

**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	)	ET Docket No. 03-237
To Expand Available Unlicensed Operation in	)	
Certain Fixed, Mobile and Satellite Frequency	)	
Bands	)	

**COMMENTS OF THE  
TELECOMMUNICATIONS INDUSTRY ASSOCIATION**

The Telecommunications Industry Association (“TIA”) hereby submits comments in response to the Notice of Inquiry and Notice of Proposed Rulemaking in the above-captioned proceeding.<sup>1</sup>

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<sup>1</sup> *Notice of Inquiry and Notice of Proposed Rulemaking*, FCC 03-289 (released Nov. 28, 2003) (“NOI/NPRM”).

## I. INTRODUCTION

TIA is the leading trade association representing the communications and information technology industry, with 700 member companies that manufacture or supply the products and services used in global communications. Among their numerous lines of business, TIA member companies design, produce and deploy terrestrial and satellite wireless network and terminal equipment. As a result, TIA has substantial interest in current and future Federal Communications Commission (“FCC” or “Commission”) spectrum management decisions and activities.

In this NOI/NPRM, the Commission seeks comment on a new “interference temperature” model for quantifying and managing interference. The Commission hopes that this new approach will provide radio service licensees with greater certainty regarding the maximum permissible interference, and greater protections against harmful interference that could be present in the frequency bands in which they operate. In addition, to the extent that the interference temperature limit in a band is not reached, the Commission believes that there could be opportunities for other transmitters, whether licensed or unlicensed, to operate in the band at possibly higher power levels than are currently authorized.

TIA is pleased to assist the Commission, and its Spectrum Policy Task Force (“SPTF”), with its ongoing review of current FCC spectrum policies. TIA applauds the Commission’s desire to promote more efficient use of spectrum and to possibly create opportunities for new and additional use of radio communications by the American public. TIA has long believed that sound spectrum management is critical to the future success of the communications industry.

However, while technology advancements continue to provide improvement in spectrum usage efficiencies, technology itself must not be depended on as a panacea to replacing sound spectrum management policy. Moreover, the benefits of new technologies must be carefully weighed against consumer costs and market attractiveness of the actual equipment.

In the discussion that follows, TIA relies heavily on its previous comments<sup>2</sup> filed in response to the November 2002 SPTF Report and on its existing spectrum policy positions.

## **II. DISCUSSION**

In the NOI phase of this proceeding, the Commission is requesting comment, information, and research on a number of issues relating to the development and use of the interference temperature metric and for managing a possible transition from the current transmitter-based approach for interference management to the new interference temperature paradigm. TIA agrees with the Commission's conclusion that "the dramatic increases in the overall demand for spectrum based services, rapid technical advances in radio systems, in particular the introduction of various advanced modulation technologies, the increased use of spectrum for mobile services, and the need for increased access to the limited supply of spectrum in recent years are straining the effectiveness of the Commission's longstanding spectrum policies in dealing with some allocations and applications."<sup>3</sup> However, the concept of interference temperature, as

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<sup>2</sup> See TIA Comments in ET Docket No. 02-135 (filed July 8, 2002).

<sup>3</sup> NOI/NPRM at Para. 5.

described in the instant NOI/NPRM, currently is unproven. Spectrum management decisions based on anticipated advances in technology are dangerous, and should await the demonstrable existence of such technology at reasonable costs for widespread deployment and market acceptance.

The Commission's proposed policies are credibly based on the premise that any arrangements that promote spectrum flexibility and spectrum access must not generate interference into systems operated by a licensee. TIA believes that the long-term use of an interference measure focused on the receive environment cannot provide greater certainty of the expected interference in a given band. Because any certainty would be dependent upon the uniformity of signal levels in a given area, and the density of measured devices, it is questionable whether a single (average) measure could practically be used over a finite area to accurately describe the noise environment.

Thus, the use of interference temperature as a "cap" to permit spectrum sharing by operators who can operate below the recommended temperature is potentially problematic. First, the acceptance of an interference temperature above the noise floor necessarily subjects the licensed, victim wireless system to increased external interference. Also, actions necessary to mitigate the impacts of additional interference can require a reduction in victim system capacity and/or a reduction in cell size. Finally, determining the source of interference is problematic in the opportunistic environments described in the SPTF Report.

Importantly, the vast majority of Homeland Security (Public Safety) and related private radio systems are noise-limited, and their design is based upon the "noise temperature" measured at the time of system design. Any increase allowed in this noise

floor would affect the coverage of these critical systems and might even require re-design at high expense to the public.

The use of an interference temperature cap to effect spectrum sharing would appear to be difficult to implement. If aggregate users cause the noise in a given band to exceed the cap, who among the multiple (underlay) users would be forced to abandon the use of the spectrum?

The long-term use of interference temperature as an alternative to transmitter filtering appears questionable. For example, a carrier who chooses to eliminate transmitter filtering and use interference temperature sensing to identify useable spectrum would likely be severely limited in the spectrum in which it can properly operate.

TIA believes that new exclusive allocations for unlicensed uses should be made in unencumbered spectrum to provide maximum flexibility and possibility for innovation. In considering whether to permit spectrum to be used by devices on an unlicensed basis, technical studies must demonstrate that such uses will not interfere with licensed services in the same and adjacent bands.

The SPTF Report recommended that the Commission consider the use of receiver standards, especially voluntary standards, to further address interference, and a NOI released earlier by the Commission considers the likely costs and benefits of this potential tool for interference management.<sup>4</sup>

However, as TIA has noted in the past, equipment manufacturers who are motivated by market demands are in the best position to respond quickly to marketplace changes including the development of voluntary, industry standards and the management

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<sup>4</sup> See Interference Immunity Performance Specifications for Radio Receivers, ET Docket No. 03-65, *Notice of Inquiry* (Mar. 24, 2003).

of the noise floor as part of their system design. This has been demonstrated in the case of Commercial Mobile Radio Service ("CMRS") equipment, which incorporates stringent, industry-developed receiver performance specifications to mitigate interference and increase efficiency. Where industry already develops receiver specifications, generally it is done through internationally recognized standards bodies in order to ensure economies of scale in the global marketplace. Attempts to mandate specifications may inhibit the sharing of common solutions and create a situation where products developed and marketed in the U.S. will cost more.

Mandatory receiver standards and the imposition of an interference temperature metric will not compensate for the absence of spectrum management that potentially arises as a result of excessive "flexibility" in the Commission rules. For example, the FCC still needs to incorporate adequate frequency separation between base and mobile transmit operations for paired channel mobile operations and make discrete allocations for incompatible technologies.

TIA supports the current spectrum management approach of defining a service in terms of frequency band(s), transmitter power, the required shape of the emitted spectrum (*i.e.*, its spectral mask), limits on out-of-band and spurious emissions and guidelines on the nature of the service. This approach provides much of the information needed by manufacturers to design receivers responsive to market needs.

### III. CONCLUSION

TIA member companies design, develop and manufacture communications equipment, including systems that are subject to, and affected by, the Commission's regulatory oversight. TIA therefore has a direct and substantial interest in the spectrum management activities of the Commission and, more specifically, in the outcome of the issues addressed in this proceeding. TIA requests that the Commission take into consideration the views expressed above.

Respectfully submitted,

**Telecommunications Industry Association**

By:  \_\_\_\_\_

Bill Belt

Director, Technical Regulatory Affairs

Derek Khlopin

Director, Law and Public Policy

Grant Seiffert

Vice President, External Affairs & Global Policy

2500 Wilson Boulevard

Suite 300

Arlington, VA 22201

(703) 907-7700

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