

**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 Agency Communication )  
Requirements Through the Year 2010 )

WT Docket No. 96-86

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**Opposition by M/A-COM, Inc. to the Petition for Reconsideration of the Fifth  
Report and Order filed by Motorola, Inc.**

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April 1, 2003

M/A-COM, Inc.  
P.O. Box 2000  
221 Jefferson Ridge Parkway  
Lynchburg VA  
(434) 455-6600

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## SUMMARY

In the *Fifth Report and Order* in the *Public Safety Proceeding* the Commission has finally adopted narrowband voice spectrum efficiency requirements and mandates for the new 700 MHz public safety spectrum. Motorola, Inc. has filed a timely Petition for Reconsideration asking the Commission to delete such requirements or in the alternative to significantly delay the dates such requirements are mandated.

In the *Petition* the petitioner asserts a number of general grounds and several specific reasons why the Commission should delete or delay the narrowband voice spectrum efficiency requirements adopted in the *Fifth Report and Order*. As regards the general grounds asserted the concerns with the *Petition* are as follows:

- An apparent limitation on the Commission to only accept *in toto* proposals made during the comment and reply comment phases of a Rulemaking proceeding
- Alternatively, if the Commission is not limited to accepting proposals *in toto*, the Commission has misunderstood a proposal made during the comment and reply comment phases of this particular Rulemaking, which the Commission intended to adopt *in toto*
- An apparent assertion a Rulemaking proceeding is governed by a “majority rules” standard such that the proposal favored by the most commenters must be accepted regardless of where the public interest lies
- An assertion the rules adopted in the *Fifth Report and Order* are contrary to the Commission’s policy of flexibility in spectrum management, and/or contrary to the statements made in the Commission’s Spectrum Policy Task Force Report
- A failure of the *Petition* arguments to reflect the equivalent voice spectrum efficiency mandates already applicable to some new equipment two years earlier than the dates selected by the Commission for the 700 MHz public safety spectrum in the *Fifth Report and Order*
- A failure of the *Petition* to acknowledge a Petition for Reconsideration may not be the most efficient procedural tool in light of the Commission’s expressed intent to monitor and review voice spectrally efficient equipment development, and to make appropriate adjustments if development progress is unsatisfactory

There are also concerns with the specific grounds asserted in the *Petition*.

- An allegation of extensive utilization of conventional technology that is contrary to the existence of the mandatory trunking rules applicable in the narrowband segment of 700 MHz public safety spectrum

- An allegation of a motivation towards utilization of highly efficient, highly interoperable trunked, wide-area, shared systems perceived to result from the voice spectrum efficiency rules adopted in the *Fifth Report and Order*, which clearly advances the Commission's goals of improved spectrum efficiency and improved interoperability, is somehow inappropriate
- An allegation the requirement for multi-mode equipment is an unnecessary cost impact to the public safety community, when the cost of equipment for the new 700 MHz public safety band is driven by the requirement for digital modulation, not a requirement for multi-mode equipment

Neither the general grounds nor the specific grounds asserted are sufficient for the Commission to act favorably towards the *Petition's* requests for rules changes.

The actions taken by the Commission in the *Fifth Report and Order* were and are entirely appropriate and consistent with the requirements and policies of the Administrative Procedures Act (5 U.S.C. Part 1, Chapter 5, hereinafter referred to as the APA), and the Commission's rules (47 C.F.R. Parts 1 & 2). Most importantly the rules and rules changes adopted by the Commission in the *Fifth Report and Order* are "in the public interest."

M/A-COM, therefore, respectfully suggests the Commission can properly reject the *Petition* in its entirety.

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To the Commission:

**INTRODUCTION**

M/A-COM, Inc. (“M/A-COM”), pursuant to Section 1.429 of the Commission’s rules<sup>1</sup> respectfully submits this Opposition to the Petition for Reconsideration of the Commission’s *Fifth Report and Order*<sup>2</sup> in the above-captioned proceeding, filed by Motorola, Inc.<sup>3</sup>

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<sup>1</sup> 47 C.F.R. §1.429.

<sup>2</sup> The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year Through the Year 2010, WT Docket No. 96-86, Fifth Report and Order, 17 FCC Rcd 14999 (2002), adopted July 16, 2002; released August 2, 2002 (“*Fifth Report and Order*”).

<sup>3</sup> Petition for Reconsideration, filed in WT Docket No. 96-86, by Motorola, Inc., January 13, 2003. (“*Petition*”)

In the *Petition*, Motorola seeks reconsideration of two aspects of the *Fifth Report and Order*. First, Motorola asks the Commission to eliminate the language of Section 90.203(n)<sup>4</sup> adopted in the *Fifth Report and Order* limiting the marketing, manufacture and importation of transmitters designed to operate on the narrowband General Use<sup>5</sup> and State License<sup>6</sup> channels that do not provide at least one voice path per 6.25 kHz of occupied bandwidth. In effect the *Petition* requests the Commission to allow the unrestricted marketing, manufacture and importation of exclusively 12.5 kHz equipment<sup>7</sup> until December 31, 2016. The *Petition* requests, in the alternative, that should the Commission refuse to eliminate Section 90.203(n), the December 31, 2006 dates included in Section 90.203(n) as adopted by the *Fifth Report and Order* be changed to December 31, 2011 in all instances in Section 90.203(n).

