

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	
Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010	)	WT Docket No. 96-86

**COMMENTS OF MOTOROLA, INC.**

Steve B. Sharkey  
Director, Spectrum and Standards Strategy  
Motorola, Inc.  
1455 Pennsylvania Avenue, NW  
Suite 900  
Washington, DC 20004  
TEL: 202.371.6900

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## SUMMARY

It is without doubt that public safety would benefit from the integration of wireless high-speed data and streaming video applications into its daily activities and that broadband technologies could provide much needed capacity to meet these requirements, particularly in dense urban areas where demand will be greatest.

Motorola has previously supported the Commission's proposals, based on public safety input, to rechannelize the 700 MHz band to accommodate broadband deployment within the public safety allocation provided that narrowband operations are adequately protected. In so doing, Motorola strongly urged the FCC to provide public safety users the flexibility to deploy either broadband or wideband communications systems in order to accommodate specific needs.

In the 9<sup>th</sup> NPRM, the Commission proposes a plan to promote the deployment of public safety broadband networks. This plan would allocate 12 megahertz of the 700 MHz public safety spectrum from wideband to broadband use and assign this spectrum nationwide to a single national public safety broadband licensee. The nationwide licensee would be permitted to use its assigned spectrum to provide public safety entities with public safety broadband service on a fee for service basis, and also, would permit the licensee to provide access to its assigned spectrum to commercial service providers on a secondary basis that can be unconditionally "preempted" by public safety users.

Motorola believes that the proposals in the 9<sup>th</sup> NPRM warrant further discussion. First, Motorola strongly believes that the Commission should not ignore the record developed in response to the 8<sup>th</sup> NPRM to provide public safety the flexibility to deploy the most appropriate technology in the 700 MHz band, whether broadband or wideband, depending on local requirements. Second, it is imperative that the deployment of broadband networks, including the nationwide network considered in the 9<sup>th</sup> NPRM, fully protects the narrowband spectrum that is crucial for meeting the mission critical voice needs of public safety. Finally, Motorola believes that the FCC must make certain that public safety spectrum remain firmly in control of public safety to ensure access to critical data communications.

Motorola notes that consideration of integrated public safety broadband networks requires a plan for ensuring interoperability. While a standard developed by public safety interest exists for wideband technologies, TIA-902 (SAM), no such standard exists for broadband technologies. Motorola believes that selection of a broadband standard is best left to the public safety community, and that any consideration of technologies must look to accommodating requirements and growth well into the future. In this regard, Motorola believes that the OFDM-based Long Term Evolution (LTE) standard warrants consideration as a suitable platform for the public safety air interface broadband technology. However, adoption of an international based standard that provides high volume commercial off-the-shelf equipment does not obviate the need to develop unique Public Safety specific products and features based on that technology.

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**COMMENTS OF MOTOROLA, INC.**

Motorola Inc. (Motorola) hereby submits these comments in response to the FCC’s *Ninth Notice of Proposed Rule Making* in the above-captioned proceeding that proposes to establish a centralized, nationwide interoperable public safety broadband network within the 764-776/794-806 MHz bands currently allocated for public safety use.<sup>1</sup> As further described in these comments, Motorola believes that certain adjustments to the FCC’s proposals are warranted if the concept is to be given further consideration.

**I. Introduction and Summary.**

Motorola has a long history as a global leader for the development and manufacture of innovative public safety communications equipment. Throughout its time serving public safety, Motorola has adhered to one principal operating tenet – that public

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<sup>1</sup> *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Ninth Notice of Proposed Rulemaking, 21 FCC Rcd 14837 (2006) (“9<sup>th</sup> NPRM”).

safety communications must be reliable and available when needed. Motorola never forgets that behind each radio stands a public servant who absolutely depends on the reliable and intelligible exchange of information and communications. This basic fact demands that new products and innovations for the public safety market be thoroughly tested to ensure that they operate as intended in the wide variety of hostile environments and situations that emergency responders face each day. This cautious philosophy applies equally when considering significant regulatory changes that impact public safety communications.

A careful approach to new product development must not be blind to trends driving new innovations. In this regard, it is without doubt that public safety would benefit from the integration of wireless high-speed data and streaming video applications into its daily activities. The industry and the FCC are now wrestling with this question of how these services will be made available to public safety in the most efficient manner. Certainly with improving security features and available capacity, public safety agencies could choose to receive service from commercial broadband networks for non-mission critical applications. However, broadband wireless networks optimized for public safety use have undeniable appeal from an operational perspective – particularly for more critical data and video applications – and provides public safety with greater ability to tailor the system to meet specific requirements.

