

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of

The Development of Operational, Technical
and Spectrum Requirements for Meeting
Federal, State and Local Public Safety
Communication Requirements Through the
Year 2010

WT Docket No. 96-86

**REPLY COMMENTS OF M/A-COM, INC., ON THE
EIGHTH NOTICE OF PROPOSED RULEMAKING**

Dr. Ernest Hofmeister
Technology Fellow
Wireless Systems Business Unit
M/A-COM, INC.
221 Jefferson Ridge Parkway
Lynchburg, Virginia 24551
+1 434 455 9555 tel

Kent D. Bressie
Patricia J. Paoletta
Damon C. Ladson*
Christopher P. Nierman
HARRIS, WILTSHIRE & GRANNIS LLP
1200 18th Street, N.W., Suite 1200
Washington, D.C. 20036-2560
+1 202 730 1337 tel

Counsel for M/A-COM, Inc.

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* Technical Policy Advisor

SUMMARY

M/A-COM, Inc. (“M/A-COM”), continues to urge the Commission to implement a band plan that is not only flexible enough to accommodate varying channel sizes, technologies, and regional needs in the wideband portion of the 700 MHz public safety spectrum, but that also protects the narrowband channels from harmful interference. After reviewing the numerous comments filed in this proceeding, it is clear that M/A-COM’s proposals have established a common ground on the most significant issues. *First*, like M/A-COM, many Regional Planning Committees (“RPCs”), public safety agencies, States and localities, and private entities reject a wholesale conversion of the wideband public safety spectrum to broadband-only channels, and instead support an adaptable band plan that allows RPCs to accommodate flexible channel sizes and a variety of wideband and broadband technologies and applications tailored to meet the needs of the public safety agencies within their jurisdictions. *Second*, M/A-COM’s proposal to consolidate the narrowband channels at the upper end of the 700 MHz spectrum has support not only from various RPCs charged with implementing the band plan at a regional level, but also from members of private industry. *Third*, M/A-COM and others maintain that wideband interoperability is embryonic and thus there exists no immediate need for wideband interoperability channels or mandatory equipment standards. Thus, the Commission should adopt M/A-COM’s proposal and reject proposals that would have the Commission mandate particular technologies for broadband public safety spectrum.

TABLE OF CONTENTS

	Page
I. The Public Safety Community Favors the Type of Band Plan Flexibility Proposed by M/A-COM	3
II. RPCs and Others Agree That Consolidation of the Narrowband Channels Would Increase Interference Protection With Minimal Cost	9
III. The Record Confirms the Lack of Broad-Based Support—and the Lack of Current, Demonstrated Need—for Mandatory Wideband Interoperability Standards.....	13
Conclusion	14

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M/A-COM, Inc. (“M/A-COM”), applauds the Commission’s commitment “to taking the necessary steps to ensure public safety has access to the spectrum it needs, and that it is utilized in the most effective and efficient manner.”¹ To reach that common goal, M/A-COM continues to urge the Commission to implement a band plan that is not only flexible enough to accommodate varying channel sizes, technologies, and regional needs in the wideband portion of the 700 MHz public safety spectrum, but that also protects the narrowband channels from harmful interference.

M/A-COM is a leading technology developer and manufacturer of radio frequency, microwave, and millimeter wave semiconductors, components, and technologies serving the public safety and critical infrastructure, broadband, wireless data, aerospace, defense, and

¹ See *The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Eighth Notice of Proposed Rulemaking, 21 FCC Rcd. 3,668, 3,685 ¶ 35 (2006) (“8th NPRM”).

automotive market segments. M/A-COM has long been an industry leader in providing advanced two-way land mobile products and systems to the public safety community, including its recent introduction of cutting edge 6.25 kHz equivalent efficiency public safety solutions, already contracted for deployment at 700 MHz. M/A-COM is also a pioneer in the development of IP-based networks for private radio applications, and supplies industry-leading brands such as EDACS®, OpenSky®, NetworkFirst™, and ProVoice™. M/A-COM is part of Tyco Electronics, one of the world's leading suppliers of electronic components.

