

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**

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) **ET Docket No. 03-237**
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TO: The Commission

COMMENTS OF UNION TELEPHONE COMPANY

By: Shirley S. Fujimoto
Jeffrey L. Sheldon
Erika E. Olsen
McDermott, Will & Emery
600 13th Street, N.W.
Washington, D.C. 20005-3096
(202) 756-8000 (T)
(202) 756-8087 (F)

Attorneys for Union Telephone Company

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I. INTRODUCTION

Pursuant to Section 1.415 of the FCC's Rules,¹ Union Telephone Company ("Union Telephone") hereby submits its Comments to the Federal Communications Commission ("FCC" or "Commission") in the above-captioned proceeding.² Union Telephone, headquartered in Mountain View, Wyoming, has been a leader in providing communications services to residents in Wyoming, Northwestern Colorado, and parts of Utah for more than 90 years. Union Telephone provides high quality local and long distance telephone service, DSL, cable television

¹ 47 C.F.R. § 1.415.

² *In re 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, 18 FCC Rcd 25309 (Nov. 28, 2003); 69 Fed. Reg. 2863 (Jan. 21, 2004) (establishing Comment deadline as April 5, 2004, and Reply Comment Deadline as May 5, 2004) (hereinafter, because of the bifurcation of this item, paragraphs 1 to 28 will be referred to as the NOI, while paragraph 28 to the end will be referred to as the NPRM).

service and cellular telephone service. Union Telephone is a total solution provider, meeting the needs of its customers from a single source as a complete turnkey solution to their telecommunication needs.

Union Telephone began its cellular division in 1990 under the name of Union Cellular with eight cell sites. Since that time, Union Telephone's cellular operations have undergone substantial growth, and now cover over 58,000 square miles with 60-plus cell sites throughout its service territory. Union Telephone holds cellular licenses in the 800 MHz and 1.9 GHz band, as well as microwave authorizations at 2 GHz, 6 GHz, and 10-11 GHz. Its wireless operations are vital to its communications offerings, and any interference or degradation of its system may compromise Union Telephone's quality of service commitment to its customers. As a small cellular provider, the integrity and stability of its network, as well as its commitment to customer service, distinguish it from its competitors and allow Union Telephone to compete with larger cellular providers, supplying vital choice to small, often-overlooked communities.

Union Telephone utilizes 6 GHz microwave frequencies in its wireless and wireline operations, and its 6 and 11 GHz frequencies are essential to both the landline operation and its cellular operations. Particularly, because landline services are not available at most of Union Telephone's current cellular sites, microwave links are the only economical method of connecting these sites to the broader network. Moreover, because of the distance involved and environmental concerns, it would not be feasible at current prices to use either copper or fiber as a replacement for Union Telephone's microwave facilities. Unmitigated interference could easily cause Union Telephone's entire network to go down, both wireline and cellular, placing service to Union Telephone's customers in jeopardy. Because of the large geographic area served

and the small population, Union Telephone must be extremely careful with its costs in order to compete in the mobile services area.

The proposed interference temperature metric could undermine Union Telephone's efforts and jeopardize its operations. In particular, Union Telephone believes that the Commission's Notice of Proposed Rulemaking ("NPRM") addressing the immediate implementation of an interference temperature metric is inappropriate given that it is simultaneously exploring fundamental issues related to the metric in a related Notice of Inquiry ("NOI"). Moreover, there are technical and implementation issues that have not been fully addressed in the NPRM, making it difficult to comment fully on the proposal.

II. A NOTICE OF PROPOSED RULEMAKING ON INTERFERENCE TEMPERATURE IS PREMATURE

A. The NPRM is inappropriate and counterproductive in light of the related NOI

Although the interference temperature concept may have merit in addressing interference issues in certain bands, it is inappropriate and even counterproductive to implement an interference temperature metric while the concept itself, and its value as an interference management tool, are still being vetted in a related NOI. The FCC is still seeking comment on a number of *fundamental* issues that render an NPRM premature and potentially disastrous. For example, the FCC has requested input in its NOI on whether or not the interference temperature approach is even *necessary*.³ If this basic question has not been addressed, why is the FCC seeking to implement it? If its implementation is a foregone conclusion, why seek comment on it? As Commissioner Adelstein noted when this item was adopted, it is "very clear that we are exploring an entirely new concept in the interference temperature model, and it is quite

³ NOI at ¶ 8.

premature to actually discuss proposed rules when the Commission has not even engaged in a preliminary discussion on the interference temperature approach as a whole.”⁴ Union Telephone agrees.

