

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 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 THE
CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION**

The Cellular Telecommunications & Internet Association (“CTIA”)¹ respectfully submits this reply to comments on the Notice of Inquiry and Notice of Proposed Rulemaking (hereinafter “NOI”) in the above-referenced proceeding.² CTIA strongly urges the Commission not to move forward with practical implementation of the Interference Temperature (“ITemp”) concept in the Commercial Mobile Radio Service (“CMRS”) bands. The Commission instead should continue fostering secondary markets in CMRS bands, which will maximize consumer welfare and economic efficiency. CTIA’s position is consistent with the overwhelming majority of commenters in this proceeding, including large and small CMRS carriers,³ CMRS and Part 15

¹ CTIA is the international organization of the wireless communications industry for both wireless carriers and manufacturers. CTIA membership covers all Commercial Mobile Radio Service (“CMRS”) providers and manufacturers, including cellular, broadband PCS, ESMR, as well as providers and manufacturers of wireless data services and products.

² See *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 25309 (2003) (“NOI”).

³ See Comments of AT&T Wireless Services, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004) (“AWS Comments”); Comments of Cingular Wireless LLC and BellSouth Corp., ET Docket No. 03-237 (filed Apr. 5, 2004) (“Cingular/BellSouth Comments”); Comments of Nextel Comm., Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Union Tel. Co., ET Docket No. 03-237 (filed Apr. 5, 2004) (“Nextel Comments”); Comments of

equipment manufacturers,⁴ fixed wireless interests,⁵ satellite providers,⁶ utilities and private radio interests,⁷ broadcasters,⁸ and others.⁹ Indeed, only three commenters express support for an ITemp-based approach to spectrum use, and each of those commenters concede that there are shortcomings with the approach described in the NOI.¹⁰

The record demonstrates that CTIA's opposition to the implementation of ITemp systems in CMRS bands is well founded. As Verizon points out, the Commission's ITemp proposal is "completely divorced from engineering reality."¹¹ According to Sprint, the technical and

Sprint Corporation, ET Docket No. 03-237 (filed Apr. 5, 2004) ("Sprint Comments"); Comments of Verizon Wireless, ET Docket No. 03-237 (filed Apr. 5, 2004) ("Verizon Comments"). *See also* Comments of V-Comm, L.L.C., ET Docket No. 03-237 (filed Apr. 5, 2004) ("V-Comm Comments"); Comments of Thomas Hazlett and Matthew Spitzer ("Hazlett and Spitzer Comments"), ET Docket No. 03-237 (filed Apr. 5, 2004).

⁴ *See* Comments of Ericsson Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Lucent Technologies, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Motorola, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Nokia, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Proxim Corp., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Qualcomm Inc., ET Docket No. 03-237 (filed Apr. 5, 2004). *See also* Comments of the Telecommunications Industry Ass'n, ET Docket No. 03-237 (filed Apr. 5, 2004).

⁵ *See* Comments of Comsearch, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of the Fixed Wireless Communications Coalition, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Idaho Power, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of PacifiCorp, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of the Wireless Communications Ass'n Int'l, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004).

⁶ *See* Comments of the DirecTV Group, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Joint Comments of Globalstar, L.P., ICO Global Comm., INMARSAT Ventures, Ltd, INTELSAT Global Services Corp., Lockheed Martin Corp., Loral Space & Comm. Ltd., New Skies Satellites, Northrop Grumman Space Technology, PANAMSAT Corp., and SES Americom, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of INMARSAT Ventures Ltd, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of Sirius Satellite Radio Inc. (filed Apr. 5, 2004).

⁷ *See* Comments of Excel Energy Services, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of United Telecom Council, ET Docket No. 03-237 (filed Apr. 5, 2004).

⁸ *See* Joint Comments of the Ass'n for Maximum Service Television, Inc. and the National Ass'n of Broadcasters, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of the Society of Broadcast Engineers, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004).

⁹ *See* Comments of the Nat'l Acad. of Sciences' Cmte on Radio Frequencies, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of the Nat'l Radio Astronomy Observatory, ET Docket No. 03-237 (filed Apr. 1, 2004); Comments of Delphi Corp., ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of ARRL, the Nat'l Ass'n for Amateur Radio, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of N. Leggett, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of IEEE 802, ET Docket No. 03-237 (filed Apr. 5, 2004); Comments of New York State Office for Technology Statewide Wireless Network, ET Docket No. 03-237 (filed Apr. 5, 2004).

