

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of

Amendment of Part 90
of the Commission's Rules

WP Docket No. 07-100

REPLY COMMENTS OF M/A-COM, INC.

The comments in this proceeding reflect overwhelming support by public safety agencies and equipment suppliers for the proposal of M/A-COM, Inc. (“M/A-COM”)¹ to clarify the Commission’s rules to authorize operation on a primary basis of point-to-point and point-to-multipoint fixed links that are a part of a broadband public safety network operating in the 4940-4990 MHz frequencies (“4.9 GHz band”).² Therefore, M/A-COM urges the Commission to act

¹ See Amended Petition for Clarification or, in the Alternative, Petition for Rulemaking of M/A-COM, Inc. (filed July 22, 2005, amended Aug. 23, 2005) (“Amended Petition”).

² See, e.g., WT Docket No. 07-100, including Comments of the American Association of State Highway and Transportation Officials at 17 (filed Aug. 13, 2007) (“AASHTO Comments”) (supporting “the clarification of the 4.9 GHz rules allowing fixed links deployed in support of an area wide 4.9 GHz broadband system be considered as primary.”); Comments of the State of California at 5-6 (filed Aug. 13, 2007) (“State of California Comments”); Comments of The International Association of Fire Chiefs, Inc. and the International Municipal Signal Association at 9 (filed Aug. 13, 2007) (“IMSA and IAFC Comments”) (supporting “the M/A-COM, Inc. proposal to afford primary (vs. secondary) status to certain permanent fixed links.”); Comments of the Land Mobile Communications Council at 18 (filed Aug. 13, 2007) (“LMCC Comments”) (supporting “the proposition that fixed links deployed in support of an area-wide 4.9 GHz broadband system should be considered as primary.”); Comments of Motorola, Inc. at 11 (filed Aug. 13, 2007) (“Motorola Comments”) (agreeing “that the rules regarding fixed links are creating some confusion in the marketplace and would benefit from FCC clarification.”); Comments of the National Public Safety Telecommunications Council

expeditiously to adopt M/A-COM's proposal, without waiting to resolve unrelated issues posed in the broader notice of proposed rulemaking.³ Specifically, as supported by commenters, M/A-COM proposes that the Commission should revise Sections 90.1207(d) and 90.1215 of its rules to provide that licensees using the 4.9 GHz band have authority to operate on a primary basis point-to-point and point-to-multipoint fixed links that are a part of a 4.9 GHz broadband network.

First, the commenters and M/A-COM agree that fixed links are critical to the success of the 4.9 GHz broadband public safety networks that the Commission envisioned in its *Third Report and Order* in the WT Docket No. 00-32.⁴ Policy leaders, including the Chairman, have repeatedly noted the benefits of broadband applications to providing public safety in order to enhance the security of the American public.⁵ *Second*, commenters reaffirm M/A-COM's view

at 16-17 (filed Aug. 13, 2007) (“NPSTC Comments”) (supporting “a clarification in the rules for 4.9 GHz operations. . . . In the end, we feel primary status should be afforded to all functions that support and contribute to the overall development of delivering 4.9 GHz user-based service as envisioned by the implementing agency.”); Comments of the Private Radio Section of the Wireless Communications Division of the Telecommunications Industry Association at (filed Aug. 13, 2007) (“TIA Comments”); Comments of RadioSoft at 6 (filed Aug. 13, 2007) (“RadioSoft Comments”) (agreeing “with MA/COM that so long as point-to-point service in the 4.9 GHz band is fully in support of traffic in that service, it should be afforded primary designation.”); Comments of Tropos Networks at 4 (filed Aug. 13, 2007) (“Tropos Networks Comments”) (agreeing “with M/A-COM that the Commission’s rules should indicate clearly that fixed links using directional antennas, operating as part of an integrated network with hot spots and mobile links, are authorized on a primary basis.”).

³ *Amendment of Part 90 of the Commission’s Rules*, Notice of Proposed Rulemaking and Order, WP Docket No. 07-100, ¶ 19 (rel. May 14, 2007) (“Part 90 NPRM”).

⁴ *See 4.9 GHz Band Transferred from Federal Government Use*, Memorandum Opinion and Order and Third Report and Order, 18 FCC Rcd. 9152 (¶ 33) (2003) (“*Third Report and Order*”).

⁵ *See, e.g.*, Statement of Kevin J. Martin, WT Docket No. 96-86 (Dec. 20, 2006) (“[I]t is more important than ever to ensure that our rules give first responders the communications capabilities they need to protect safety of life and property of the American public.”); *see also The 700 MHz Auction: Public Safety and Competition: Hearing Before the S. Comm. On Commerce, Science & Transportation.*, 110th Cong. (June 14, 2007) (statement of Sen.

that the Commission would not threaten to exhaust available 4.9 GHz frequencies or cause any additional interference to operations in adjacent frequency bands by allowing primary use of such fixed links. *Third*, they reiterate that public safety agencies need the flexibility to use fixed links operating on a primary basis to tailor 4.9 GHz broadband public safety networks to local communication needs.

