

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

In the Matter of	)	
	)	
Establishment of an Interference Temperature	)	ET Docket No. 03-237
Metric to Quantify and Manage Interference )		
And to Expand Available Unlicensed	)	
Operations in Certain Fixed, Mobile and	)	
Satellite Frequency Bands	)	

**REPLY COMMENTS OF THE  
UNITED TELECOM COUNCIL**

The United Telecom Council (“UTC”) hereby submits its reply comments on the *Notice of Inquiry and Notice of Proposed Rulemaking* in the above-captioned proceeding.<sup>1</sup> The overwhelming comments in opposition to the NOI and NPRM confirm that interference temperature is not technically or economically viable and certainly should not be tested in the 6525-6700 MHz band, or other bands that are used for critical infrastructure communication systems that would be vulnerable to interference from unlicensed underlays.

**II. NOTICE OF INQUIRY**

**A. There is Widespread Opposition to Interference Temperature**

Practically all the comments oppose the concept of interference temperature. Even the Wi-Fi Alliance, which would presumably benefit from unlicensed underlays,

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<sup>1</sup> 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, 18 FCC Rcd. 25,309 (2003) (“NOI” or “NPRM”).

stated that the metric “will not be broadly practical and applicable,” and it suggests that the FCC pursue other ways of improving spectrum efficiency and increasing access.<sup>2</sup> Similarly, the IEEE 802 committee opposes interference temperature in favor of power spectrum density (PSD) and does not support unlicensed underlays in bands that are currently used.<sup>3</sup> Neither does it support requiring licensed systems to monitor interference temperature, nor would it support creating a grid to monitor stations for interference temperature measurement and control.<sup>4</sup> Given that unlicensed interests oppose interference temperature as a spectrum management metric, the FCC should abandon it in the inquiry stage.

Meanwhile, licensed interests universally oppose interference temperature. In addition to UTC, many utilities have filed individual comments in opposition.<sup>5</sup> All the major cellular carriers and CTIA have filed individual comments that oppose it, citing studies that show it would cause interference with their operations.<sup>6</sup> In addition, many

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<sup>2</sup> Comments of the Wi-Fi Alliance in ET Docket No. 03-237 at 2 (filed Apr. 5, 2004).

<sup>3</sup> Comments of the IEEE 802 in ET Docket No. 03-237 at 3-4 (filed Apr. 5, 2004).

<sup>4</sup> *Id.* at 5-6.

<sup>5</sup> Comments of Xcel Energy Services, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Idaho Power Corp. in ET Docket No. 03-237 (filed Apr. 5, 2004) and Comments of Pacificorp in ET Docket No. 03-237 (filed Apr. 5, 2004).

<sup>6</sup> See e.g. Comments of AT&T Wireless Services, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Cingular Wireless LLC and BellSouth Corporation in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Nextel Communications, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Sprint Corporation in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of V-Com in ET Docket No. 03-237 (filed Apr. 5, 2004); and Comments of Verizon Wireless in ET Docket No. 03-237 (filed Apr. 5, 2004). See also Comments of Cellular Telecommunications Industry Association in ET Docket No. 03-237 (filed Apr. 5, 2004).

manufacturers and TIA oppose it.<sup>7</sup> Frequency coordinators object to its implementation.<sup>8</sup> Finally, broadcasters, amateurs and astronomers object as well.<sup>9</sup>

Only one comment has been filed in support of interference temperature, but even it opposes testing interference temperature in the 6 GHz band.<sup>10</sup> Shared Spectrum Company states that it is a newly formed company developing adaptive methods to control transmitter power. It believes there are inherent problems with what it calls the “closed loop architecture” the FCC envisions for monitoring, and suggests an open loop architecture, but even it concedes its model is based on estimates (i.e. assumptions). Moreover, it is another theory without any real-world testing to support it, and Shared Spectrum Company concedes that more noise studies are necessary to implement it.

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<sup>7</sup> See e.g. Comments of Delphi Corporation, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Ericsson, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Lucent Technologies, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Motorola, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Nokia, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004); and Comments of Qualcomm, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004). See also Comments of the Telecommunications Industry Association in ET Docket No. 03-237 (filed Apr. 5, 2004); *But see* Comments of Agilent Technologies, Inc. at 4-5 (filed Apr. 5, 2004)(questioning whether interference temperature is viable, but suggesting a way that it could be explored as a concept, but not tested in the bands used for fixed services).

<sup>8</sup> See e.g. Comments of Comsearch, Inc. in ET Docket No. 03-237 (filed Apr. 5, 2004) and Comments of Society of Broadcast Engineers in ET Docket No. 03-237 (filed Apr. 5, 2004).

<sup>9</sup> See e.g. Comments of the ARRL, the National Association for Amateur Radio in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of NAB and MSTV in ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of the National Radio Astronomy Observatory in ET Docket No. 03-237 (filed Apr. 5, 2004); and Comments of the National Academy of Sciences' Committee on Radio Frequencies in ET Docket No. 03-237 (filed Apr. 5, 2004).