After reviewing the numerous comments filed in this proceeding, it is clear that M/A-COM's proposals have established a common ground on the most significant issues.² *First*, like M/A-COM, many Regional Planning Committees ("RPCs"), public safety agencies, States and localities, and private entities reject a wholesale conversion of the wideband public safety spectrum to broadband-only channels, and instead support an adaptable band plan that allows RPCs to accommodate flexible channel sizes and a variety of wideband and broadband technologies and applications tailored to meet the needs of the public safety agencies within their jurisdictions. *Second*, M/A-COM's proposal to consolidate the narrowband channels at the upper end of the 700 MHz spectrum³ has support not only from various RPCs charged with implementing the band plan at a regional level, but also from members of private industry. *Third*, M/A-COM and others maintain that wideband interoperability is embryonic and thus there is no immediate need for wideband interoperability channels or mandatory equipment standards. Such premature mandates would stifle innovation and public safety's ability to be responsive to local demands, to the detriment of the public they serve.

² See Comments of M/A-COM, Inc., WT Docket No. 96-86 (filed June 6, 2006) ("M/A-COM Initial Comments").

³ See M/A-COM Initial Comments at 4.

I. THE PUBLIC SAFETY COMMUNITY FAVORS THE TYPE OF BAND PLAN FLEXIBILITY PROPOSED BY M/A-COM

As the record demonstrates, the public safety community favors band plan flexibility as proposed by M/A-COM. Public safety professionals, private industry, and state and local governments all support a band plan that would allow RPCs to accommodate flexible channel sizes and a variety of wideband or broadband technologies and applications.⁴ The Association of Public-Safety Communications Officials-International, Inc. (“APCO”), for instance, supports the proposal to make the wideband channel allotments “available for broadband or wideband use on a flexible, regional basis” to “accommodate a variety of public safety requirements as well as diverse geographic and demographic considerations across the nation.”⁵ Even more importantly, public safety providers implore the Commission to allow them the flexibility “to choose wideband, broadband or a combination of both, depending on [their] specific needs within [their]

⁴ See WT Docket No. 96-86, including: Reply Comments of Region 40, 700 MHz Regional Planning Committee at 2 (filed June 23, 2006) (“Region 40 RPC Reply Comments”); Reply Comments of Region 12 (Idaho), 700 MHz Regional Planning Committee at 1–2 (filed July 5, 2006); Reply Comments of Pinellas County Emergency Communications at 2 (filed July 3, 2006) (“Pinellas County Reply Comments”); Comments of the National Public Safety Telecommunications Council at 1-2 (filed June 5, 2006); Comments of APCO at 2-3 (filed June 6, 2006) (“APCO Comments”); Comments of Dataradio, Inc., at 1-2 (filed June 6, 2006) (“Dataradio Comments”); Comments of Motorola, Inc., at 3 (filed June 6, 2006) (“Motorola Comments”); Comments of the Spectrum Coalition for Public Safety at 2 (filed June 6, 2006) (“SCPS Comments”); Comments of Region 24 700 MHz Regional Planning Committee at 1 (filed June 6, 2006) (“Region 24 RPC Comments”); Comments of Region 39 700 MHz Regional Planning Committee at 2 (filed May 26, 2006) (“Region 39 RPC Comments”); Comments of the City and County of Denver, Colorado at 1 (filed June 6, 2006); Comments of the California Highway Patrol at 1 (filed June 6, 2006); Joint Reply Comments of the International Association of Chiefs of Police, Major Cities Chiefs Association, National Sheriffs’ Association, and Major County Sheriffs Association at 3 (filed June 6, 2006) (“IACP-MCCA-NSA-MCSA Joint Comments”); Comments of the International Association of Fire Chiefs at 2 (filed June 6, 2006); Comments of the State of California Department of General Services at 1 (filed June 6, 2006); Comments of the State of Hawaii Department of Accounting and General Services at 3 (filed June 6, 2006) (“Hawaii Comments”).

⁵ APCO Comments at 2.

various jurisdictions.”⁶ As Region 24 RPC aptly put it, “Public safety should be able to accommodate broadband technologies and applications, when they deem necessary, in a time frame that meets their fiscal and operational situations.”⁷

Mandatory channel sizes and technology would severely limit equipment options and would often force public safety agencies to purchase equipment that they do not need and cannot afford.⁸ A host of variables, including “data rates and applications, jurisdictional area, costs, number of users and agencies in [a given] area, [and the need for] direct mode communications,” influence public safety equipment decisions.⁹ As such, “the choice between wideband and broadband for data communications should be left to the individual state, county and local governments who are in the best position to determine the approach that most fits their circumstances and meets their needs.”¹⁰ A flexible plan accommodates these disparate

⁶ IACP-MCCA-NSA-MCSA Joint Comments at 3.