Second, the *Petition* appears<sup>8</sup> to ask the Commission to delete the sentence “Voice operations on these channels are subject to compliance with the spectrum usage efficiency requirements set forth in §90.535(d).” from Sections 90.531(b)(5)<sup>9</sup> and 90.531(b)(6)<sup>10</sup> as adopted by the *Fifth Report and Order*; and to change the wording of Section 90.535(d) as adopted by the *Fifth Report and Order* to ostensibly read, “After December 31, 2016, licensees may only operate in voice mode on the narrowband General Use channels designated in §90.531(b)(6) and the State License channels designated in §90.531(b)(5) at a voice efficiency of at least one voice path per 6.25 kHz of occupied bandwidth.” Alternatively, if the Commission refuses to adopt the requested change to the language of Section 90.535(d), the *Petition* requests that the December 31, 2006 date in Sections 90.535(d)(1)<sup>11</sup> and 90.535(d)(2)<sup>12</sup>

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<sup>4</sup> 47 C.F.R. §90.203(n)

<sup>5</sup> 47 C.F.R. §90.531(b)(6)

<sup>6</sup> 47 C.F.R. §90.531(b)(5)

<sup>7</sup> Exclusive 12.5 kHz equipment refers to equipment that provides no better efficiency than 1 voice path per 12.5 kHz of occupied bandwidth in the General Use and State License segments.

<sup>8</sup> The *Petition* for Reconsideration does not contain proposed language for those sections of the Commission’s rules on which reconsideration is requested, thus necessitating this Opposition to make reasonable assumptions concerning the petitioner’s proposed wording for the sections impacted by the *Petition*.

<sup>9</sup> 47 C.F.R. §90.531(b)(5)

<sup>10</sup> 47 C.F.R. §90.531(b)(6)

<sup>11</sup> 47 C.F.R. §90.534(d)(1)

as adopted by the *Fifth Report and Order* be changed to December 31, 2011 in all instances in Sections 90.535(d)(1) and 90.535(d)(2).

The Petition bases the requested changes, and alternatives, on the belief such changes “will provide public safety users with flexibility and the continued right to make their own purchasing decisions without undermining the Commission’s ultimate goal of requiring full use of 6.25 kHz equipment or equivalent efficiency by the end of 2016.”<sup>13</sup> As an initial matter, this statement incorrectly describes the Commission’s efficiency objective. The Commission does not limit itself with a goal of not requiring 6.25 kHz efficiency until the end of 2016. The Commission’s goal is “...the expeditious development and deployment of spectrum efficient public safety equipment in the 700 MHz band.”<sup>14</sup> In addition to misstating the Commission’s spectrum efficiency goal, the *Petition* does not provide any evidence supporting the allegation of user flexibility. Regardless, even if such statement and allegations were justified, the *Petition* does not substantiate any error on the part of the Commission or provide any other legally sufficient basis for favorable consideration of the *Petition* in accordance with the requirements of the Commission’s rules and relevant case law.

## **BACKGROUND**

M/A-COM is a longstanding provider of electronic equipment to the Land Mobile Radio market. M/A-COM is also the successor in interest to Ericsson GE Mobile Communications, Ericsson Private Radio Systems (“Ericsson”) and Com-Net Ericsson Critical Communications, Inc. (“Com-Net”). Tyco Electronics, acquired Com-Net in May of 2001, and established M/A-COM Private Radio Systems, Inc. as an operating component of its M/A-COM Wireless Systems Business unit. In December of 2002, M/A-COM Private Radio Systems, Inc. officially

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<sup>12</sup> 47 C.F.R §90.534(d)(2)

<sup>13</sup> *Petition* at page 1.

<sup>14</sup> *Fifth Report and Order* at paragraph 17.

changed its name to M/A-COM, Inc. to better reflect the continuing integration of the former Com-Net entity into the M/A-COM family of companies.

M/A-COM and its predecessors have long been actively involved in the private radio business, particularly the public safety segment of this market. The Tyco Electronics acquisition merged the expertise developed by Com-Net and its predecessors through its Enhanced Digital Access Communications Systems (EDACS<sup>®</sup>) with the expertise developed within M/A-COM through its advanced digital OpenSky<sup>®</sup> communications system.

M/A-COM and its predecessors have long been active participants in a number of public safety advisory committees. The output of these committees has either formed the genesis of the above referenced public safety proceeding, or such outputs have assisted in developing technical rules for this new public safety spectrum. In 1995 and 1996, Ericsson personnel were very active members of the Public Safety Wireless Advisory Committee (“PSWAC”) with one Ericsson employee serving as a member of the PSWAC Steering Committee. More recently, M/A-COM and its predecessors have been and continue to be very active members of the Public Safety National Coordination Committee (“NCC”). Again a current M/A-COM employee has served on the NCC Steering Committee from the very beginning of the NCC in 1999.

M/A-COM and its predecessors have also been very active participants in the formal rulemaking activities of this public safety proceeding since the initiation of the rulemaking in the fall of 1996. We have supplied numerous comments, replies and petitions throughout the various steps in this proceeding. As witnessed by the ex parte notices filed by M/A-COM and its predecessors in WT Docket No. 96-86, we have also participated in numerous presentations and briefings to Commission Staff on relevant issues and topics, including the issue of spectrum efficiency in the 700 MHz public safety band. In particular, M/A-COM and its predecessors have been strong advocates of the need to achieve maximum voice spectrum efficiency, consistent with available technology, as soon as possible in this new public safety spectrum.