¹⁰ *See* Comments of Agilent Technologies, Inc., ET Docket No. 03-237 (filed Apr. 5, 2004) ("Agilent Comments"); Comments of HYPRES, Inc., ET Docket No. 03-237 (filed Mar. 25, 2004) ("HYPRES Comments"); Comments of Shared Spectrum Company, ET Docket No. 03-237 (filed Apr. 5, 2004) ("Shared Spectrum Company Comments").

¹¹ *See* Verizon Comments at 6-12.

engineering challenges associated with implementing ITemp in CMRS bands are so severe that the ITemp concept is not workable. Sprint, for example, notes that the three monitoring methods (self, indirect, and direct) discussed in the NOI are not technically or economically feasible as applied to CMRS bands.¹²

The technical shortcomings with the Commission's proposal would be particularly acute in CMRS bands, where systems are now designed to operate down to (and in some cases below) the noise floor.¹³ Excess capacity for ITemp-based systems in CMRS bands simply does not exist. According to a Telcordia study referenced by Sprint, the Commission's ITemp proposal would result in a net reduction in spectrum efficiency in CDMA networks.¹⁴ Cingular and BellSouth observed that, "[b]y operating more efficiently, licensees push their technologies and their spectrum usage closer to the performance limits, which often means that the signal is more sensitive to interference or degradation than a signal in a less sophisticated system."¹⁵ V-Comm has conducted a comprehensive and detailed analysis of the noise floor for both cellular and PCS systems that statistically underscores the industry's view of spectrum use in the CMRS bands.¹⁶

As Verizon notes:

The [V-Comm] measurements show very low operating noise floor conditions. In the cellular band, for example, interference levels were measured from -127 dBm to -119 dBm, with an overall operating noise floor average of -126 dBm. For PCS, interference levels were measured from -129 dBm to -123 dBm, with an overall operating noise floor average of -128 dBm. These noise

¹² See Sprint Comments at 21-31.

¹³ See, e.g., AWS Comments at 11-13; Cingular/BellSouth Comments at 6-7; Nextel Comments at 7; Sprint Comments at 5-12; Verizon Comments at 6-9.

¹⁴ See Sprint Comments at 18-21 ("[I]t is clear that the loss in value to the licensed service is greater than [the] added value associated with the unlicensed devices.") (quoting Telcordia Report at § 5.6).

¹⁵ Cingular/BellSouth Comments at 16-17.

¹⁶ See V-Comm Comments at 3, 11-15.

floor averages are only slightly above the thermal noise floor of –129 dBm...¹⁷

Based on V-Comm’s analysis, Verizon notes that an increase of only 0.33 dB in the total cumulative system noise floor would cause “CDMA coverage [to] be reduced by as much as 32 percent in urban markets and 38 percent in rural markets,” and “[t]he cell site capacity of the CDMA system would be reduced by as much as 61 percent,” which would “entail as much as a 390 percent increase in capital and operating costs” to achieve comparable performance.¹⁸ Likewise, AT&T Wireless notes that in rural areas, a 1 dB degradation would require a 17 percent increase in cell sites, and that in an urban environment, capacity losses in a GSM system are approximately 25 percent and 40 percent for a 1 dB and 2 dB link loss, respectively.¹⁹ The extensive measurements provided by Telcordia, V-Comm, and others clearly demonstrate the fallacy of the premise in the ITemp NOI that spectrum in the CMRS bands is not efficiently and fully utilized and can tolerate additional interference.

These findings demonstrate that even under seemingly low levels of interference, the impact of the Commission’s ITemp proposal on CMRS systems would have a serious adverse impact on mobile wireless customers, who increasingly expect reliable, high-quality service on par with wireline connections.²⁰ According to Cingular and BellSouth, “increased levels of interference [due to ITemp systems] will impact not only the call quality or data throughput, but can affect the entire cell and possibly even the network as a whole through a decrease in network capacity and coverage.”²¹ Likewise, Nextel notes that “introduction of an [ITemp system]

¹⁷ Verizon Comments at 7.

¹⁸ Verizon Comments at 11-12.

¹⁹ AWS Comments at 15-20.

²⁰ See Verizon Comments at 11-12.