⁷ Region 24 RPC Comments at 10. *See also* Pinellas County Reply Comments at 2 (stating that “Pinellas County is evaluating several technology solutions, both broadband and wideband, and we must continue to have the ability to choose the technologies that best fit our requirements.”); Region 40 RPC Reply Comments at 2 (“We reiterate [the comments of other Regional Planning Committees, public safety agencies and Associations], plus those of many manufacturers, calling for the Commission to allow public safety users the flexibility to choose the wideband or broadband solution that best fits their needs and budget.”).

⁸ M/A-COM continues to seek flexibility for public safety users to aggregate channel bandwidth greater than 150 kHz, based upon RPC identification of specific needs within their respective jurisdictions. *See* M/A-COM Initial Comments at 3. Several commenters have expressed a desire to aggregate channels beyond 1.25 MHz. *See, e.g.*, Comments of Region 26 700 MHz Regional Planning Committee, WT Docket No. 96-86, at 2 (filed June 6, 2006) (“Region 26 RPC Comments”); Region 39 RPC Comments at 2; Comments of Access Spectrum, L.L.C., Columbia Capital III, L.L.C., Intel Corporation, and Pegasus Communication Corporation, WT Docket No. 96-86, at 6 (filed June 6, 2006) (“Access Comments”); Comments of Pegasus Communications Corporation, WT Docket No. 96-86, at 4 (filed June 6, 2006) (“Pegasus Comments”); Dataradio Comments at 1. M/A-COM does not oppose such proposals, so long as the overall channel bandwidth flexibility M/A-COM advocates is maintained, and appropriate technical limitations are adopted.

⁹ IACP-MCCA-NSA-MCSA Joint Comments at 3.

¹⁰ SCPS Comments at 2 (emphasis omitted). *See also* Hawaii Comments at 4 (stating that “[o]versight by the RPCs will ensure an open and public discussion on how these limited resources will be allocated, used, and coordinated with adjacent regions.”).

requirements. As Region 24 RPC noted, the Commission has already recognized the benefits of a flexible band plan in the public safety context.¹¹ The flexible plan that M/A-COM and others propose is consistent with the FCC's band plan at 4.9 GHz, allowing channel aggregation tailored to regional differences.¹²

Contrary to the suggestions of Lucent and others, there is simply no need to convert the current wideband spectrum to broadband-only channels.¹³ *First*, flexible plans, as proposed by M/A-COM and others, allow for broadband technologies where the public safety agencies, through their RPCs, deem it appropriate. *Second*, as M/A-COM has already noted, public safety agencies have not identified—through formal requirements processes—any wide-area broadband applications for which they need broadband channels in this spectrum.¹⁴ *Third*, the broadband channels allocated for public safety use in the 4.9 GHz spectrum are already well-suited for the type of incident-scene data communications that public safety agencies are most likely to encounter in the near term.

Lucent and others would have the Commission reserve all 700 MHz wideband public safety spectrum to accommodate a single technology. By *mandating* a single technology, the

¹¹ See Region 24 RPC Comments at 8.

¹² *4.9 GHz Band Transferred from Government Use*, Memorandum Opinion and Order and Third Report and Order, 19 FCC Rcd. 9,152, 9,167 ¶ 39 (2003) (stating that “[t]he frequency utilization plan will consist of ten one-megahertz channels and eight five-megahertz channels that can be combined to a maximum of twenty megahertz, which provides users with maximum flexibility to employ existing technologies, while leaving the door open for the implementation of future broadband technologies in the band.”).

¹³ Comments of Lucent Technologies, Inc., WT Docket No. 96-86, *passim* (filed 6, 2006); Comments of Northrop Grumman Information Technology, Inc., WT Docket No. 96-86, at 2-8 (filed June 26, 2006) (“Northrop Grumman Comments”); Comments of Qualcomm Incorporated, WT Docket No. 96-86, at 8-9 (filed June 6, 2006) (“Qualcomm Comments”); Comments of Lockheed Martin Corporation, WT Docket No. 96-86, at 3 (filed June 6, 2006).

¹⁴ See M/A-COM Initial Comments at 8; Region 24 RPC Comments at 19.

