

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

In the Matter of)	
)	
TETRA Association)	
)	ET Docket No. 09-234
Request for Waiver of Parts 90.209, 90.210)	
and 2.1043 of the Commission's Rules)	
)	
)	

COMMENTS OF MOTOROLA, INC.

Motorola, Inc. (“Motorola”) hereby submits these comments opposing the Request for Waiver of the TETRA Association (“Association”).¹ The Association’s request should be denied because it does not satisfy the requirements of a waiver request under the Federal Communications Commission’s (“Commission”) rules,² and because the Association fails to demonstrate that grant of the request will not cause harmful interference to existing Part 90 licensees in the affected bands. Because of the significant ramifications of the proposed changes and the complexity of the technical issues involved, the only appropriate way to pursue the Association’s goal of effecting a large scale modification of the Part 90 regulatory scheme would be through a rulemaking proceeding, which would allow full consideration of the requested changes and development of a detailed technical record.

¹ See Request for Waiver of Sections 90.209, 90.210 and 2.1043 by the TETRA Association, ET Docket No. 09-234 (filed Nov. 20 2009) (“Request”).

² See 47 C.F.R. § 1.925.

As the TETRA Association notes in its waiver request, Motorola is a global manufacturer and distributor of TETRA technology and systems.³ As such, the company endorses the quality of the technology and its use in appropriate environments. Nonetheless, it is inappropriate for the Commission to waive rules related to the protection of existing services and users without a thorough evaluation and understanding of the potential impact of doing so. This is particularly true in this case, where the impacted users would include public safety agencies that rely upon Part 90 mobile radio technology for mission-critical voice operations. In fact, allowing TETRA, which is most often deployed in a low-site, interference-limited cellular configuration, to operate alongside more commonly deployed, non-cellular noise-limited Land Mobile Radio (“LMR”) equipment without a full vetting of the compatibility issues and interference protection requirements, may produce the same operational environment that has necessitated the multi-billion dollar reconfiguration of the 800 MHz band.⁴ These compatibility issues are appropriately considered through the rule-making process and not through a waiver.

I. THE TETRA ASSOCIATION REQUEST FAILS TO SATISFY THE REQUIREMENTS OF A WAIVER REQUEST.

The Commission may grant a request for waiver if it is shown that either (i) “[t]he underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest;” or (ii) “[i]n view of unique or unusual factual circumstances of the instant case, application of the

³ Request at 10. Motorola is also a founding member of the TETRA Association and an active contributor to TETRA standards definition and development.

⁴ See, e.g., *Improving Public Safety Communications in the 800 MHz Band, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 14969 (2004) (*800 MHz Report and Order*); Public Safety and Homeland Security Bureau Extends 800 MHz Rebanding Negotiation Period for Wave 4 Border Area NPSPAC and Non-NPSPAC Licensees Along the U.S.-Mexico Border, *Public Notice*, WT Docket No 02-55, DA 09-2645 (rel. Dec. 31, 2009).

rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”⁵ However, as an initial matter, “[a]n applicant for waiver faces a high hurdle even at the starting gate. When an applicant seeks a waiver of a rule, it must plead with particularity the facts and circumstances which warrant such action.”⁶

Although the TETRA Association purports to satisfy the requirements of Section 1.925(b)(3)(i),⁷ in reality it demonstrates neither that the underlying purpose of the Part 90 and Part 2 rules would be frustrated by application to the instant case, nor that a grant of the requested waivers would be in the public interest. Furthermore, despite its assertions of a “demonstrable need in the United States for use of the TETRA Standard,”⁸ the Association provides no evidence of this need and fails to demonstrate any “unique or unusual factual circumstances” that would justify a waiver under Section 1.925(b)(3)(ii).⁹

A. The Waiver Request Fails the Section 1.925(b)(3)(ii) Test.

The Request fails to demonstrate that the underlying purpose of the Part 90 and Part 2 rules in question would not be served or would be frustrated by application to the instant case. In fact, the Request does not even address the purposes of Section 2.1043 of the Commission’s

⁵ See 47 C.F.R. § 1.925(b).