Initially, the Ericsson basis for advocating the earliest utilization of the most spectrally efficient voice technology in this new public safety spectrum was the need to satisfy the underlying spectrum efficiency assumptions utilized by PSWAC for calculation of the public

safety community spectrum needs through the year 2010.<sup>15</sup> Subsequently, Ericsson and its successors noted that in addition to the need for satisfying the PSWAC spectrum efficiency assumptions, the earliest utilization of the most spectrally efficient voice technologies was entirely consistent with the equipment voice spectrum efficiency requirements mandated as a result of the *Refarming*<sup>16</sup> proceeding.<sup>17</sup> By adopting Sections 90.203(j)(4)<sup>18</sup> and 90.203(j)(5)<sup>19</sup> in 1996<sup>20</sup>, the Commission informed the manufacturing community 6.25 kHz or equivalent spectrum efficiency voice technology would be required for all new voice communications equipment certifications beginning January 1, 2005 in the 150-174 MHz and 421-512 MHz bands. Ericsson, and its successors, reasoned it was and is entirely appropriate, and in the public interest, to require utilization of similarly efficient voice equipment in the new 700 MHz public safety spectrum, as soon as possible. Manufacturers would be providing the most efficient voice technology at a time consistent with the anticipated substantial availability of this new public safety spectrum.

In 2000, through the *Fourth Notice*<sup>21</sup> the Commission began to officially address the issue of voice spectrum efficiency requirements for the narrowband segments of the 700 MHz public safety spectrum. The *Fourth Notice* specifically addressed the issue of voice spectrum efficiency requirements for the designated narrowband interoperability channels.<sup>22</sup> However, many, including M/A-COM and the Association of Public-Safety Communications Officials,

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<sup>15</sup> See Comments of Ericsson Inc. to the Notice of Proposed Rulemaking, WT Docket 96-86, dated October 21, 1996, at pages 30. ff. See also Reply Comments of Ericsson Inc. to the Notice of Proposed Rulemaking, WT Docket 96-86, dated December 19, 1996, at pages 3ff. and; Comments of Ericsson Inc. to the Second Notice of Proposed Rulemaking, WT Docket 96-86, dated December 27, 1997, at page 18.

<sup>16</sup> Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignments Policies of the Private Land Mobile Services, PR Docket No. 92-235 (“*Refarming*”)

<sup>17</sup> See Reply Comments of Ericsson Inc. to the Second Notice of Proposed Rulemaking, WT Docket 96-86, dated January 26, 1998, at page 5. See also Petition for Reconsideration by Ericsson Inc. to the First Report and Order, WT Docket 96-86, dated December 2, 1998, at page 8, and; Comments of Com-Net Ericsson Inc. to the Fourth Notice of Proposed Rulemaking, WT Docket 96-86, dated September 25, 2000, at pages 16ff. and; Comments of Com-Net Ericsson Inc. to the Fifth Notice of Proposed Rulemaking, WT Docket 96-86, dated March 19, 2001, at pages 7ff.

<sup>18</sup> 47 C.F.R. 90.203(j)(4)

<sup>19</sup> 47 C.F.R. 90.203(j)(5)

<sup>20</sup> See Memorandum Opinion and Order, PR Docket No. 92-235, FCC 96-492, 11 FCC Rcd 17696 (1996), adopted December 23, 1996 and released December 30, 1996

<sup>21</sup> 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, *Fourth Notice of Proposed Rulemaking*, 15 FCC Rcd 16899 (2000) (“*Fourth Notice*”)

<sup>22</sup> 47 C.F.R. §90.531(b)(1)

International (“APCO”), took this as an opportunity to also address the issue of voice spectrum efficiency requirements for the designated narrowband General Use and State License channels.<sup>23</sup> In its comments to the *Fourth Notice*, APCO specifically recommended the use of the equipment certification process<sup>24</sup> as a means of implementing the Commission’s stated goal “...of expediting the development and deployment of spectrum efficient public safety equipment in the 700 MHz band.”<sup>25</sup>

When the Commission issued the *Fourth Report and Order*<sup>26</sup> it correctly declined to rule on the issue of voice spectrum efficiency requirements for the designated narrowband General Use and State License channels. The Commission wisely concluded that the issue of voice spectrum efficiency requirements for the designated narrowband General Use and State License channels had not been properly raised in the *Fourth Notice*. Therefore, the Commission issued the *Fifth Notice*, concurrently with the *Fourth Report and Order*, wherein the Commission sought additional specific comment on the proposals raised in certain comments submitted in response to the *Fourth Notice*. This new request for comments specifically addressed the implementation of a 6.25 kHz voice spectrum efficiency requirement<sup>27</sup> for the designated narrowband General Use channels. The discussion of the *Fifth Notice* referenced the two general areas of opinion regarding implementation of a 6.25 kHz voice spectrum efficiency requirement in this new 700 MHz public safety spectrum as such general areas were disclosed in responses to the *Fourth Notice*. One general area of opinion, as noted in the *Fifth Notice*, believed adoption of a voice spectrum efficiency standard of one voice path per 6.25 kHz should be mandated *ab initio* for the designated narrowband General Use channels. The second general area of opinion disclosed in comments to the *Fourth Notice*, as detailed in the *Fifth*

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<sup>23</sup> See Comments of Com-Net Ericsson Inc. to the Fourth Notice of Proposed Rulemaking, WT Docket 96-86, dated September 25, 2000, at pages 16ff., and; Comments APCO in Response to the Fourth Notice of Proposed Rulemaking, WT Docket 96-86, dated September 25, 2000(Corrected and resubmitted September 27, 2000), at pages 5ff.

<sup>24</sup> Similar to the process adopted in the *Refarming* proceeding.

<sup>25</sup> footnote 14, *supra*.

<sup>26</sup> Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communications Requirements Through the Year 2010, WT Docket No. 96-86, *Fourth Report and Order and Fifth Notice of Proposed Rulemaking*, FCC 01-10, 16 FCC Rcd 2020 (2002), adopted January 11, 2001 and released January 17, 2001 (referred to herein as "*Fourth Report and Order*" or "*Fifth Notice*" as applicable).