The NOI asks broad-ranging and basic questions about the interference temperature metric and its viability as a method for interference management. It seeks to validate the underlying assumptions underpinning the Spectrum Policy Task Force’s recommendations on the subject, and to evaluate whether a theory can translate into reality given the existing spectrum environment. Union Telephone submits that this analysis must necessarily precede any implementation of an interference temperature metric, or else the Commission risks a failed experiment at the expense of the incumbent operators in the 6 and 12 GHz bands. Moreover, to plunge into untested waters in this manner is arbitrary and capricious at best.

In response to the Spectrum Policy Task Force’s proposal that the FCC should develop and adopt an interference temperature limit to cap interference in particular bands, several parties responded that such a proposal is impractical and possibly dangerous. AT&T Wireless noted that there is “no basis to conclude that this approach is practical, technically feasible in any meaningful timeframe, or enforceable.”⁵ Motorola also argued that “imposing a fixed interference temperature cap...would not be the best means of managing interference.”⁶

⁴ Separate Statement of Commissioner Jonathan S. Adelstein Approving in Part, Concurring in Part, *In re 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, Notice of Inquiry and Notice of Proposed Rulemaking, FCC 03-289 (rel. Nov. 28, 2003).

⁵ Comments of AT&T Wireless, *In re Commission Seeks Public Comment on Spectrum Policy Task Force Report*, ET Docket No. 02-135, at 12 (filed Jan. 27, 2003) (“SPTF Proceeding”).

⁶ Comments of Motorola, SPTF Proceeding, at A-1 (filed Jan. 27, 2003).

Motorola further noted that the approach “presents many difficult technical problems”⁷ and that the concept is “fraught with difficulty.”⁸ Furthermore, the “fundamental task of determining and controlling the influence of a transmitter’s emissions upon a remotely located receiver is an enormously complex problem.”⁹ Motorola’s comments went on to identify a substantial number of technical hurdles that must be overcome “before the potential benefits of the interference temperature concept can be realized.”¹⁰ Motorola concluded that further analysis and study of the concept is necessary, and that the interference temperature metric “is a long way from being ready for routine deployment in the real world as a reliable spectrum tool.”¹¹ The National Telecommunications and Information Administration (“NTIA”) agreed, stating that “NTIA believes that more study is necessary to ascertain what might be the ‘correct’ tool for quantitatively controlling interference between mobile and unlicensed transmitting devices and existing telecommunication facilities.”¹²

The NOI portion of this proceeding is precisely the type of analysis that should be undertaken with respect to what the FCC describes as a “fundamental paradigm shift in the Commission’s approach to spectrum management...”¹³ The NOI requests “comment, information, and research” on the proposal, clearly illustrating that the concept remains in its infancy. Other basic questions posed by the NOI include how to determine an interference

⁷ *Id.* at iv.

⁸ *Id.* at 14.

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.* at v.

¹² Letter from NTIA to John Muletta, *In re Commission Seeks Public Comment on Spectrum Policy Task Force Report*, ET Docket No. 02-135, at 4 (June 25, 2003) (NTIA SPTF Letter).

¹³ NOI at 1.

temperature limit in a given band, how to assess cumulative noise and the interference environment, standard methodologies for making assessments to support the setting of these limits and the process for transitioning to this metric from the current interference management standards. The FCC also poses fundamental questions relating to how the interference temperature concept will change the legal framework, regulatory process and enforcement of rules designed to prevent harmful interference, what parties should be involved in setting the interference temperature for a particular band, who must shoulder the burden of monitoring, and how to determine which devices and the priority of devices for resolving a situation where the interference temperature has been exceeded. Union Telephone respectfully submits that the answers to these questions are essential to the implementation of an interference temperature metric, and must, at the very least, be discussed in a public forum such as the NOI prior to the issuance of an NPRM which could set a precedent for other bands.

B. The Interference Temperature Concept Is Incomplete; The NOI Should Be Concluded Prior To Implementation In Any Band

The FCC has recognized that measuring and monitoring the noise floor is “a substantial, time consuming, and ...resource intensive undertaking.”¹⁴ Commenters in the FCC’s Spectrum Policy Task Force proceeding agreed, estimating that it may take a number of years to even measure the noise floor before proceeding to implement an interference temperature limit. Moreover, the FCC also appears to concede that it will take time for manufacturers to develop the technology necessary for implementation. As the NTIA has also argued, “the concepts embodied in calculating aggregate interference levels in real time and making individual transmitter adjustments to manage this aggregate level appears to be quite original but as of yet

¹⁴ NOI at 26.

untested. The ‘certainty’ of interference-free operation proposed by the Commission through use of interference temperature appears quite dependent upon this new untested concept.”¹⁵

An NOI, not an NPRM, is the ideal opportunity to explore these issues and to gauge their value to spectrum management, as well as to evaluate the cost mechanisms that would be entailed in this undertaking. The NOI must run its course before an informed discussion can be had with respect to implementation; to do otherwise is certainly putting the cart before the horse in a situation in which the FCC can scarce afford to be wrong. As NTIA has noted,” imposing requirements on incumbent systems to adopt new temperature sensory and control mechanisms would be challenging in general and would have to be fully analyzed as to mission and economic impact...”¹⁶ It is inappropriate to impose these costs and burdens on incumbent licensees for speculative gain when the FCC is still seeking to determine the interference temperature concept’s merit and technical/practical feasibility.