For these reasons, Motorola supported the Commission’s proposals – based on public safety user input – to rechannelize the 700 MHz band to accommodate broadband deployment within the public safety allocation provided that narrowband operations are

adequately protected.<sup>2</sup> In that phase of this proceeding, Motorola strongly supported the FCC providing public safety users the flexibility to deploy either broadband or wideband communications systems, “that meet their specific needs.”<sup>3</sup>

In the 9<sup>th</sup> NPRM, the Commission proposes a plan that is a self described “departure from prior public safety allocations.”<sup>4</sup> In short, the proposal would allocate 12 megahertz of the 700 MHz public safety spectrum from wideband to broadband use and assign this spectrum nationwide to a single national public safety broadband licensee.<sup>5</sup> The nationwide licensee would be permitted to use its assigned spectrum to provide public safety entities with public safety broadband service on a fee for service basis, and also, would permit the licensee to provide access to its assigned spectrum to commercial service providers on a secondary basis that can be unconditionally “preempted” by public safety users.<sup>6</sup> This latter proposal is intended to serve as an incentive to facilitate the shared use of commercial mobile radio service (CMRS) infrastructure for the efficient provision and deployment of the public safety network.<sup>7</sup> Finally, the Commission proposes that, the national public safety broadband licensee would also be authorized to operate on a secondary basis on all other public safety spectrum in the 700 MHz band.<sup>8</sup>

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<sup>2</sup> See Comments Of Motorola, Inc., WT Docket No. 96-86 at 3-5 (received June 6, 2006).

<sup>3</sup> Reply Comments Of Motorola, Inc., WT Docket No. 96-86 at 2-3 (received July 6, 2006).

<sup>4</sup> 9<sup>th</sup> NPRM at ¶4.

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

Motorola appreciates the Commission's desire to apply creative solutions to addressing the need for public safety broadband in the most efficient and effective manner. Motorola believes that the proposals in the 9th NPRM warrant further discussion. First, Motorola strongly believes that the Commission should not ignore the record developed in response to the 8<sup>th</sup> NPRM to provide public safety the flexibility to deploy the most appropriate technology in the 700 MHz band, whether broadband or wideband, depending on local requirements. Second, it is imperative that the deployment of broadband networks, including the nationwide network considered in the 9<sup>th</sup> NPRM, fully protects the narrowband spectrum that is crucial for meeting the mission critical voice needs of public safety. Finally, Motorola believes that the FCC must make certain that public safety spectrum remain firmly in control of public safety to ensure access to critical data communications.

In addition, Motorola notes that consideration of integrated public safety broadband networks requires a plan for ensuring interoperability. While a public safety developed standard, TIA-902 (SAM) exists for wideband technologies, no such technology exists for broadband. Motorola believes that selection of a broadband standard is best left to the public safety community, and that any consideration of technologies must look to accommodating requirements and growth well into the future. In these comments, Motorola discusses the benefits of OFDM-based Long Term Evolution (LTE) as a suitable platform for consideration as the public safety air interface broadband technology. However, adoption of an international based standard that provides the availability of high volume commercial off-the-shelf (COTS) equipment

does not obviate the need to develop unique Public Safety specific products and features based on that technology.

## **II. The Commission Must Maintain Flexibility To Allow Public Safety To Deploy Wideband As Well As Broadband Technology.**

The Commission's current band plan interposes 12 MHz of wideband spectrum between the two 6 MHz narrowband blocks.<sup>9</sup> As previously noted by Motorola, this band plan is not optimized for the deployment of public safety broadband systems in the 700 MHz band.<sup>10</sup> Reconfiguring the band to place the now separated 3 + 3 MHz blocks of narrowband spectrum into a single, combined 6 + 6 MHz narrowband block reduces the amount of spectrum that must be dedicated to guard bands. Accordingly, Motorola continues to support an internal realignment of the public safety spectrum in order to accommodate broadband regardless of the governance model ultimately implemented.<sup>11</sup>

However, broadband may not always be the most appropriate, suitable or cost effective solution for meeting the needs of public safety. Therefore, Motorola continues to urge the Commission to provide public safety with flexibility to deploy wideband technologies. Given the higher costs inherent in deploying a broadband network compared to a wideband network, providing this flexibility may mean the difference between a rural public safety agency having adequate data to meet critical requirements

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<sup>9</sup> See 9<sup>th</sup> NPRM at ¶5. The four narrowband segments are 764-767 MHz (Channels 1-480), 773-776 MHz (Channels 481-960), 794-797 MHz (Channels 961-1440) and 803-806 MHz (Channels 1441-1920). The two wideband segments are 767-773 MHz (Channels 1-120) and 797-803 MHz (Channels 121-240).

<sup>10</sup> See Comments of Motorola, Inc., WT Docket No. 06-169 (received Oct. 23, 2006).