Commission would foreclose the use of a number of wideband and broadband technologies.¹⁵ This is contrary to the Commission’s longstanding support for flexible technology choice. As the Commission has recognized, mandating a specific technology by rule would undermine competition and stifle innovation by “freezing” technologies at their current state.¹⁶ Moreover, no single technology is superior in all of the widely varying communication scenarios that public safety agencies face. Rather than rely on self-serving analyses supporting one technology over another, the Commission should be mindful of necessary technology trade-offs that must be made for desired applications and therefore maintain its policy of technology neutrality.

Unlike private-carrier operational scenarios, public safety operational scenarios generally require a uniform grade of service throughout a jurisdiction. The required service level should not vary with location (whether densely or sparsely populated). To achieve a desired service level, public safety network designers must balance *required* coverage with *desired* data rate. A successful technology for public safety applications should provide cost-effective coverage of over 95 percent of a jurisdiction’s geography,¹⁷ while maintaining an instantaneous data rate to

¹⁵ See Pinellas County Reply Comments at 2 (“We urge the Commission not to limit this segment of the band to only one technology type, as is argued in a somewhat self-serving manner by these broadband providers. Instead, we strongly agree with the Comments filed by all public safety representatives, as well as many other technology providers, that urge the Commission to ensure flexibility of solution choices in this band.”).

¹⁶ See, e.g., *Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz bands; Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introductions of New Advanced Wireless Service, including Third Generation Wireless Systems*, Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd. 13,356, 13,377 ¶ 46 (2004) (noting that “[t]his spectrum sharing plan represents a more technology neutral approach to assigning spectrum, thereby not giving a preference to a specific technology. Consequently, this sharing plan should promote more market-driven, as opposed to regulatory-driven, uses of spectrum. As discussed in prior Commission decisions, we consider technical neutrality to be an important spectrum management objective.”).

¹⁷ Public safety network procurement documents often specify the 95 percent criterion. See, e.g., SWN Functional Specifications, New York State, Statewide Wireless Network, NYS

the user that does not vary considerably throughout the coverage area. A broadband public safety network that provides streaming video of a high-speed automobile chase, for example, should maintain an undisrupted video stream even as the viewer's data rate adapts to the available coverage "level."¹⁸ A drop in data rate for streaming video applications would significantly reduce the effectiveness of a broadband video application.

Rate-adaptive technologies like EV-DO may well provide "broadband data rates" when users are in close proximity to cell sites. Without sufficient cell density, however, such technologies do not provide uniform "broadband data rates" throughout a jurisdiction, as the received data rate drops off dramatically as the user moves away from the cell-site tower. The data-rate drop-off is not easily remedied. Operators of such networks have strong incentives to minimize the number of cell sites, both to reduce costs and to reduce the potential for self-interference.¹⁹ The Commission should therefore be skeptical of unrealistic data-rate claims for rate-adaptive technologies, and consider the cost and interference constraints on efforts to improve those data rates.

Contrary to Lucent's belief, the record demonstrates that there is no pressing public safety user requirement for broadcasting real-time, broadband video over vast geographic expanses. As noted above, the Commission's recent allocation of 4.9 GHz spectrum exclusively for public safety broadband requirements is more than sufficient to satisfy the public safety community's foreseeable broadband requirements. Several public safety vendors (including M/A-COM) are poised to deploy 4.9 GHz broadband public safety networks in the immediate

Request for Proposals (RFP) No. 01-007, June 3, 2002, available at <http://www.oft.state.ny.us/SWN/SWNReqForProp.htm>.

¹⁸ Essentially, with rate-adaptive technologies, the data rate will drop as the received signal level decreases.

¹⁹ See Motorola Comments at 7-8.

future.²⁰ Further, as M/A-COM has described elsewhere, the uses for public safety broadband are likely to be most critical at an incident scene, and can be efficiently supported over 4.9 GHz.²¹

For example, at an incident scene, full-motion, real-time video could be transmitted from within a building to incident scene responders with 4.9 GHz mobile units. Simultaneously, the same transmission could travel via nearby 4.9 GHz temporary fixed network transceivers back to command and control centers where the information could be viewed by commanders, who then direct actions at the incident scene. Alternatively, public safety providers could more widely disseminate such information by transmitting to 4.9 GHz temporary fixed transceivers that could convey the information back to headquarters, which in turn could send broadband information via an Internet Protocol (“IP”) connection to other command and control centers or even transmit this information on IP-connected broadband networks in other frequency bands. Put simply, a vast spectrum-consuming 700 MHz radio link is not needed to place broadband data in the limited locations where it needs to be.

