Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band	)	ET Docket No. 98-237 RM-9411
The 4940-4990 MHz Band Transferred from Federal Government Use	)	WT Docket No. 00-32

REPLY COMMENTS OF MOTOROLA, INC.

Motorola, Inc. ("Motorola") respectfully submits these replies to comments that were filed in response to the Commission's *Second Notice of Proposed Rule Making* in the above-captioned proceedings.[1] As further discussed below, the record does not support the FCC's proposal to pair the 3650-3700 MHz with the 4940-4990 MHz bands. Thus, Motorola continues to urge the FCC to reject that proposal and instead allocate the 4940-4990 MHz band for public safety broadband operations.

I. Background

In the *Second Notice of Proposed Rule Making*, the FCC solicited comments on its proposal to pair the 3650-3700 MHz band with the 4940-4990 MHz band. Both of these bands were part of the reallocation of spectrum from the Federal Government to private sector use as

[1] Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band, ET Docket No. 98-237, The 4940-4990 MHz Band Transferred from Federal Government Use, WT Docket No. 00-32, *First Report and Order and Second Notice of Proposed Rule Making*, FCC 00-363 (rel. Oct. 23, 2000) ("*3650 MHz Order & Second Notice*").

mandated by the Omnibus Budget Reconciliation Act of 1993.[2] Until the adoption of the subject *Second Notice of Proposed Rule Making*, however, the bands were treated distinctly in two separate proceedings. To that end, the FCC has already allocated the 3650-3700 MHz band for fixed wireless services while a proposal to allocate the 4940-4990 MHz band for fixed and mobile operations remains outstanding.[3] Despite that history, the FCC now questions whether pairing the two bands would facilitate a "broad range of new fixed and mobile services."[4]

In its response to the *Second Notice of Proposed Rule Making*, Motorola noted that the FCC had failed to acknowledge comments previously filed in WT Docket No. 00-32 urging the FCC to allocate the 4940-4990 MHz band for public safety fixed and mobile services.[5] Motorola pointed out that the 4940-4990 MHz band is of particular interest for broadband public safety operations because of its proximity to the Unlicensed National Information Infrastructure (U-NII) band at 5 GHz and that its availability would allow public safety users to leverage underlying technology research conducted for commercial broadband data rate transmissions in a wireless local area or personal area network environment.[6] Motorola also argued that pairing is not necessary from a technical perspective and that the Commission has already concluded that the 3650-3700 MHz allocation is sufficient in terms of bandwidth for its intended use.[7]

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[2] Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312 (1993) ("OBRA-93").

[3] The 4940-4990 MHz Band Transferred from Federal Government Use, WT Docket No. 00-32, *Notice of Proposed Rule Making*, 15 FCC Rcd 4778 (2000).

[4] *3650 MHz Order & Second Notice* at ¶43.

[5] Comments of Motorola, ET Docket No. 98-237, *et al.*, at 2.

[6] *Id.* at 4.

[7] *Id.* at 6, 7.

II. The Record Does Not Support Pairing the 3650-3700 MHz and 4940-4900 MHz Bands.

In addition to Motorola, eight other parties filed comments addressing the Commission's proposal. All but one of these commenters urged the FCC to not pair the two bands.

Two separate camps commented on the pairing proposal; those potentially interested in providing commercial services or equipment in these two bands and public safety representatives. From the commercial use perspective, Innowave ECI Wireless Systems, Transcomm, Adaptive Broadband Corporation, and to a lesser extent, Global Frontiers, all opposed the FCC's proposal, largely on technical grounds. Innowave ECI Wireless Systems, for example, points out a "number of technical problems" associated with pairing the 3650-3700 MHz and 4940-4990 MHz bands.[8] They note that the bands are too far apart in frequency for one antenna to cover both effectively.[9] Further, because of the frequency difference, uplink and downlink propagation will differ thus complicating the planning and deployment of systems.[10] According to Innowave ECI, pairing will result in "more complicated and costly" radios and even lessen reliability due to the need for more filtering and oscillator circuits to cover the two bands.[11] Finally, they note that the FCC's proposal is not harmonized with world-wide allocations meaning that "U.S. users could never reap the cost and efficiency benefits of common worldwide equipment designs."[12]

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[8] Comments of Innowave ECI Wireless Systems Ltd., ET Docket No. 98-237, *et al.*, at 5.

[9] *Id.*

[10] *Id.*

[11] *Id.*

[12] *Id.*

Likewise, Transcomm notes that fixed wireless access "radio hardware design tends to economically limit the overall frequency range of FDD downlinks and uplinks to within 200-300 MHz at these frequencies" and thus concludes that "there is no technical merit in coupling the two bands for FDD purposes."[13] Transcomm further notes that, at the same time, pairing the two bands "might limit the flexibility for TDD operations within each of the two bands, taking into account the additional potential interference paths in mixed TDD/FDD adjacent channel scenarios."[14] For these reasons, Transcomm urges the FCC "to not impose or imply" any technical pairing of the 3.6 and 4.9 GHz bands."[15]

Adaptive Broadband Corporation agrees with these views further noting that "no equipment is available today that is capable of duplex operations in the 3650-3700 MHz and 4.9 GHz bands and that none is likely to be available in the future in light of the substantial cost associated with such equipment."[16] They too conclude that the Commission "should not subject these frequency bands to the same technical and licensing rules and force bidders at auction to accept both frequency blocks in a particular geographic region."[17]

The only party to fully support pairing was the Advanced Telecom Group who believe that while "it is not necessary" to pair these two bands it is appropriate to do so.[18] They note that their fixed wireless service "could operate on a single 50 MHz allocation of spectrum" but argue,

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[13] Comments of Transcomm Inc., ET Docket No. 98-237, *et al.,* at 4.