III. 6 GHZ SHOULD NOT BE USED AS “TEST BEDS” FOR THE INTERFERENCE TEMPERATURE METRIC

Despite the fundamental issues that remain unaddressed by the Commission, the FCC nonetheless determined that an “experiment” in interference management using the interference temperature metric would be appropriate in the 6 and 12 GHz bands. Union Telephone disagrees for several reasons. First, as discussed above, implementation of any type of test bed is inappropriate in light of the outstanding questions that require resolution prior to any implementation. Second, as discussed below, the FCC’s assumptions about the nature of

¹⁵ NTIA SPTF Letter at 5.

¹⁶ NTIA SPTF Letter at 4-5. Although made with respect to the concept’s impact on government operations, the same is equally true for non-government operations.

operations at 6 GHz fail to take into account the nature of the licensees in the band, which is a necessary component to any analysis.

Lockheed Martin, among others, has argued that “the adoption of the interference temperature model will degrade the performance of currently deployed systems and may in fact make future systems more costly, or inhibit the deployment of new technologies by incumbent services in those bands subject to an interference temperature.”¹⁷ NTIA has agreed, stating that if the interference temperature is set higher than existing noise levels, this could have a significant impact on incumbents.¹⁸ NTIA noted further that the cap on interference temperature suggested by the Commission appears to be significantly higher than the current values commonly used as the long-term interference protection criteria in many Commission rulemaking proceedings, NTIA studies, and ITU-R Recommendations. This would require most systems to be based on interference-limited, rather than the current noise-limited, design. The NTIA has further noted that while this approach may offer improved spectrum efficiency for new services in cleared spectrum, mandating this requirement for incumbent radio services may prove very difficult, and may restrict the development of more sensitive receiver technologies.¹⁹

Sprint, while supporting the use of an interference temperature as a potential management tool, objected to a metric that would render deployed systems vulnerable. It argued that the interference temperature metric diminishes the rights of license holders who have paid a substantial amount of money to the federal government for spectrum rights, and that the

¹⁷ Lockheed Martin Comments, SPTF Proceeding, at 8 (Jan. 27, 2004).

¹⁸ NTIA SPTF Letter at 4.

¹⁹ NTIA SPTF Letter at 5.

interference temperature concept actually limits flexibility of incumbent licensees.²⁰ Sprint explains that the interference temperature concept will essentially impose receiver standards on existing licensees, requiring them to operate above the “temperature” established by the Commission in order to retain their interference rights. In some instances, the temperature may be set above that which current signal levels would reach, rendering some locations vulnerable. This would require an incumbent to: (1) accept interference that it was not required previously to accept; (2) upgrade receivers; or (3) build additional transmitter sites.

These consequences are particularly difficult when addressing fixed point-to-point microwave systems such as those operations present in the 6 GHz band. Because these services are not licensed on a geographic basis, it is not a simple matter of deploying an additional site to increase signal strength. Moreover, because of the type of traffic carried on these microwave links, where signals are degraded due to interference the consequences may reach much further. As noted above, Union Telephone’s 6 and 11 GHz frequencies are essential to both its landline operation and its cellular operation. Unmitigated interference could easily jeopardize the entire network, including wireline and cellular service.

These consequences are particularly inappropriate to impose upon small carriers such as Union Telephone. Union Telephone has worked diligently to bring the benefits of communications competition to its largely rural customer base. Union Telephone has sought to distinguish itself by providing high caliber customer service on a well-maintained local network. Even a slight miscalculation in the interference temperature employed, in the 6 GHz band or elsewhere, may have a profound impact on Union Telephone’s resource deployment and its

²⁰ Sprint Comments, SPTF Proceeding, at 10-11 (Jan. 27, 2003) (comparing underlay operations under the interference temperature model to underlay operations permitted by the FCC’s ultra wideband rules).

ability to compete with other regional and national communications companies. If the FCC moves forward with implementation, it should be done cautiously and after a *full* evaluation of the economic and social ramification for small communications providers.

IV. CONCLUSION

For the foregoing reasons, Union Telephone respectfully requests the Commission consider these comments and proceed in a manner consistent with the views expressed herein.

Respectfully submitted:

UNION TELEPHONE COMPANY

By: /s/ Shirley S. Fujimoto _____

Shirley S. Fujimoto
Jeffrey L. Sheldon
Erika E. Olsen
McDermott, Will & Emery
600 13th Street, N.W.
Washington, D.C. 20005-3096
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