Moreover, TIA and APCO Project 25 are working to apply a broad range of technologies to public safety networks at 4.9 GHz. TIA’s TR8/ APCO’s Project 25 Interface Committee (“APIC”) is developing standards for 4.9 GHz broadband applications. Candidate technologies include IEEE 802.11 and IEEE 802.16 point-to-multipoint protocols. APIC has created the Broadband Task Group to evaluate public safety user needs against IEEE 802.11 and IEEE 802.16. In addition, proposals have been made within the WiMAX Forum to create interoperability/certification profiles for 4.9 GHz WiMAX networks. M/A-COM continues to

²⁰ See, e.g., M/A-COM Introduces VidaMAX System for Public Safety Grade Broadband Applications, Press Release (May 17, 2006), available at <http://www.macom-wireless.com/news/pressdetail.asp?id=108>.

²¹ See, e.g., Petition for Clarification or, in the Alternative, Petition for Rulemaking of M/A-COM, Inc., WT Docket No. 00-32 (filed July 22, 2005; amended Aug. 23, 2005).

believe that the 4.9 GHz band, in concert with the Commission’s regulatory framework for the band, will serve many public safety’s broadband network needs for the foreseeable future.²²

II. RPCS AND OTHERS AGREE THAT CONSOLIDATION OF THE NARROWBAND CHANNELS WOULD INCREASE INTERFERENCE PROTECTION WITH MINIMAL COST

The RPCs, several private industry representatives, and at least one State agree with M/A-COM that consolidation of the narrowband channels would increase interference protection with minimal cost.²³ Consolidating narrowband channels “reduces the number of boundaries between narrowband and broadband requiring interference protection from eight to four.”²⁴ By consolidating and relocating the narrowband channels, the Commission would also reduce interference and provide added flexibility by locating the 700 MHz narrowband channels adjacent to the 800 MHz narrowband channels and locating the 700 MHz wideband channels adjacent to commercial broadband/advanced wireless services (“AWS”) spectrum. This reconfiguration would ultimately lower equipment costs for public safety, due to the decreased requirements for interference mitigation.

Even commenters that otherwise favor an inflexible, broadband-only band plan for the wideband spectrum recognize the benefits of consolidating the narrowband channels into one contiguous block at the upper end of the 700 MHz public safety spectrum. Qualcomm, for

²² See Pinellas County Reply Comments at 2 (noting that “[c]urrently, Pinellas County is conducting tests of various broadband technologies in the 4.9 GHz public safety broadband spectrum.”).

²³ See Region 39 RPC Comments at 2 (noting that it is “particularly interested in exploring proposals that would consolidate public safety narrowband channels” to the upper end of the 700 MHz public safety spectrum); Region 26 RPC Comments at 1 (stating that “Region 26 is not opposed to proposals for reconfiguring the narrowband spectrum as currently assigned . . . [but] it is critical to consider moving narrow band frequencies now while the majority of 700 MHz plans are still being written.”); Access Comments at 13-14; Pegasus Comments at 8-10; Hawaii Comments at 2 (stating that “the overall benefit from band reconfiguration outweighs the incremental costs to the State of Hawaii of retuning newly implemented systems at this time.” (emphasis omitted)); Qualcomm Comments at 19; Northrop Grumman Comments at 4–6.

²⁴ Pegasus Comments at 5; Qualcomm Comments at 19.

example, asserts that if the Commission consolidated “all narrowband channels into one 6 MHz segment, only one guardband would be required, and a much better use of the overall allocation would be achieved.”²⁵

Moreover, as more than one commenter has stated, with a mandatory date for transitioning from analog to digital television broadcast transmissions, the “key rationale”²⁶ for splitting the narrowband channels “became moot.”²⁷ Originally, the Commission separated the narrowband channels into two bands, across two pairs of television channels, in the hopes of providing early access to public safety agencies in locations where a station operating in one pair of television channels was required to vacate before stations operating in the other television channel pair vacated. Now that all stations are required to vacate the 700 MHz by the same date, there is no such fear.

The actual costs and barriers to narrowband consolidation are minimal. *First*, although public safety agencies may have deployed a significant number of dual-band-capable 700/800 MHz radios, only a few such radios operate on 700 MHz today. With a simple software upgrade, these radios actually using 700 MHz could easily be modified to support a consolidated narrowband channel plan. Moreover, consolidation of the 700 MHz narrowband channels would affect only half of the narrowband channels in the current 700 MHz band plan. Thus, users would need the software upgrade—essentially a new channel look-up table—for only half of the existing 700 MHz narrowband channels. As Region 24 RPC noted, to the limited extent an upgrade might be necessary, it would be “a relatively simple process to reprogram radios, especially with the limited number of devices in use nationwide.”²⁸ *Second*, the Commission has

²⁵ Qualcomm Comments at 19.