⁶ *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969) (quoting *Rio Grande Family Radio Fellowship, Inc. v. FCC*, 406 F.2d 664 (D.C. Cir. 1968)) (internal quotation marks omitted).

⁷ See Request at 8.

⁸ See Request at 1.

⁹ The scope of the waiver is not even clear from the face of the Request. Although the Association seeks a waiver of Sections 90.209, 90.210, and 2.1043 of the Commission’s rules in order to allow TETRA technology to be deployed in the United States, there are no specifics provided on how such technology should be defined in order to limit the waiver’s applicability. Ultimately, the blanket waiver requested is so broad that it could apply to any number of technologies or devices that do not comply with the emissions masks as codified and thus would fully undermine the intent of the rule.

rules that it seeks to waive, and thus, on this point, the request is facially deficient. With respect to the Part 90 rules, the request merely states, without explanation, that the underlying purpose of the rules would be frustrated by their application.¹⁰ Although not attempting to define the underlying purposes of Sections 90.209 and 90.210, the request asserts generically that these purposes would be served by making the benefits of TETRA technology available to mobile radio users.

All three rules that the TETRA Association seeks to waive have the purpose of creating certainty of interference free operation between licensed mobile radio systems by setting clear and uniform standards. Application of the rules here would neither frustrate nor disserve these purposes. The Part 90 rules in question ensure that systems in adjacent channels coexist with minimal or no interference by providing certain minimum levels of protection regardless of the technology platform upon which a system is based. The Part 2 rule provides similar certainty by ensuring that after certification, equipment will operate only as certified, preventing any changes in characteristics that might cause harmful interference to other equipment or unexpected incursions into spectrally or geographically adjacent operations.

The TETRA Association readily admits that TETRA does not meet the required Part 90 occupied bandwidth and emission mask restrictions.¹¹ The Association, however, characterizes the non-compliance as minor and attempts to demonstrate this in its Technical Analysis¹² through application of TIA TSB-88's Adjacent Channel Power Ratio (ACPR) concept, which it holds out as an equally effective method of looking at the potential for interference to and from

¹⁰ See Request at 8.

¹¹ Request at 3, 5.

¹² See Request, Attachment A.

other users as the existing rules. Regardless of the accuracy or inaccuracy of the Association's ACPR calculations, the Association is mistaken in applying the ratio in this fashion, as ACPR has not been approved by the Commission as an alternative to emission masks, and its use in this context does not serve the underlying purpose of the relevant rules.

The emission mask and occupied bandwidth rules serve to guarantee a minimum level of protection to all adjacent technologies—both those that currently exist and those that have yet to be licensed—in order to provide a baseline level of certainty in certification decisions. TSB-88's ACPR is not appropriate for these purposes because it is a method for determining interference at potential frequency offsets between *specific* technologies for the purpose of *specific* frequency coordination decisions. Motorola participated in the development of TSB-88 and supports the use of its methods for frequency coordination, in which the adjacent and/or offset channel technologies are evaluated and ACPR can be calculated—however ACPR cannot function as a proxy for emission masks.¹³ Although the Association's data suggests some cases in which TETRA would be a better neighbor than certain currently licensed technologies and other cases in which it would be a worse neighbor, these conclusions do not go to the purposes of the Part 90 rules in question, which are meant to provide certain baseline protections regardless of the specific technologies involved.

¹³ Although the Commission has used Adjacent Channel Power (ACP) rather than emission masks to limit transmitter emissions in some instances, *see* 47 C.F.R. § 90.543, ACP and emission masks are fundamentally the same from the standpoint that they act to limit transmitter out-of-band power to a known amount independent of receiver technology. TSB88's ACPR analysis contains specific informative operational parameters for frequency coordination purposes. It is different in that the specific transmitter and receiver technologies and frequency offset can be evaluated so that a coordinator can use the resulting ACPR in a specific coordination decision. Further, since ACP is essentially a mask, just defined and measured in a different way, adopting ACP is in effect simply changing the mask. Since the equipment in use in the UHF and 800 MHz bands has been designed under the presumption of a particular mask, exchanging one mask for another may have unforeseen consequences, such as degradation of ACPR in some cases. *See* Request, Attachment A at 7.