²¹ Cingular and BellSouth Comments at 13-14.

without adequate study and justification could be potentially disastrous for wireless customers, including those customers using E911 services.”²²

Commenters also agree with points raised by Michael Katz in a report accompanying CTIA’s comments that government-imposed underlay rights in CMRS bands such as those proposed in the NOI would perpetuate a command-and-control approach to regulation that would distort incentives for innovation and investment to the detriment of consumers.²³ As argued by Thomas Hazlett and Matthew Spitzer, a Commission-mandated transfer of spectrum access rights from licensed CMRS operators to unlicensed underlay rights would lead to a large decrease in social welfare.²⁴ In contrast, the Commission’s exclusive use model for CMRS bands creates highly efficient spectrum sharing and tangible benefits to consumers. Consistent with CTIA’s comments, several commenters therefore support promoting secondary markets policies as a vehicle for ensuring the full utilization of any small amount of unused spectrum capacity.²⁵ By providing parties with the ability to define rights vis-à-vis known technologies²⁶ and terminate rights in a predictable and meaningful manner should interference occur,²⁷ the Commission’s secondary markets model enables parties to voluntarily negotiate agreements that

²² Nextel Comments at 7.

²³ See, e.g., AWS Comments at 20-24 (noting “[t]he history of CMRS is one of continuing innovation and increasing spectral efficiency,” and that “the introduction of an [ITemp] limit could negate many of the gains the industry has made over the last several years by reducing the margin available to achieve those capacity gains”); Cingular/BellSouth Comments at 13-14 (stating that implementation of ITemp in the CMRS bands “would destroy the premises on which the current exclusive licensees obtained their licenses and on which they have based business plans involving investments of billions of dollars” and “precludes the licensee from implementing technologies that may improve efficiencies and allow reception of its licensed service at levels where effective communications may not *currently* be possible”); Nextel Comments at 4 (“CMRS carriers operate in a highly competitive market in which there is constant pressure to improve and extend service offerings to the public,” and “forced underlays of additional spectrum users creates obvious market disincentives for CMRS licensees to undertake continued innovation and investment”).

²⁴ *Id.*

²⁵ See, e.g., Nextel Comments at 3, 4; Sprint Comments at 47-48; Verizon Comments at 17-18.

²⁶ See, e.g., Comments of AT&T Wireless at 13.

²⁷ See, e.g., Joint Comments of Cingular and BellSouth at 24-26.

do not suffer the defects of untested, overly-simplistic, and overly-broad command-and-control regulations, such as the Commission's ITemp proposal, which does not even adequately define basic ITemp precepts.²⁸

Among the forty-some comments filed in this proceeding, only three commenters support the implementation of ITemp in any manner. Even those parties note that ITemp, as proposed in the NOI, suffers practical implementation issues. Shared Spectrum Company, for example, notes that “[t]he FCC’s proposed ‘Closed-Loop’ Interference Temperature architecture has significant technical obstacles, primarily the need for a vast number of monitoring sites.”²⁹ HYPRES, for its part, “recommend[s] that the Commission make clear to current participants in radio services the level of their exposure to any change in regulatory approach in order to avoid unnecessary opposition to the plans.”³⁰ Agilent also notes that “many questions remain unanswered and require further study.”³¹ CTIA believes that the muted support of even those who advocate ITemp on a theoretical basis is further evidence that the Commission should not move forward with implementation of an ITemp metric for CMRS bands at this time.

²⁸ See, e.g., Joint Comments of Cingular and BellSouth at 18-23. Comments of AT&T Wireless at 5-8, 23-25.

²⁹ Shared Spectrum Company Comments at 1.

³⁰ HYPRES Comments at 3.

³¹ Agilent Comments at 2.

Rarely is the record in an FCC proceeding so uniformly opposed to a specific technical proposal. Commenters have submitted broadly varied opposition to the ITemp concept that ranges from the purely technical to the pragmatic to the economic. Based on this record, there should be no doubt that ITemp should proceed very cautiously, if at all, and outside of certain bands, such as the CMRS bands, where implementation could have vast negative consumer impacts.

Respectfully submitted,

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I, Christine Blomquist, hereby certify that on this 5th day of May 2004, the foregoing Reply Comments of the Cellular Telecommunications & Internet Association were filed electronically on the FCC's Electronic Comment Filing System and copies were served via email to the following:

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