For these reasons, M/A-COM proposes that the Commission amend Section 90.1207(d) to read as follows:

- (d) A 4940-4990 MHz band license does not give the licensee authority to operate permanent fixed point-to-point stations regardless of whether or not such permanent fixed point-to-point stations are part of a 4.9 GHz broadband network. Licensees choosing to operate permanent fixed point-to-point stations must license them individually on a site-by-site basis. Permanent fixed point-to-point stations that are part of a 4.9 GHz broadband network will be licensed on a primary basis. Permanent fixed point-to-point stations that are not part of a 4.9 GHz broadband network will be licensed on a secondary basis.

The Commission can adequately clarify the situation in the 4.9 GHz public safety spectrum by adopting the Section 90.1207(d) language proposed above. With the above revision to Section 90.1207(d), revisions to Section 90.1207(c) are not necessary.

In addition, M/A-COM continues to support the Commission's proposal to amend Section 90.1215 to reflect the revised measurement procedures subsequently adopted by the Commission for devices that use digital modulation techniques and are regulated by Part 15 of the Rules.

Daniel K. Inouye, Chairman, S. Comm. On Commerce, Science & Technology) (noting "the responsibility of our regulators to meet the needs of first responders and to facilitate the development and use of cutting-edge communications technologies that will be essential to protecting the safety of current and future generations.").

I. THE MOST EFFECTIVE 4.9 GHz BROADBAND PUBLIC SAFETY NETWORKS REQUIRE FIXED LINKS

As M/A-COM outlined in its Amended Petition⁶ and as many of the comments reiterated, fixed links comprise an essential component of a successful 4.9 GHz public safety network. Primary status for fixed links strengthens the ability of public safety users and first responders to communicate among hot spots via fixed links, thereby enhancing incident-scene communication capabilities. As the Land Mobile Communications Council states, “Loss of a link could cripple the 4.9 GHz wide area system by eliminating a needed path of connectivity.”⁷ Tropos Networks adds that “[t]o confine fixed 4.9 GHz links, other than backhaul, to secondary status defeats the purposes and efficiencies for which the band was established,” and further states that “[t]o remove these crucial [fixed] access points from the protection of primary status relegates and confines the 4.9 GHz band to limited use.”⁸ The record in this proceeding leaves no doubt that fixed links are crucial to the effective operation of 4.9 GHz broadband public safety networks and the Commission must clarify its rules to make certain such links operate on a primary basis.

⁶ See Amended Petition at 5-9.

⁷ LMMC Comments at 18. See also NPSTC Comments at 16 (stating that “the links are an integral part of the 4.9 GHz system and NPSTC supports a clarification or rewording of the rules to insure consideration as primary under the rules.”); AASHTO Comments at 16 (stating that “[t]he loss of a link supporting a wide area would cause significant problems by the elimination of that connectivity path.”); IMSA and IAFC Comments at 10 (asserting that “[a]doption of [M/A-COM’s] proposal will increase the reliability of such networks and enhance the ability of public safety entities to deploy dynamic, incident scene mobile communications networks.”); TIA Comments at 2 (asserting that “[b]lanket interpretation and application of ‘secondary’ status likely means many permanent fixed applications that are integral parts of 4.9 GHz broadband public safety networks would receive little or no protection”).

⁸ Tropos Networks Comments at 4.

II. 4.9 GHz BROADBAND PUBLIC SAFETY NETWORKS THAT INCLUDE BOTH FIXED AND MOBILE LINKS WILL NOT EXHAUST AVAILABLE 4.9 GHz SPECTRUM

The commenters agree with M/A-COM that the Commission’s existing technical rules already ensure that permitting fixed operations within a 4.9 GHz network on a primary basis will not “result in severely limiting the spectral availability” in the 4.9 GHz band.⁹ Nor would adoption of M/A-COM’s proposal cause any additional interference to operations in adjacent frequency bands.

The Telecommunications Industry Association (“TIA”) and others specifically note that “[t]he Commission’s technical rules for the 4.9 GHz band already effectively limit so-called ‘traditional point-to-point’ backhaul links by limiting antenna gain and EIRP.”¹⁰ Fixed links used in 4.9 GHz broadband public safety networks present substantially lower maximum interfering power than fixed links used for traditional point-to-point microwave operations. As such, the Commission’s secondary use restriction is duplicative of existing interference protections and hinders public safety’s use of the 4.9GHz band for broadband networks.

As TIA puts it, “limiting fixed links associated with a 4.9 GHz broadband public safety network to secondary licensing status does not reflect the propagation realities” of those networks.¹¹ As TIA explains:

Because of the propagation characteristics of this band, the typical urban coverage footprint from an access point to a subscriber is on the order of a few hundred meters. To alleviate this problem, a number of innovative network technologies, often referred to as mesh-networks or multi-hop

⁹ Part 90 NPRM ¶ 22.

¹⁰ TIA Comments at 1. *See also* Tropos Networks Comments at 5 (asserting that “[e]nsuring that backhaul operations do not consume 4.9 GHz band capacity does not require eliminating the source of enormous cost and efficiency.”).