[14] *Id.*

[15] *Id.*

[16] Comments of Adaptive Broadband Corporation, ET Docket No. 98-237, at 4.

[17] *Id.* at 5.

[18] Comments of Advanced Telecom Group Regarding Second Notice of Proposed Rulemaking, ET Docket No. 98-237, *et al.,* at 2.

without further clarification, that the pairing of two 50 MHz channels would permit better spectral utilization via frequency reuse and that future features "may" require the additional bandwidth.[19]

Representatives of public safety users echoed Motorola's concern that the FCC's proposal would eliminate the option of allocating the 4940-4990 MHz band for public safety use which is now before the Commission in WT Docket No. 00-32. The Major Cities Chiefs Association, APCO and the International Association of the Chiefs of Police – who collectively represent the overwhelming majority of public safety agencies – all argue that the 4.9 GHz band is well suited for the provision of high-speed data transmissions that would be useful in a variety of law enforcement activities.[20] These parties argue that there is no spectrum available to public safety for such purposes and that the Communications Act therefore compels the FCC to fully consider the needs of public safety agencies when determining the final uses of these two subject frequency bands.[21]

In short, there was near unanimous opposition to the FCC's proposal to couple or pair the 3650-3700 MHz band with the 4940-4990 MHz band. Motorola recognizes that some of the opponents of this proposal wish to use the 4940-4990 MHz band for non-public safety purposes but the fact remains that those interested in developing these bands for commercial services see little benefit from either a technical or operational perspective from pairing. Given this record,

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[19] *Id.*

[20] *See, e.g.,* Comments of APCO, ET Docket No. 98-237, *et al.,* at 2, Comments of the Major Cities Chiefs Association, ET Docket No. 98-237, *et al.,* at 2, Comments of the International Association of Chiefs of Police, ET Docket No. 98-237, *et al.,* at 2.

[21] Comments of APCO at 2, 3.

the FCC should feel compelled to dismiss its proposal and, once again, consider the use of the two bands as separate and distinct.

III. The Record Supports Allocating the 4940-4990 MHz Band to Public Safety Use.

In contrast to the rather amorphous support for fixed wireless access, allocating the 4940-4990 MHz band for public safety use is the most concrete proposal set forth in the record of these two proceedings. Motorola and other public safety interests have discussed how broad bandwidth capacity systems deployed in vehicular area networks and personal area networks will assist law enforcement officers in the field. The International Association of Chiefs of Police foresee such systems offering real-time video capabilities that will support remote controlled robotic devices for hazardous situations such as hostage or terrorist incidents, remote video surveillance and monitoring, and mobile video transmissions to on-scene command personnel in officer assistance or high risk situations.[22] APCO points out that even if unencumbered, the recently allocated 24 MHz for public safety in the 700 MHz band would not provide sufficient bandwidth for such uses.[23]

Whereas commercial interests note the lack of harmony with nearby global allocations for their proposed services,[24] public safety advocates are instead relying on an ability to "leverage our special broadband technology with the consumer broadband technology being deployed for that [5 GHz] unlicensed band."[25] However, the availability of the unlicensed 5 GHz band does not necessarily provide public safety users with an alternative spectrum option. The International

[22] Comments of the International Association of Chiefs of Police at 2.

[23] Comments of APCO, ET Docket No. 98-237 at 2.

[24] *See* Comments of Innowave ECI Wireless Systems Ltd. at 5.

[25] Comments of the Major Cities Chiefs Association at 3.

Association of Chiefs of Police point out that "[w]e cannot accept the potential of interference from other licensed or unlicensed devices operating on the same or adjacent channels, or the possibility of delay or inability to transmit due to consumer peak usage."[26] The interference problems associated with unlicensed frequency bands was recently the subject of a Wall Street Journal article concerning the similarly regulated 2.4 GHz band in which the FCC's Julius Knapp is quoted as saying "[i]f you really require high reliability, that's really not what this band was set up for."[27] Public safety users, of course, do require high reliability networks for mission critical communications and it is only a matter of time before the 5 GHz bands replicate the commercial success and interference scenarios of the 2.4 GHz band.

Public safety representatives have long identified broadband data services as a near term mission critical communications needs. There is no reason for the FCC not to consider allocating the 4940-4990 MHz for such service. There is no statutory obligation to auction this band for commercial applications, there is no broad-based commercial interest in the band, and this proposed use would harmonize nicely with nearby U-NII allocations. For these reasons, the FCC should allocate the 4940-4990 MHz band for public safety broadband uses.

IV. Conclusion

The FCC's proposal to pair the 3650-3700 MHz and 4940-4990 MHz was not supported by either commercial interests or public safety representatives. Without any technical merit to pairing, the sole remaining rationale for proceeding with this proposal is to increase the potential revenue at some future auction. Motorola believes that such an outcome would be contrary to all

[26] Comments of the International Association of Chiefs of Police at 3.

[27] *Raft of New Wireless Technologies Could Lead to Airwave Gridlock*, The Wall Street Journal, January, 8, 2001.

guiding principles and legislative authority of U.S. spectrum management. The FCC should abandon its proposal to pair these two bands and, instead, fully consider the needs of public safety users to have access to broad bandwidth data systems in the 4940-4990 MHz band.

Respectfully submitted,

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