Furthermore, the Request offers no compelling evidence that grant of the waiver would serve the public interest, as required by Section 1.925(b)(2)(i). Although the Association attempts to provide justification for the waiver based on the increased data transfer rates of TETRA, the request itself is internally inconsistent in the data rates it claims TETRA achieves, asserting both 36 kbps¹⁴ and 28.8 kbps¹⁵ maximum packet data rates. In Motorola's professional experience as a TETRA technology manufacturer and distributor, the TETRA standard is limited to 28.8 kbps (gross) and approximately 12 kbps (net) packet data in multi-slot operation in standard modulation and bandwidth scenarios. The Association touts the benefits of higher data rates by aggregating channels and even asserts the potential for 600 kbps data transfer rates through the use of "advanced modulation schemes and wider channel bandwidths."¹⁶ However, it is unlikely, if not impossible, that licensees will be able to aggregate the necessary spectrum in the Part 90 frequency bands that are covered by the instant waiver request due to the large number of existing users occupying the spectrum.

B. The Request Does Not Satisfy The Requirements of Section 1.925(b)(3)(ii).

The TETRA Association request does not satisfy the requirements of a waiver request under Section 1.925(b)(3)(ii) because it does not demonstrate "unique or unusual factual circumstances" that justify a waiver in the instant case. The request gives no indication why, more than fifteen years after the formation of the TETRA Association, the need for TETRA technology in the United States is so pressing as to require a waiver of long-established Commission rules. In fact, both of the Part 90 rules forming the substantive basis of the waiver

¹⁴ Request at 2.

¹⁵ Request at 10.

¹⁶ Request at 3.

request were codified in their current locations after the creation of the TETRA Association and have been subsequently modified on numerous occasions since the widespread emergence of TETRA technology on the international scene.¹⁷ The request does not describe any recently arising factual circumstances that would justify a waiver now, when each time the Commission has reexamined these Part 90 rules it has neglected to modify them in such a way as to conform to the Association's desires. Furthermore, despite referring to "a demonstrable need in the United States for use of the TETRA standard,"¹⁸ the request provides no information, description, or theory about the nature of this need, by whom it is being suffered, or how existing technologies are not satisfying it. Absent any evidence of unique or unusual factual circumstances to justify a waiver, it appears that the Association's request is borne solely out of a disagreement with the substance of the rule itself, which is most appropriately addressed through a rulemaking proceeding, and not a waiver request.

¹⁷ See 60 Fed. Reg. 37,263 (July 19, 1995) (adopting Section 90.209); 67 Fed. Reg. 41,860 (June 20, 2002) (amending Section 90.209); 68 Fed. Reg. 42,314 (July 17, 2003) (same); 68 Fed. Reg. 54,769 (Sept. 18, 2003) (same); 69 Fed. Reg. 39,867 (July 1, 2004) (same); 69 Fed. Reg. 67,837 (Nov. 22, 2004) (same); 70 Fed. Reg. 21,661 (Apr. 27, 2005) (same); 70 Fed. Reg. 34,693 (June 15, 2005) (same); 72 Fed. Reg. 35,194 (June 27, 2007) (same); 73 Fed. Reg. 34,201 (June 17, 2008) (same); 60 Fed. Reg. 37,264 (July 19, 1995) (adopting Section 90.210); 61 Fed. Reg. 4,235 (Feb. 5, 1996) (amending Section 90.210); 61 Fed. Reg. 6,155 (Feb. 16, 1996) (same); 62 Fed. Reg. 41,214 (July 31, 1997) (same); 62 Fed. Reg. 52,044 (Oct. 6, 1997) (same); 64 Fed. Reg. 66,409 (Nov. 26, 1999) (same); 67 Fed. Reg. 63,288 (Oct. 11, 2002) (same); 68 Fed. Reg. 38,639 (June 30, 2003) (same); 69 Fed. Reg. 46,443 (Aug. 3, 2004) (same); 69 Fed. Reg. 67,838 (Nov. 22, 2004) (same); 70 Fed. Reg. 28,466 (May 18, 2005) (same); 70 Fed. Reg. 61,061 (Oct. 20, 2005) (same); 72 Fed. Reg. 35,195 (June 27, 2007) (same).