<sup>11</sup> The Commission should also address the cost of moving public safety licensees that have already deployed systems.

and having no data because the rural public safety agency could not afford to deploy a broadband network. The advantage of wideband data capability compared to existing Public Safety deployments should not be simply dismissed. TIA-902 based systems exhibit user data speeds in the range of 10 to 100 times existing systems, and permit the following advanced features that are not routinely available on narrowband systems today.

- High resolution graphics transmittal
- Surveillance video applications
- Field Report Writing
- High Rate AVL

Broadband adds the capability of high rate streaming video and additional capacity for Public Safety agency demands, particularly in more densely populated areas.

In response to the 8<sup>th</sup> NPRM,<sup>12</sup> public safety commenters were clear that they need the flexibility to deploy broadband or wideband solutions.<sup>13</sup> The need for this flexibility is straightforward – true broadband speed requires four to five time the number of sites as narrowband voice in the same spectrum band to provide equivalent reliability coverage for the same scenarios (e.g., on-street, in building, etc.). In contrast, wideband

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<sup>12</sup> *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, WT Docket No. 96-86, Eighth Notice of Proposed Rulemaking, 21 FCC Rcd 3668 (2006) (“8<sup>th</sup> NPRM”).

<sup>13</sup> *See e.g.*, Comments of National Public Safety and Telecommunications Council (NPSTC), WT 96-86 at 5 (received June 5, 2006); Reply Comments Of Pinellas County Emergency Communications, WT Docket No. 96-86 at 2 (received July 3, 2006); Comments of the City and County of Denver, Colorado, WT Docket No. 96-86 at 4 (received June 6, 2006); Joint Reply Comments of International Association of Chiefs of Police, Major Cities Chiefs Association, National Sheriffs Association, and Major County Sheriffs Association, WT Docket No. 96-86 at 3 (received June 6, 2006).

systems could re-use voice sites and provide similar coverage reliability while still providing data rates that support advanced PS applications including real time video. While broadband provides faster data rates and greater capacity if enough sites are constructed, broadband coverage in less densely populated areas will be difficult to achieve in a cost-effective manner. Even with hybrid public safety/commercial systems, the demand for broadband data rates must support a viable business plan that entails the cost of more sites spread across fewer users. Regardless of the governance model used to license the spectrum, provisions need to be made to provide public safety the ability to choose wideband or broadband, as recommended by public safety comments to the 8<sup>th</sup> NPRM.

Motorola does not believe that the flexibility to deploy wideband systems is inherently incompatible with the nationwide licensee concept proposed in the 9<sup>th</sup> NPRM. First, we note that the NPSTC band plan under consideration accommodates both wideband and broadband carriers. In some areas, for example, there will likely be insufficient demand and/or density to warrant the build out of the broadband network on all available frequencies. Wideband deployment could be authorized on a coordinated basis with the national broadband licensee. Further, depending on the FCC's actions in the 700 MHz Guard Band proceeding,<sup>14</sup> additional public safety spectrum might be made available in the 700 MHz band, providing greater flexibility to accommodate both

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<sup>14</sup> *Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Notice of Proposed Rule Making, WT Docket No. 06-169, WT Docket No. 96-86, FCC 06-133 (released Sept. 8, 2006).

broadband and wideband deployment. The Commission should not foreclose this flexibility, but should instead ensure that any governance structure includes provisions that will provide coordination as either broadband or wideband technologies are deployed.

Furthermore, to the extent that wideband is deployed, the Commission should require that the radio support TIA 902 (SAM). This standard was developed by public safety organizations in support of public safety applications and recognition of this standard will help ensure interoperability across any networks deployed.

### **III. The Commission Should Not Permit Secondary Broadband Use of Narrowband Spectrum.**

Public Safety has repeatedly emphasized that mission critical voice is the highest priority service for police officer and firefighter safety and the safety of the public they protect. The Commission must not place these communications at risk by permitting secondary use of the narrowband spectrum based on untested technology and undefined sharing mechanisms. Public Safety systems are very different from television stations and key up randomly and unpredictably based on traffic load. Broadband opportunistic usage with interference of even a fraction of a second can have serious effects on mission critical real time voice communications.

The Commission's proposal that secondary use of narrowband spectrum by the national public safety licensee (1) may not interfere with primary use; (2) must immediately remedy any interference it causes to primary uses at its own expense (or shut down the interfering use); and (3) must accept any interference it receives from primary uses that are operating in accord with their licenses, while necessary for any secondary

use, is insufficient to ensure that mission critical communications are not disrupted. When dealing with public safety, it is not enough to establish a regulatory structure that has the potential for interference that would have to be resolved *after the fact*. The Commission should defer, if not outright reject, any consideration of secondary use to a future proceeding, following a better understanding of how the services are deployed and following testing of the proposed sharing technology.