¹¹ TIA Comments at 2.

networks, have been developed that allow for messages to ‘hop’ from access-point to access-point to traverse an infrastructure grid - providing an effectively large coverage area through an interconnected grid of access points.¹²

Fixed links in 4.9 GHz networks will operate at lower power and over shorter distances than traditional point-to-point microwave operations and thus pose less potential interference. As such, limiting fixed links to secondary operation will only frustrate the deployment of such systems, without providing any needed interference protection.

Nor would adoption of M/A-COM’s proposal pose any threat of additional interference to adjacent band operations, such as radioastronomy.¹³ Nowhere has M/A-COM asked the Commission to (1) adopt increased power or antenna gain limits that would increase interference potential to radioastronomy, or (2) authorize permanent fixed links that do not comply with existing Commission power limits. To the contrary, M/A-COM has reaffirmed support for the requirement of individual site licenses for permanent fixed links in order to aid in interference management.¹⁴ Consequently, M/A-COM believes that the concerns of the radio astronomers are misplaced, and that the radio astronomers should rest assured that primary status fixed links comprising part of a 4.9 GHz broadband public safety network would impact radio astronomy no differently than operations already authorized as primary under the Commission’s rules.

¹² *Id.*

¹³ See Comments of National Academy of Sciences’ Committee on Radio Frequencies, WT Docket No. 07-100 at 1 (filed Aug. 13, 2007) (expressing “concern about the potential impact of proposed permanent fixed *microwave* operations” in the 4.9 GHz band) (emphasis added); Comments of National Radio Astronomy Observatory, WT Docket No. 07-100 at 2 (filed Aug. 13, 2007) (“NRAO Comments”) (expressing concern about the *permanent* nature of fixed links in the 4.9 GHz band).

¹⁴ The National Radio Astronomy Observatory concedes in its comments that permanent links afford an ability to coordinate, due to lead times in planning. See NRAO Comments at 3.

Fixed links are easier to manage for purposes of minimizing interference than mobile links. The Commission has already required 4.9 GHz band licensees to cooperate in the sharing of the band and to coordinate their 4.9 GHz operations on an ad hoc basis.¹⁵ Such licensees are under a continuing obligation to cooperate in the selection and use of 4.9 GHz frequencies.¹⁶ This coordination process among licensees helps to ensure that all fixed links operated on a primary basis will not interfere with other uses in the 4.9 GHz band. This existing obligation on licensees to coordinate usage in the 4.9 GHz band fully justifies the Commission clarifying that all fixed links that are part of a 4.9 GHz network are granted primary status.

III. PUBLIC SAFETY AGENCIES NEED THE FLEXIBILITY TO DEPLOY 4.9 GHz NETWORKS WITH FIXED LINKS THAT OPERATE ON A PRIMARY BASIS.

The public safety community clearly agrees with M/A-COM that flexibility to operate fixed links on a primary basis is critical for the 4.9 GHz band to provide effective incident-scene communications. The State of California, Office of Public Safety Radio Services, for example, recognizes that M/A-COM's proposal "provides for greater flexibility within the band," which "would translate into an escalation in 4.9 GHz public safety band deployments," and "would allow government agencies to more fully utilize the 4.9 GHz public safety band in deploying localized broadband systems."¹⁷ AASHTO also supports M/A-COM's proposal, precisely because it provides "the flexibility to deploy 4.9 GHz infrastructure in a way that best meets

¹⁵ See *Third Report and Order*, ¶ 42.

¹⁶ *Id.*; see also 47 C.F.R. § 90.173(b).

¹⁷ State of California Comments at 5. See also IMSA and IAFC Comments at 10 (stating that the adoption of the proposal will "enhance the ability of public safety entities to deploy dynamic, incident scene mobile communications networks."). Accord TIA Comments at 2 (warning that under the current rules, "these [fixed] access-point to access-point links may be interpreted as 'secondary' thereby making it impossible for any license to expect permanent utilization of the technologies that the Commission wanted to encourage when the rules for 4.9 GHz were initially adopted.").

local needs.”¹⁸ If restricted to operation on a secondary basis, this flexibility would be lost and the utility of the 4.9 GHz band for incident-scene broadband operations would be greatly diminished.

CONCLUSION

For the reasons stated by M/A-COM and others, the Commission should clarify—consistent with the *Third Report and Order*—that point-to-point and point-to-multipoint fixed links operating as part of a 4.9 GHz broadband public safety network have authority to operate on a primary basis.

Respectfully submitted,

M/A-COM, INC.



Dr. Gregory Henderson
Manager, Broadband Technology
M/A-COM, INC.
1011 Pawtucket Blvd.
Lowell, Massachusetts 01853

Kent D. Bressie
Patricia J. Paoletta
Damon C. Ladson*
Christopher Nierman
HARRIS, WILTSHIRE & GRANNIS LLP
1200 18th Street, N.W., Suite 1200
Washington, D.C. 20036-2516
+1 202 730 1337 tel

Counsel for M/A-COM, Inc.

* Technology Policy Advisor

11 September 2007

¹⁸ AASHTO Comments at 17.