²⁶ Access Comments at 16.

²⁷ Northrop Grumman Comments at 5.

²⁸ Region 24 RPC Comments at 17. *See also* Access Comments at 5-6.

only approved a handful of RPC plans for 700 MHz, and—as Region 24 RPC notes—most RPCs have yet to submit plans addressing the wideband spectrum and thus must make plan modifications in any event.²⁹ *Third*, “[m]uch of the work of coordinating these channels has already been done and will not need to be repeated,” in that “RPC’s have determined the number of channels each public safety agency will receive or the allotments in each county, and those decisions will not require revisiting.”³⁰

As for implementation in border areas, the Commission is well-versed in negotiating new or modified agreements to provide for more flexible use of the spectrum along the common borders with Canada and Mexico,³¹ and has not viewed the negotiation of such agreements as an impediment to band reconfiguration.³² In fact, the Organization of American States’ Inter-American Telecommunications Commission (“CITEL”) is already working to develop a recommendation on the use of the 698-806 MHz band in the Western Hemisphere and will surely recommend band plans for accommodating commercial and public safety use of 700 MHz

²⁹ See Region 24 RPC Comments at 15-16; Region 39 RPC Comments at 2 (stating that “[w]e understand that some have raised concerns about the cost of moving the narrowband channels. We do not expect these costs to be significant.”); 8th NPRM, 21 FCC Rcd at 3,680 ¶ 25 (stating that the Commission has approved only four RPC plans to date).

³⁰ Region 39 RPC Comments at 2.

³¹ As the Commission noted in the 8th NPRM, it has already reached an agreement with Canada that will facilitate the deployment of 700 MHz public safety services near the U.S - Canada border and is negotiating with a similar agreement with Mexico. See Arrangement G: Sharing Arrangement Between the Department of Industry of Canada and the Federal Communications Commission of the United States of America Concerning the Use of Frequency Bands 764 to 776 MHz and 794 to 806 MHz by the Land Mobile Service Along the Canada - United States Border (June 2005), available at http://www.fcc.gov/ib/sand/agree/files/can-nb/764_806.pdf.

³² See, e.g., *Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, Eighth Report and Order, Fifth Notice of Proposed Rulemaking and Order, 20 FCC Rcd. 15,866, 15,872 ¶ 10 (2005) (noting with respect to the Commission’s proposed reallocation of AWS spectrum that “we note that there may be a need to negotiate new or modified agreements to provide for more flexible use of the spectrum with Canada and Mexico along the common borders.”).

spectrum for those administrations transitioning to digital television. The CITEL process could therefore contribute greatly to efforts to harmonize 700 MHz spectrum use along U.S. borders.

Moreover, narrowband consolidation further reduces the need for wasteful, predetermined guardbands. As M/A-COM has previously advocated, the Commission should establish Power Flux Density limits and Out of Band Emissions limits to protect the narrowband channels from interference rather than waste spectrum with mandatory guardbands.³³ Moreover, echoing M/A-COM's call to use technology to obviate the need for wasteful guardbands, Pegasus similarly "proposes that interference protection for Public Safety narrowband be provided by reference to specific Power Flux Density ("PFD") and Out Of Band Emission ("OOBE") limits imposed upon abutting spectrum, rather than by use of mandated guard bands of a fixed size."³⁴ In this way, the Commission can further protect the narrowband channels, while simultaneously increasing the useable narrowband spectrum.³⁵

In its initial comments, M/A-COM advised the Commission to "guard against the type of interference to public safety operations that occurred in the 800 MHz band." As the Commission

³³ See M/A-COM Initial Comments at 5. Additionally, M/A-COM continues to urge the Commission to apply the Adjacent Channel Power Ratio methodology currently employed for interference protection for in-band transmissions in the 700 MHz narrowband channels, to also protect against interference from equipment operating in the wideband channels. M/A-COM also reiterates that it is essential that the Commission protect narrowband equipment from intermodulation ("IM") interference from broadband and/or wideband transmitters. Thus M/A-COM continues to believe it necessary for the Commission to adopt rules similar to those in 47 C.F.R. § 90.672 to ensure that broadband/wideband intermodulation products do not exceed the IM rejection performance of narrowband receivers.