<sup>27</sup> 6.25 kHz voice spectrum efficiency is used to refer to systems that provide one voice path per 6.25 kHz of occupied bandwidth. Hereinafter referred to as *6.25 kHz technology*. See also footnote 4 of the *Fifth Report and Order*.

*Notice* set forth a migration plan from an initial 12.5 kHz voice spectrum efficiency requirement<sup>28</sup> to a 6.25 kHz voice spectrum efficiency requirement over a span of 21 years.

In making a preliminary determination on the issue of voice spectrum efficiency requirements for the designated narrowband General Use channels in the *Fifth Notice*, the Commission crafted a compromise between the two general areas of opinion. The Commission noted the need for rapid access to the new public safety spectrum at 700 MHz necessitated allowing 12.5 kHz voice spectrum efficiency requirement on the designated General Use channels, at least initially. However, the Commission also wisely noted there should be mandatory migration to a 6.25 kHz voice spectrum efficiency requirement for those systems that initially operated at a 12.5 kHz voice spectrum efficiency requirement on the designated narrowband General Use channels in the public safety spectrum at 700 MHz. Importantly, the Commission noted that such migration should not be unreasonably long “...considering the demand for public safety spectrum.”<sup>29</sup>

Most Importantly, in the *Fifth Notice*, the Commission realized not all systems licensed for the narrowband General Use channels in the new public safety spectrum at 700 MHz should be allowed to start as 12.5 kHz voice spectrum efficiency systems. The Commission specifically noted that “new” systems on the designated narrowband General Use channels would be required to initially demonstrate 6.25 kHz voice spectrum efficiency at a date certain, which such date the Commission proposed to be not earlier than December 31, 2005.<sup>30</sup>

From the language in the *Fifth Notice*, there is no doubt the Commission intended to demand utilization of 6.25 kHz voice spectrum efficiency *ab initio* at some date certain for “new” systems licensed on the designated narrowband General Use channels in the public safety 700 MHz spectrum. This date would be different than the date migration from 12.5 kHz voice spectrum efficiency to 6.25 kHz voice spectrum efficiency performance for any “legacy” narrowband General Use systems might be required. It is equally clear from the language in the *Fifth Notice* the Commission intended to mandate migration from 12.5 kHz voice spectrum

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<sup>28</sup> 12.5 kHz voice spectrum efficiency is used to refer to systems that only provide one voice path per 12.5 kHz of occupied bandwidth. Hereinafter referred to as 12.5 kHz technology. See also footnote 4 of the *Fifth Report and Order*

<sup>29</sup> See *Fifth Notice* at paragraph 98.

<sup>30</sup> *Ibid.*

efficiency to 6.25 kHz voice spectrum efficiency performance for any “legacy” systems that went on line before the date the Commission required a 6.25 kHz voice spectrum efficiency performance for systems *ab initio*. Finally, from the *Fifth Notice* it is clear the Commission intended to retain all means at its disposal, e.g. certification mandates, and/or application mandates, and/or license mandates, to implement whatever 6.25 kHz voice spectrum efficiency requirement mandates it would adopt as a result of the Commission’s analysis of the record developed by the comments received in response to the *Fifth Notice*.

## **DISCUSSION**

### **A. General**

When analyzing the *Petition* it quickly becomes apparent there exist a number of general arguments that can be applied to demonstrate the insufficiency of all or parts of the *Petition*. Most of these general arguments are sufficient in and of themselves to reject the requests made in the *Petition*.

The first general argument demonstrating the legal insufficiency of the *Petition*’s arguments is resultant from the statement in the *Petition* implying that because the Commission adopted a two-step migration plan, based ostensibly on the APCO plan outlined in the comments to the *Fourth Notice* the Commission is somehow limited to acceptance of the APCO plan, *in toto*.<sup>31</sup> M/A-COM is unaware of any requirement in the Commission’s rules, the APA, and/or relevant case law so limiting the Commission in a Rulemaking proceeding.

In a Rulemaking proceeding the Commission seeks out the adoption of rules that best serve the public interest. The Commission achieves this goal by seeking comment from everyone and then crafting the suggestions received in such comments into reasonable rules that the Commission, in its sole discretion, believes best satisfies the public interest. The very nature of a rulemaking proceeding demands the Commission to have the ability and freedom to

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<sup>31</sup> See *Petition* at page ii.

pick and choose among all elements of all suggestions received in the comment and reply comment phases of a proceeding. To imply the Commission is somehow limited to accepting proposals *in toto* seriously undermines the Commission's ability to serve the public interest, and could set a very dangerous precedent severely hampering the Commission's future ability to function.

Alternatively, the argument might be rather than the Commission being limited to accepting a proposal *in toto*; the Commission has misunderstood what was proposed in the APCO comments to the *Fourth Notice*. However, the language in the *Fifth Notice* makes it abundantly clear the Commission fully understood the APCO proposal and rejected the proposal beyond the fact that it proposed a bifurcated system for migration to 6.25 voice spectrum efficiency requirements for "new" systems and for "legacy" systems.

The Commission in the *Fifth Notice* clearly notes the APCO proposal relies on the equipment certification process and would not require 6.25 voice spectrum efficiency performance for any public safety 700 MHz system until January 1, 2017, at the earliest.<sup>32</sup> However, the Commission rejected this idea when it clearly drew a distinction between new public safety 700 MHz systems and "legacy" public safety 700 MHz systems and proposed different dates when such systems would be required to utilize 6.25 voice spectrum efficiency technology.<sup>33</sup> M/A-COM believes alleging the Commission may be mistaken on the APCO proposal as a basis for supporting the legal sufficiency of the *Petition* is beyond reason and does not support a favorable response to the *Petition* requests.

