DESIGN ON PUBLIC SAFETY

9. We are concerned that imposition of the ITM into Public Safety bands would institutionalize the interference-limited design through policy dictum. We believe this will have serious implications on all present and future Public Safety radio systems. These implications will be clearly measurable in terms of reduced coverage and degraded performance for existing systems - potentially disastrous effects when coupled with Public Safety's basic function - to protect life and property.

¹ Luxon Wireless Inc. Comments filed April 5, 2004, Section II - EXISTING TECHNOLOGY CANNOT SUPPORT IMPOSITION OF AN INTERFERENCE TEMPERATURE METRIC, page 8.

² Comments of AT&T Wireless Services, CTIA, Erisson, Motorola, Sprint, and V-COM.

³ Comments of the Maximum Service Television (MSTV) and National Association of Broadcasters (NAB), filed April 5, 2004, Section D The Broadcast Spectrum Is Particularly Ill-Suited For Unlicensed Devices Operating Under The Interference Temperature Approach, page 11.

10. Mobile users could experience operational problems stemming from this reduction in coverage. This would manifest as degraded voice and data quality, and be directly attributable to an increased environmental noise floor due to the allowance of a higher Interference Temperature Limit. These operational problems would adversely affect Public Safety first responders and Homeland Security efforts. Similar concerns appear in filings by NEXTEL⁴ and the Telecommunications Industry Association (TIA)⁵. We concur with their assertions.
11. The need for interference-limited designs for future systems would impose prohibitive financial burdens on governmental entities at every level. We concur with the comments of TIA that dealing with problems associated with interference limited design could come at a high cost to the public⁶. Designing a radio system to function in an interference limited environment requires the construction of more tower structures than would otherwise be necessary in a noise limited case. With ever increasing the social and political pressures being brought to bear on environmental regulations and zoning ordinances associated with tower construction, requiring a three or more times increase in the number of towers required to maintain ubiquitous system coverage becomes very onerous and fiscally imprudent. This has a direct adverse impact upon Public Safety's ability to serve the public.

V. THE INTERFERENCE TEMPERATURE METRIC THREATENS FIXED MICROWAVE SERVICES UTILIZED BY OUR NATION'S PUBLIC SAFETY AND CRITICAL INFRASTRUCTURE

12. Public Safety and critical infrastructure systems utilize fixed wireless infrastructure. This includes wireless and wireline telecommunications, and electric and pipeline utilities. These

⁴ NEXTEL Comments filed April 5, 2004, Conclusions, page 8-9.

⁵ Telecommunications Industry Association (TCIA), Comments filed on April 5, 2004, Section II, pages 4-5.

⁶ Ibid.

services utilize fixed 6 and 10 GHz microwave. Presently, these microwave systems are designed to operate within an interference-*controlled* environment which is highly *coordinated* between users. Introduction of unlicensed devices that are inherently mobile in nature in an uncoordinated fashion could result in disastrous consequences to these critical point-to-point services.

13. Imposing the ITM in the 6 and 10 GHz fixed microwave band would result in costly re-design of existing point-to-point systems in order to maintain necessary signal fade margins, and this would produce a rippling effect where all adjacent systems would have to be redesigned to the higher radiated power levels. A number of commenters who use or provide fixed wireless services offered comments concerned with the application of ITM in the 6 and 10 GHz microwave bands⁷. We concur with their comments and urge the Commission not to deploy the ITM in these bands that our nation's Public Safety and critical infrastructure rely on for the security of this nation.

VI. ANCILARY EFFECTS OF THE INTERFERENCE TEMPERATURE ON PUBLIC SAFETY

14. Another example of fallout from the ITM was expressed in the joint comments of Maximum Service Television (MSTV) and National Association of Broadcasters (NAB) concerning possible negative effects to the Digital Television (DTV) transition⁸. The State agrees with the MSTV and NAB in their characterization of the "complex" and "daunting" transition to DTV. Public Safety is still waiting for analog TV channels to clear in the 700 MHz band. We urge the Commission not to deploy the ITM in broadcast spectrum that can adversely impact their transition from frequencies that have been allocated for use by Public Safety.

⁷ Comments filed on ET 03-237 by Xcel Energy Services, Fixed Wireless Coalition, PacificCorp, and Idaho Power and Light.