<sup>10</sup> Comments of Shared Spectrum Company in ET Docket No. 03-237 at 1, 18 (filed Apr. 5, 2004)(reporting disadvantages to testing in the 6 GHz band). See also Reply Comments of Shared Spectrum Company in ET Docket No. 03-237 (filed May 3, 2004) (only contradicting claims of interference to CDMA operations, not microwave 6 GHz operations).

All of the comments (pro and con) recognize that this would be an expensive proposition that no one is willing to fund.<sup>11</sup> Most also recognize that monitoring would require coordination between devices that is not technically feasible at the present time.<sup>12</sup> Finally, many question the FCC's assessments of the impact of an interference temperature metric on noise-limited receivers.<sup>13</sup> Clearly, there are grave doubts, if not loud opposition, from all parties in this proceeding, and the FCC should not move forward with interference temperature unless and until this becomes more than just a novel concept. As such, UTC reiterates its opposition to the NOI and echoes the overwhelming opposition to it on the record.

### **III. NOTICE OF PROPOSED RULE MAKING**

#### **A. The FCC Should Not Test the Interference Temperature Concept in the 6 GHz Band, Which is Heavily Used for Critical Infrastructure Communications.**

In addition to its opposition to the interference temperature concept, UTC reiterates its opposition to testing the concept in the 6525-6700 MHz band. UTC echoes the comments of utilities, all of which express grave concerns about the impact that the concept could have on system reliability and safety. Pacificorp states that “a *single* unlicensed device, operating at the + 30 dBm power levels, as suggested in the NPRM, would be sufficient to reduce the fade margin of a typical 6 GHz microwave system, using a parabolic antenna, by over 30 dB if the unlicensed device is present within a

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<sup>11</sup> See e.g. Comments of the Wireless Communications Association, International in ET Docket No. 03-237 (filed Apr. 5, 2004).

<sup>12</sup> See e.g. Comments of Luxor Wireless in ET Docket No. 03-237 at 10 (filed Apr. 5, 2004).

<sup>13</sup> See e.g. Comments of Comsearch at 4-8.

distance of 24 kilometers of the boresight of the microwave receive antenna.”<sup>14</sup> This conclusion is reinforced by the Fixed Wireless Communications Coalition, which studied the potential interference impact on actual links in the area of Phoenix, AZ. The FWCC found not only that the fade margin would be reduced by more than 30 dB by a single one-watt unlicensed device at a distance of 24 km, but that “multiple devices in the area would make the problem worse,” resulting in a composite power level of 10 dB above that of a single device.<sup>15</sup>

Xcel Energy and Idaho Power express serious concerns about the impact that the interference temperature concept could have on critical infrastructure systems in the 6 GHz band. Xcel emphasizes that it uses the 6 GHz band to support “vital utility functions” and that the “proposed interference temperature model creates substantial uncertainty regarding the protections against harmful interference, and would degrade the performance of currently deployed systems.”<sup>16</sup> Idaho Power adds that, “if unlicensed users are allowed to emit on frequency, in line and in proximity to, receivers of licensed 6 GHz power utility users . . . this could jeopardize the integrity and stability of the Power grid.”

These concerns are shared by many other utilities, including Lower Colorado River Authority, which reported to UTC that its 6 GHz microwave system covers 30,000 square miles in central Texas, providing backhaul for voice and data; inter-utility communications to administer the state’s power grid; and circuits for protective relaying

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<sup>14</sup> Comments of Pacificorp at 10 (emphasis in original). See also Comments of Idaho Power Company at 2 (concurring generally with the comments of Pacificorp).

<sup>15</sup> Comments of the Fixed Wireless Communications Coalition at 15-17.

<sup>16</sup> Comments of Xcel Energy Services at 8.

and SCADA systems for generation and transmission infrastructure, as well as Hydromet systems that monitor rain fall amounts, river levels and lake levels and are used for flood warning, managing flood gates and minimizing risk for those who live along the Colorado River. The microwave systems also support communications for enterprise applications that cannot afford interruption. Some of these systems are engineered to as little as eight milliseconds maximum delay specifications. As such, these systems are constantly active and must maintain extremely high standards for reliability in order to prevent faults that could have devastating effects on public safety.

UTC submits that the FCC should not adopt its proposal to test the interference temperature concept in the 6 GHz band, owing to the critical nature of the communications provided and the sensitivity of those systems that all the parties on the record recognize. As UTC noted in its comments, the proposal is also inequitable to utilities that just moved to the 6 GHz band from the 2 GHz band to make way for PCS and MSS. Particularly after the Northeast Blackout, the FCC needs to be conscious of the importance of electric service reliability and the potential impact that this proposal would have on critical infrastructure systems in the band. Therefore, UTC respectfully requests that the FCC refrain from any testing of the interference temperature metric, at least until the NOI is completed, and it opposes any testing in the 6 GHz band at all.

#### **IV. CONCLUSION**

Although UTC recognizes the need to explore new spectrum management mechanisms, it does not believe that the interference temperature concept is necessary or appropriate at this time, and it certainly should not be tested in any band, let alone the 6

GHz band, which is used for critical infrastructure communications. UTC looks forward to working with the Commission on this important initiative.

Respectfully submitted,

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