Another implication derived from the *Petition* is the basis for the second general argument why the *Petition* should be rejected. The *Petition* notes that a number of commenters, maybe a majority of commenters favorably viewed the APCO proposal, leaving the implication that because of "majority rules" the Commission is somehow required to adopt the APCO

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<sup>32</sup> *Fifth Notice* at paragraph 97

<sup>33</sup> *Fifth Notice* at paragraph 98

proposal *in toto*. Again, the Commission's rules, the APA, and/or relevant case law do not support such an implication. Furthermore, it is not very difficult to imagine scenarios where rules that are totally inappropriate and entirely contradictory to the public interest would be adopted if a "majority rules" standard was used as the appropriate measuring stick in a Rulemaking proceeding. To repeat, the appropriate standard that must be applied is the public interest test, and frequently that which is most popular may not be that which is in the public interest. Thus, the fact a majority of the commenters may have favored the APCO proposal does not, in and of itself, provide a legally sufficient basis for favorable action on the *Petition's* requests. In a Rulemaking, the Commission role is not limited to that of a vote counter.

The *Petition* also alleges grounds for favorable action to the *Petition* based on the Commission's desire for flexibility in its rules.<sup>34</sup> The allegation in the *Petition* indicating the rules adopted in the *Fifth Report and Order* are contrary to the Commission's desire for flexibility in the rules, demonstrates another reason why the *Petition* is legally insufficient for favorable action.

The *Petition* provides numerous examples where the efficient use of the spectrum was not mandated by the imposition of technical standards and rigid rules, because market forces would in and of themselves necessitate efficiency. The problem with these *Petition* arguments is the fact the efficient use of this new public safety spectrum, probably efficient use of all public safety spectrum, is not driven by market forces. In public safety spectrum there is no direct relationship between the return to a public safety agency and the degree to which such agency uses its spectrum efficiently.

The Commission's Spectrum Policy Task Force recently noted the "Command and Control" method of spectrum management would remain the appropriate technique for management of the public safety spectrum.<sup>35</sup> The report noted that despite the Task Force

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<sup>34</sup> *Petition* at footnote 24.

<sup>35</sup> See Spectrum Policy Task Force Report, November 2002, Docket No. ET 02-135, at page 42

desire for more flexibility in the Commission's approach to spectrum management, the market forces operating in the commercial portions of the spectrum were not present in sufficient degree in the public safety spectrum to warrant the abandonment of the "Command and Control" method of spectrum management. While the Commission might like greater flexibility in the management of public safety spectrum, it fully realizes it must maintain some control if the Commission has any hope of achieving its goals for the public safety spectrum.

Since the beginning of this *Public Safety Proceeding*<sup>36</sup> in 1996, the Commission has continuously avowed one objective of the proceeding was to achieve spectrally efficient use of the public safety spectrum. These statements by the Commission have been unchallenged by anyone at any previous step in the proceeding. To now say the *Fifth Report and Order* spectrum efficiency rules were adopted contrary to Commission flexibility policies, without also proving the Spectrum Policy Task Force was wrong in finding the need to continue the "Command and Control" method of spectrum management, denies the Commission the opportunity to realize a perfectly valid objective in this *Public Safety Proceeding*.

Another general problem with the *Petition* is the failure to recognize the 2005 Refarming spectrum efficiency mandates<sup>37</sup>. M/A-COM finds the *Petition's* failure to recognize these *Refarming* efficiency mandates very interesting. At a date some two years ahead of the dates adopted in the *Fifth Report and Order*, manufacturers are required to have the 6.25 kHz or equivalent technology available. Surely, the current densely populated nature of the 150-174 MHz and 421-512 MHz bands justifies the fact that licensees are not mandated to use this more spectrally efficient equipment on January 1, 2005, but manufacturers are required to provide it.

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<sup>36</sup> The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year Through the Year 2010, WT Docket No. 96-86 ("Public Safety Proceeding")

<sup>37</sup> Effective January 1, 2005 manufacturers must include a 6.25 kHz voice efficiency requirement in any equipment submitted for certification in the 150-174 MHz and 421-512 MHz bands. New equipment requiring certification that does not have a 6.25 kHz or equivalent mode, even old previously certified equipment that require re-certification for whatever reason, can not be certified, and thus can not be marketed or sold. See 47 C.F.R. §90.203(j)(4) and 47 C.F.R. §90.203(j)(5).

However, the public safety 700 MHz spectrum is not densely populated with existing public safety licensees. There is no reason why the Commission should not demand the most spectrally efficient use of this new public safety spectrum by licensees as soon as possible.

M/A-COM is not aware of any activity on the part of the Commission to revoke the *Refarming* 2005 spectrum efficiency requirements. Manufacturers have been aware of this equipment efficiency requirement since late 1996, at least. Manufacturers have had more than sufficient time to petition the Commission to relax the *Refarming* rules, yet none have done so. It should be noted the manufacturing community has promoted various 6.25 kHz and 6.25 kHz equivalent technologies as the answers to the Commission's efficiency concerns and the *Refarming* efficiency requirements for well over ten years, maybe as long as fifteen years. It now seems odd the *Petition* alleges neither the petitioner nor anyone else is developing the 6.25 kHz solutions that will be so critical to the heavily populated, shared 150-74 MHz and 421-512 MHz bands. One has to wonder how these manufacturers will comply with the *Refarming* 2005 requirements. M/A-COM, on the other hand intends to comply with the *Refarming* 2005 requirements, and plans to apply the technologies developed to satisfy the *Refarming* 2005 requirements across all land mobile radio bands as soon as feasible. In any case, M/A-COM will provide equipment meeting the 6.25 kHz voice spectrum efficiency mandates for the narrowband General Use 700 MHz public safety channels, well in advance of the dates mandated in Sections 90.203(n), 90.535(d)<sup>38</sup>.