15. Another example of ancillary effects on Public Safety is the potentially grave consequences the ITM could have on Emergency 911 (E911) performance. The State agrees the comments of V-COM LLC that an increased noise floor will degrade the ability of E911 location based technologies to resolve a caller's location to FCC required accuracy levels⁹. We also concur with the danger posed by opportunistic devices sensing no signal above the interference temperature threshold, which could seriously degrade the ability to triangulate on a caller's location¹⁰. The State concurs with Qualcomm's comments regarding the effects that ITM will have on global positioning system (GPS) enabled mobile terminals¹¹. This will have a direct impact on Public Safety's ability to respond to the location of an incident when calls are placed from cellular phones. We feel these risks to the safety of the public are too great to warrant deployment of the ITM into the cellular mobile radio service bands.

VII. THE INTERFERENCE TEMPERATURE METRIC IS NOT A VIABLE APPROACH TO SPECTRUM MANAGEMENT FOR ALL BANDS

16. Comments offered by Cingular Wireless and Qualcomm have provided valuable scientific analysis into why the ITM should not be deployed in existing licensed bands. Though their studies focused on cellular service employing CDMA technologies, the conclusions are applicable. Qualcomm identified that a 1 dB increase in the noise temperature would decrease coverage by 10-15%¹². We concur with their comments and reply that similar effects could be experienced on a Public Safety radio system.

⁸ Comments of the Maximum Service Television (MSTV) and National Association of Broadcasters (NAB), filed April 5, 2004, Summary, page ii,

⁹ Comments of V-COMM LLC, filed April 5, 2004, Section B, Major Flaws of the Interference Temperature, page 30

¹⁰ Ibid.

¹¹ Comments of Qualcomm, filed April 5, 2004, Section C Effect of Interference Temperature on GPS Enabled Mobile Terminals, page 11.

¹² Qualcomm comments filed April 5, 2004, Section II, Increasing the Noise Temperature in Licensed Bands At Which CDMA Has Been or Will Likely Be Deployed Would Cause

17. The State also agrees with the comments of Sprint regarding the impact that the ITM would have on future technical innovation¹³. We agree that development of other spectrum efficient technologies such as increased receiver performance and smart antenna technologies could be undermined by the imposition of the ITM.
18. The State also agrees with the comments of Motorola on the challenges faced by the ITM. Of the three challenges they identified in their executive summary, perhaps the most important factor, which could affect mobile operations, is the inability of the unlicensed device to determine the path conditions between it and the victim receiver¹⁴. This problem is exacerbated if the opportunistic device is remotely controlled by a monitoring point that does not receive the primary user of the spectrum.

VIII. CONCLUSIONS

19. The State respectfully urges the Commission not to apply the Interference Temperature Metric to any of the bands used by Public Safety and critical infrastructure. Public Safety has very stringent operational requirements and systems must be designed under very tight budgetary constraints. Implementation of the Interference Temperature in Public Safety bands will require present systems to undergo costly modification, and subject State, local, and federal government entities to adopt interference limited designs in the future, with no guarantee that users will not be subject to interference problems. We also urge the Commission not to deploy the Interference Temperature Metric in fixed point-to-point microwave bands that are utilized by Public Safety and support our nation's critical

Substantial Harm to the Networks and to Millions of Americans Who Depend on the Network, Subsection A, Effect of Interference Temperature on CDMA Mobile Terminals, page 7.

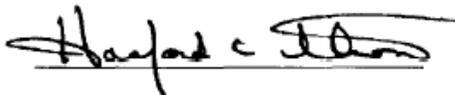
¹³ Comments of Sprint, filed April 5, 2004, Section V ONE MAJOR POLICY ISSUE THE NOI DOES NOT EVEN MENTION: THE DELETERIOUS IMPACT OF THE ITEMP PARADIGM ON FURTHER TECHNOLOGICAL INNOVATION, page 37.

¹⁴ Comments of Motorola, filed April 5, 2004, Summary, page i.

infrastructure. The State also urges the Commission to consider the ancillary effects caused by application of the Interference Temperature Metric. These range from the ability to resolve the location of an E911 call, to the adverse affect upon the DTV transition. The Commission should make every effort to not delay broadcasters from clearing the 700 MHz Public Safety spectrum needed by first responders.

20. Based upon these technological shortcomings, the State believes the ITM should only be deployed in other isolated bands allocated exclusively for this approach to spectrum management.

Respectfully Submitted,



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