¹⁸ Request at 1.

II. THE TETRA ASSOCIATION REQUEST DOES NOT SUFFICIENTLY DEMONSTRATE THAT THE WAIVER WOULD NOT CAUSE HARMFUL INTERFERENCE.

Procedural defects notwithstanding, an even more significant flaw in the TETRA Association waiver request is its failure to demonstrate satisfactorily that the proposed waiver would not cause harmful interference to existing Part 90 operations, especially in light of the problematic historical precedent represented by the ongoing 800 MHz rebanding. Although this is not the place to rehash the record of WT Docket 02-55 and the preceding 800 MHz proceedings, the similarities between the instant waiver request and the one that eventually led to the need for the 800 MHz rebanding¹⁹ are too striking for the Commission not to consider them. TETRA technology is deployed as a low-site, interference-limited, cellular-style technology. This is very different than the high-site, high-power, noise-limited technologies that now dominate existing Part 90 frequency bands. As has been previously demonstrated by interference in the 800 MHz band between low-site, low-power, interference-limited deployments interwoven with high-site, high-power, noise-limited deployments, there is often more to providing interference protection than merely whether the proposed technology meets the emission mask or a specific limit on ACP or ACPR, and the instant waiver request does not properly address these challenges.

The TETRA Association has not demonstrated that TETRA will adequately protect other Part 90 services from harmful interference. In fact the waiver essentially admits the contrary, but merely states that the waiver would “pose very little risk of interference.” The Association makes no assurances that other Part 90 operations would not be harmed, instead relying upon

¹⁹ See Request of Fleet Call, Inc. For Waiver and Other Relief To Permit Creation of Enhanced Specialized Mobile Radio Systems in Six Markets, *Memorandum Opinion and Order* 6 FCC Rcd 1533 (1991).

unsupported anecdotes from foreign administrations that have deployed or studied TETRA systems. The Association discusses operations, recommendations, and analysis conducted by Spain, New Zealand, and the European Council of Postal and Telecommunications Administrations (CEPT) as evidence of TETRA's ability to co-exist well with other technologies.²⁰ In none of these cases, however, does the Association provide any details of the studies, nor does it otherwise compare the studied environments to the United States mobile radio landscape or give other justifications as to why they should be accepted as analogous. Without a full review process it is not possible to determine the relevance of this information to the situation in the U.S.

The Association does provide a technical analysis in which it purports to demonstrate compatibility with other technologies, however, as discussed above, consideration of the complex technical issues involved requires a thorough evaluation and is inappropriate for the limited context of a waiver request. Such an evaluation can only be done either in a standards body, such as TIA, that is familiar with the technical, practical and regulatory environment of the U.S., or in a rulemaking proceeding before the Commission. In this case, where it is clear that the proposed technology does not meet the basic technical requirements for deployment in the requested frequency bands, the Commission must proceed with caution and not merely provide a blanket waiver of rules intended to provide compatibility among technologies, thereby setting up the potential for interference among users, including public safety.

²⁰ Request at 9.

III. CONCLUSION.

The TETRA Association's request does not satisfy the requirements of a waiver request under the Commission's rules and also fails to demonstrate sufficiently that introduction of TETRA technologies into the LMR bands will not cause harmful interference to existing mobile radio users, including public safety agencies. Introduction of TETRA technology into the U.S. market requires a careful and complete technical evaluation, such as would be accomplished through the standards-setting process of an organization like TIA, or through a full Commission rulemaking proceeding.

Respectfully submitted,

By: /s/ Steve B. Sharkey
Steve B. Sharkey
Senior Director
Regulatory and Spectrum Policy
Motorola, Inc.
1455 Pennsylvania Ave. N.W.
Washington, DC 20004
202.371.6900

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