Finally, from a general standpoint, M/A-COM questions whether the *Petition* is the procedurally efficient manner to seek the requested actions. M/A-COM is fully aware of the thirty (30) day time limit for filing a Petition for Reconsideration in Section 1.429.<sup>39</sup> However, in some cases, such as the instant case, M/A-COM believes it may be more effective to employ other procedural tools provided in the Commission's rules.

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<sup>38</sup> 47 C.F.R. §90.203(n) and 47 C.F.R. §90.535(d)

<sup>39</sup> 47 C.F.R. §1.429(d)

In the *Fifth Report and Order*, the Commission preemptively addressed the concerns raised in the *Petition* regarding the availability of 6.25 voice spectrum efficient technologies consistent with the specific dates the Commission selected. The Commission noted it “...reserved the right to take appropriate actions (including altering the implementation schedule) as necessary”<sup>40</sup> if circumstances warrant. Therefore, at least as far as the requested change to Section 90.535(d)<sup>41</sup>, or alternatively the requested change in the dates in Section 90.535(d), one has to wonder if the *Petition*’s request is premature. M/A-COM believes it would be more effective to wait until additional information is available on the actual development of 6.25 voice spectrum efficiency equipment for this public safety spectrum and for compliance with the *Refarming 2005* mandates, before questioning whether Section 90.535(d) as adopted in the *Fifth Report and Order* is in the public interest. At the appropriate time, with more information available and less speculation, a Petition for Rulemaking, pursuant to Section 1.401<sup>42</sup> of the Commission’s rules could be submitted requesting the modification or deletion of the requirements in Section 90.535(d).

**B. OPPOSITION TO THE REQUEST TO RECONSIDER THE PROHIBITION ON NEW SYTEMS TO USE 12.5 kHz ON APPLICATIONS FILED AFTER DECEMBER 31, 2006.**

In addition to the general opposition grounds outlined in the previous section, any of which is sufficient for denying the relief requested in the *Petition*, there exist other specific reasons why the *Petition* is defective as regards the request to reconsider the prohibition on new systems using *12.5 kHz technology*<sup>43</sup> if the application is filed after December 31, 2006.

The *Petition* appears to allege conventional use of the new 700 MHz public safety spectrum is a basis for asserting the December 31, 2006 deadline for allowing *12.5 kHz*

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<sup>40</sup> *Fifth Report and Order* at paragraph 12.

<sup>41</sup> 47 C.F.R. §90.535(d)

<sup>42</sup> 47 C.F.R. §1.401

<sup>43</sup> See footnote 28, *supra*.

*technology* applications is incorrect. The *Petition* asserts there will be extensive conventional use of the new 700 MHz public safety spectrum. However, such an assertion does not reflect the existence of other rules sections impacting the use of the new 700 MHz public safety spectrum.

Section 90.537(a)<sup>44</sup> requires “...All systems using six or more narrowband channels in the 764-776 MHz and 794-806 MHz frequency bands must be trunked systems...” While this is similar to the requirement outlined in Section 90.623(a)<sup>45</sup> for the 806-824 MHz band, limiting conventional operation to five (5) frequency pairs, there is one major distinction not discussed in the *Petition*. In the 806-824 MHz band a channel is 25 kHz wide, whereas in the new 700 MHz public safety spectrum a narrowband channel is only 6.25 kHz wide.<sup>46</sup> The net effect of this difference in channel size when interpreted in terms of the Section 90.537 requirement for trunking means that a three (3) channel system employing 12.5 kHz channel operating bandwidth, regardless of the underlying voice spectrum efficiency associated with such system, must be trunked. Another way of saying this, is conventional operation in the new 700 MHz public safety spectrum is limited to two frequency pairs for systems using a 12.5 kHz channel operating bandwidth. In light of this two 12.5 kHz channel limitation, M/A-COM believes it is highly unlikely there will be extensive conventional use of the new 700 MHz public safety spectrum by any systems employing a channel operating bandwidth other 6.25 kHz. Therefore, delaying a mandate to efficiently use this new public safety spectrum to accommodate technologies that can not or likely will not make use of the spectrum would be contrary to the public interest.

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<sup>44</sup> 47 C.F.R. §90.537(a)

<sup>45</sup> 47 C.F.R. §90.623(a)

<sup>46</sup> See 47 C.F.R. §90.531(b) wherein it states “Each of these narrowband segments is divided into 480 channels having a channel size of 6.25 kHz as follows:...”

The *Petition* also alleges the mandate to utilize *6.25 kHz technology*<sup>47</sup> spectrum efficient systems for “new” systems applied for on or after January 1, 2007, improperly motivates licensees to consider trunked, wide-area, shared systems for the General Use portion of the new 700MHz public safety spectrum. Without challenging the substance of such statement, M/A-COM believes such a motivation; if it does exist is not contrary to the public interest.

As noted previously herein, one of the Commission’s primary goals in this *Public Safety Proceeding* is to maximize the spectrum efficiency of public safety systems in the 700 MHz public safety spectrum. Utilization of trunked systems has long been recognized as one of the most effective methods for efficient utilization of land mobile radio spectrum. M/A-COM thus believes additional motivation towards efficient spectrum use is not contrary to the Commission’s goals outlined so many years ago. It does not appear such motivation is contrary to the public interest.