³⁴ Pegasus Comments at 6. See also Region 26 RPC Comments at 1-2; Region 39 RPC Comments at 2.

³⁵ In the past, the Wireless Systems Compatibility Subcommittee of TIA's TR-8 Mobile and Personal Private Radio Standards Committee—known as the TIA TR-8.18 subcommittee—has successfully developed interference protection requirements and flexible spectrum planning/allocation guidelines endorsed by the public safety community. M/A-COM participates actively in this process, and recommends that the TIA TR-8.18 subcommittee complete the technical work for developing interference protection requirements and flexible spectrum planning guidelines for wideband and broadband data.

well knows, the interference in the 800 MHz band resulted from the use of interference-limited and noise-limited technologies in the same spectrum. M/A-COM urges the Commission to isolate the 700 MHz narrowband spectrum from the 700 MHz wideband spectrum and adopt interference mitigation rules similar to those it adopted in the 800 MHz band.³⁶ Alternatively, the Commission could adopt preemptive measures that will ban interference-limited technologies from the wideband portion of the 700 MHz public safety spectrum, thus avoiding a recreation of 800 MHz-type problems.

III. THE RECORD CONFIRMS THE LACK OF BROAD-BASED SUPPORT—AND THE LACK OF CURRENT, DEMONSTRATED NEED—FOR MANDATORY WIDEBAND INTEROPERABILITY STANDARDS

Consistent with M/A-COM's long-held position, the record in this proceeding confirms the lack of broad-based support and of current, demonstrated need, for mandatory wideband interoperability standards.³⁷ The future of data interoperability is IP networks, not mandatory equipment standards. "The need, nature, and use of narrowband interoperability channels for mission critical voice applications are well understood and accepted."³⁸ By contrast, the need for wideband and broadband data interoperability is complex and thoroughly undeveloped. Without identified needs and uses, it is premature to reserve spectrum for unknown future wideband or broadband interoperability applications. Rather, as with the wideband general use channels, the Commission should allow RPCs to plan for interoperability applications based on geographic and public safety agency need.

Moreover, even most of those commenters who would accept the retention of wideband interoperability channels agree with M/A-COM that the Commission would be unwise to

³⁶ See, e.g., 47 C.F.R. § 90.672 (titled "Unacceptable interference to non-cellular 800 MHz licensees from ESMR or Part 22 Cellular Radiotelephone Systems").

³⁷ See, e.g., Comments of M/A-COM, Inc., on the Seventh Notice of Proposed Rule Making, WT Docket No. 96-86, at 6-8 (filed May 27, 2005).

³⁸ Hawaii Comments at 3.

mandate TIA-902-capable equipment. Indeed, Hawaii states that “[m]andating a physical layer standard for 50 KHz data channels, such as Scalable Adaptive Modulation, is the least effective method to promote data interoperability because of the paucity of applications and the limitations placed on developing and using other standards.”³⁹ Region 24 RPC echoes these comments, stating that only “when public safety users identify the applications associated with subscriber-to-subscriber on-scene data transfer as necessary and beneficial, the Commission should then consider TIA-902, or any other applicable standard.”⁴⁰ Otherwise, “the additional costs associated with this additional mode will be burdensome to public safety data implementation.”⁴¹

³⁹ Hawaii Comments at 3.

⁴⁰ Region 24 RPC Comments at 19.

⁴¹ *Id.*

CONCLUSION

For the reasons stated above and in M/A-COM's initial comments, M/A-COM urges the Commission to permit greater flexibility for the public safety community, protect critical narrowband voice spectrum, and ensure timely access to much-needed spectrum as it reconfigures the 700 MHz public safety spectrum.

Respectfully submitted,

M/A-COM, INC.



Dr. Ernest Hofmeister
Technology Fellow
Wireless Systems Business Unit
M/A-COM, INC.
221 Jefferson Ridge Parkway
Lynchburg, Virginia 24551
+1 434 455 9555 tel

Kent D. Bressie
Patricia J. Paoletta
Damon Ladson*
Christopher Nierman
HARRIS, WILTSHIRE & GRANNIS LLP
1200 18th Street, N.W., Suite 1200
Washington, D.C. 20036-2560
+1 202 730 1337 tel

Counsel for M/A-COM, Inc.

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* Technology Policy Advisor