Furthermore, another very important goal outlined by the Commission for this proceeding was to improve the interoperability situation for public safety communications. Towards that end, the Commission has designated certain narrowband channels for interoperability purposes in the new 700 MHz public safety spectrum, and it has adopted some special technical rules for these designated interoperability channels to assure effective utilization of these designated channels.

Why would the Commission’s attempt to do other things to improve the interoperability situation beyond its actions for the designated interoperability channels be contrary to the public interest? A shared system provides the highest level of interoperability possible between those agencies that participate in the shared system. There are likely no limitations associated with the interoperability possible among the participants. These participant agencies can take advantage of the full range of features designed into the system without negatively impacting

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<sup>47</sup> See footnote 27, *supra*.

realized interoperability. The attractive thing about a shared system arrangement is the fact it provides this ultimate degree of interoperability among the participating agencies with no additional cost. In fact, one can argue this ultimate level of interoperability is realized at a reduced cost per agency because of the economies of scale associated with a shared system concept.

If in fact, the rules adopted by the Commission in the *Fifth Report and Order* provide a motivation for agencies to utilize wide-area, shared systems, M/A-COM believes this is a good thing. The Commission has crafted rules further supporting the realization of two important Commission goals, i.e. improved spectrum efficiency and improved interoperability, without imposing any additional burden on the public safety community.

Finally, the *Petition* alleges the December 31, 2006 deadline for systems utilizing *12.5 kHz technology* restricts user flexibility. This allegation does not appear correct.

All potential users of the 700 MHz public safety spectrum have the right to apply for General Use licenses between now and December 31, 2006. This is an almost four year period of time.<sup>48</sup> Assuming one waits until at or near the deadline date of December 31, 2006, and then takes advantage of the extended implementation rules, it is very likely that buildout of a system with *12.5 kHz technology* could likely, and in a timely manner, continue until January 1, 2012 or beyond. This certainly seems to be more than sufficient user flexibility when balanced against the Commission's goals of improved efficiency and improved interoperability.<sup>49</sup>

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<sup>48</sup> This period was more than four years between the time the Commission adopted the *Fifth Report and Order* and the December 31, 2006 deadline.

<sup>49</sup> The *Petition* alleges the regional planning process may prohibit applicants from filing by the December 31, 2006 deadline due to the lack of an approved Regional Plan. M/A-COM is aware that several regions have not yet convened their 700 MHz Regional Planning Committee, however this will likely not impact any licensee wishing to apply for General Use licenses by December 31, 2006. The regions that have not yet convened the 700 MHz Regional Planning Committee fall into one of two categories. One category consists of those regions that do not see a need to utilize 700 MHz within their region for the foreseeable future. Such regions have sufficient available VHF, UHF and 800 MHz spectrum to satisfy current and future needs. The second category of non-convened regions are those regions where the 700 MHz public safety spectrum will likely not be available for many years to come, maybe 2010 or beyond. In both cases the delayed utilization of the 700 MHz public safety spectrum is reason enough for the Commission to mandate the most spectrally efficient use *ab initio*. In any case there is nothing standing in the way of any region from convening the 700 MHz Regional Planning Committee such that a plan could not be approved with sufficient time to allow any applicant to apply by the December 31, 2006 deadline.

**C. OPPOSITION TO THE REQUEST TO RECONSIDER THE BAN ON THE MARKETING, MANUFACTURE AND IMPORTATION OF 12.5 kHz EQUIPMENT AFTER DECEMBER 31, 2006**

In addition to the general and specific opposition grounds outlined in the previous sections, all of which are equally applicable here, there are additional specific reasons why the *Petition* is defective as regards the request to reconsider the prohibition on the marketing, manufacture and importation of *12.5 kHz technology* equipment after December 31, 2006. The *Petition* alleges the ban will be unnecessarily costly to the public safety community and that the manufacturing community needs additional time to develop a full product portfolio.<sup>50</sup> Both allegations are unfounded.

While there is no doubt 700 MHz public safety equipment will be expensive, particularly when compared with lower end conventional, analog, VHF and UHF equipment, the reason for the increased cost is not the requirement for multi-mode capability. In the *First Report and Order*<sup>51</sup> the Commission mandated that, with few exceptions, all transmitters in the new 700 MHz public safety spectrum must use digital modulation as its primary modulation capability.<sup>52</sup> M/A-COM believes this is the primary driver behind the cost of equipment in the new 700 MHz public safety band. Once digital modulation is employed there is no significant cost impact associated with a multi-mode radio when compared to a single mode radio. In fact, M/A-COM asserts the cost differential between a single mode *12.5 kHz technology* radio for the 700 MHz public safety and a multi-mode radio incorporating both *6.25kHz technology* and *12.5 kHz technology* will be *de minimis*. It should also be noted any 700 MHz public safety radio that includes *6.25kHz technology* would, because of the requirement for capability to operate on the

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<sup>50</sup> See *Petition*, Section III.

<sup>51</sup> The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year Through the Year 2010, WT Docket No. 96-86, First Report and Order, 14 FCC Rcd 152 (1998), adopted August 6, 1998; released September 29, 1998 (*"First Report and Order"*).

<sup>52</sup> See also 47 C.F.R. §90.535(a)

designated interoperability channels,<sup>53</sup> of necessity be a multi-mode radio. By mandating legacy licensees can only purchase multi-mode *6.25 kHz technology/12.5 kHz technology* radios after January 1, 2007, the Commission is not infringing any licensees' flexibility. Again, the Commission has crafted a rule that will not negatively impact limited public safety funds, but which will if anything decrease the future expenditure of these limited resources, when such "legacy" licensees migrate to the higher level of voice spectrum efficiency.

Alleging the January 1, 2007 date is somehow contradictory to manufacturers' ability to develop a full portfolio is without substantiation. Manufacturers have more than sufficient time to develop a full range of products to satisfy all of the likely public safety needs for the 700 MHz public safety spectrum between now and January 1, 2007.

The *Petition* says the manufacturers need time to develop trunked products for the 700 MHz public safety band, yet in other paragraphs, without noting there is insufficient time to develop such products, the *Petition* alleges the rules adopted by the Commission motivate licensees to use trunked systems. Either there is, or there isn't time to develop trunked products for the 700 MHz public safety band. M/A-COM knows there is more than adequate time to develop the necessary trunked products between now and January 1, 2007.

The need to develop a conventional mode for administrative communications is also noted as part of the portfolio problem. However, as noted previously, M/A-COM, in light of the trunking mandate for the 700 MHz band, does not see any significant conventional use of the 700 MHz band for voice communications. In light of the two channel limitation for conventional operations as described previously, M/A-COM believes administrative communications in a conventional mode would essentially necessitate a separate system. Such setups would likely limit interoperability or certainly not enhance interoperability. Thus, we again assert conventional use of the 700 MHz band is very unlikely, and it would be totally

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<sup>53</sup> See 47 C.F.R. §§90.547 and 90.548. The provisions of §90.548 require compliance with several specifications of the TIA-102, which describe a *12.5 kHz technology* exclusively

contrary to the public interest to adjust rules that have been properly adopted to accommodate a less efficient solution which is unlikely to ever appear. The Commission should not water down its rules because manufacturing entities may make business decisions not to provide equipment that nobody, or very few, would buy.

The development of intrinsically safe radios is also alleged to be a pacing item in the development of a full portfolio of products for the 700 MHz public safety band. The need to develop such products is asserted to be an additional basis for delaying the use of spectrally efficient equipment in the new 700 MHz public safety band. M/A-COM finds it extremely difficult to accept this basis for delay. While there is no doubt intrinsically safe radios will be needed in the 700 MHz band, we note the intrinsically safe design problem is not one that is RF in nature. Providing intrinsically safe radios is essentially a mechanical design problem. All manufacturers who have provided, or attempted to provide, intrinsically safe radios in any of the frequency bands have faced this problem. There is no reason why the knowledge gained in solving the problem in one band is not fully applicable in the new 700 MHz public safety band regardless of whether the intrinsically safe radio utilizes *12.5 kHz technology*, or *6.25 kHz technology*, or both. A manufacturer's product line either will or will not include intrinsically safe models, and there is no reason why such radios can not be available well in advance of the January 1, 2007 date regardless of the level of voice spectrum efficiency included. A manufacturer, or manufacturers, could decide not to include intrinsically safe radios in their portfolios, but that manufacturer's decision should not prevent the Commission from demanding the most voice spectrally efficient requirements as soon as possible in new spectrum. The *Petition* is deficient in that it provides no indication intrinsically safe *12.5 kHz technology* radios will be available, but intrinsically safe *6.25 kHz technology* radios will not or can not also be available by January 1, 2007.

The final area of concern regarding the full product portfolio argument in the *Petition* is the element of data-only radios. M/A-COM has great difficulty understanding the relevance of this data-only radio development in relation to a voice spectrum efficiency mandate. There is not doubt the voice spectrum efficiency requirements adopted in the *Fifth Report and Order* are totally not applicable to data only radios. Narrowband data-only radios are required to satisfy the efficiency requirements of Section 90.535(b)<sup>54</sup> only. M/A-COM does not understand how the development of data-only radios, as one part of a full product portfolio, has any impact whatsoever on the voice spectrum efficiency requirements and the timing of such voice spectrum efficiency mandates in the new 700 MHz public safety spectrum.

In summary, the *Petition* is deficient even though it alleges negative cost impacts associated with multi-mode radios as well as the need to develop a full product portfolio before the Commission mandates higher levels of voice spectrum efficiency for the new 700 MHz public safety spectrum. There is no specific negative cost impact associated with multi-mode radios in this case. M/A-COM also asserts the full product portfolio of the increased voice spectrally efficient equipment actually needed and/or useable in this new 700 MHz can and will be available well before the deadlines chosen in the *Fifth Report and Order*.

## **CONCLUSION**

As detailed throughout this document, M/A-COM asserts no credible argument has been proffered by the petitioner justifying a favorable response by the Commission to the requests made in the *Petition*. M/A-COM also believes a favorable response to the requests presented in the *Petition*, would be contrary to the policies embodied in the Commission's rules, the Administrative Procedures Act, and relevant case law.

Surely, one can argue the Commission's language in the *Fifth Notice* and the *Fifth*

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<sup>54</sup> 47 C.F.R. §90.535(b)

*Report and Order* may not have been as precise as possible or as desired. However, M/A-COM strongly believes nobody can reasonably argue the rules adopted by the Commission in the *Fifth Report and Order* are not clearly in the public interest.

Therefore, M/A-COM respectfully suggests the Commission can reject the *Petition* in its entirety, and can reaffirm the rules adopted pursuant to the *Fifth Report and Order*.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert J. Speidel". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Robert J. Speidel, Esq.  
Manager, Regulatory Policy  
M/A-COM, Inc.  
221 Jefferson Ridge Parkway  
P.O. Box 2000  
Lynchburg, VA 24501  
(434) 455-9465