The Commission's proposal suggests that cognitive radios would be used to enable secondary broadband access to narrowband spectrum. While Motorola is a strong advocate and technical leader in the development of cognitive radio technology, it is premature to rely on cognitive radios to protect mission critical public safety voice use from broadband deployments. In comments recently filed in the Commission's *TV White Space* proceeding, Motorola stated that while it believes that cognitive radios will inherently have sensing capabilities for determining which candidate channels provide the best communications opportunities, it is not clear at this time whether those capabilities can be used for independent identification and protection of licensed incumbents.<sup>15</sup>

It is also unclear how broadband services could successfully use the narrowband spectrum without causing interference. Based on the level of interest expressed by public safety entities and the amount of planning that has been done by the regional planning bodies, Motorola anticipates that the 700 MHz narrowband spectrum will be heavily encumbered. Assuming that at least one megahertz of guard band is needed to isolate

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<sup>15</sup> Comments of Motorola, Inc., ET Docket 04-186 at 18 (received Jan. 31, 2007).

narrowband systems from cellular broadband network, the minimum amount of narrowband spectrum that would be occupied by a single 1.25 MHz broadband carrier would be 2.25 MHz out of the available 6 MHz of narrowband spectrum.<sup>16</sup> It is difficult to envision how a broadband technology that occupies a large swath of spectrum could effectively share with or be overlaid in the narrowband portion of the public safety band, particularly at this early stage when narrowband systems are just beginning to be deployed and the spectrum is not widely available due to continued broadcast use.

Moreover, voice interoperability channels are spread throughout the 700 MHz band. Therefore, implementing secondary use of the narrowband spectrum will subject these channels, which are so critical for mutual aid communications during catastrophes and emergencies requiring multi-agency response, to significant interference risks and additional coordination nightmares. The 700 MHz band provides the best opportunity to solve the long-standing issues with voice interoperability for public safety systems. The tremendous progress that has been made in this area over the past 10 years should not now be threatened by untested operational flexibility.

In summary, Motorola believes that the risk of interference to mission critical voice channels is too high to warrant consideration of this proposal at this time. Public safety has spent the past decade planning for the use of the narrowband spectrum and is anxiously awaiting the end of the digital TV transition to begin system deployment. These plans should not be undermined.

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<sup>16</sup> See Reply Comments of the National Public Safety Telecommunications Council, WT Docket No. 06-169 at 4 (received Nov. 13, 2006) (“there is a general consensus that approximately 1 MHz is an adequate guard band between broadband and other operations.”)

#### **IV. Broadband Technology Is Not A Substitute For Mission Critical Narrowband Networks**

Implicit within the Commission's proposal for the broadband network to occupy the narrowband spectrum is the theory that broadband can serve as a replacement for narrowband networks. To this end, the 9<sup>th</sup> NPRM states that "an IP-based architecture provides great flexibility in combining multiple services, e.g. voice, data and video, on a common infrastructure and into the same device."<sup>17</sup> Motorola believes that any such conclusion is premature.

Motorola agrees that carrying voice, data and video on a common IP-based transport network offers great flexibility – if that network is also able to provide the fast call set-up, low latency through the network and the capability to prioritize public safety services over lower priority services that are being carried over the same WAN/IP connection. The ability to provide to provide low latency and prioritization capability is required throughout the IP network, extending all the way to the RF/Cell sites, not merely in the backbone network.

IP network technologies are extensively used in the fixed infrastructure networks that Motorola manufactures for the narrowband Public Safety marketplace today. These IP networks support the messages and protocols required for TIA standardized mission critical voice and data services in narrowband air interfaces. These IP networks also support the system access control, infrastructure resource control and network management sub-systems needed to operate and maintain these networks. Certainly, these fixed IP networks can carry, or be expanded to carry, the higher data rates that will

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<sup>17</sup> See 9<sup>th</sup> NPRM at ¶18.

be provided by a system utilizing a broadband air interface. Low latency and public safety service prioritization must remain when the broadband data and video services are added to the IP backbone.

Motorola does not believe that a broadband air interface with existing push-to-talk applications, cellular radio access network designs and consumer oriented subscribers have been designed and optimized to support mission critical public safety push-to-talk services for groups. Push-to-talk for mission critical group calls over broadband networks has not yet demonstrated, as a total system solution, that it can provide the same level of fast access performance, call capacity at a single site, multi-vendor and network interoperability, information assurance, coverage reliability versus voice quality, subscriber product robustness and reliability, back-up operational modes during network failures and the public safety feature set that are now provided by fielded, operational narrowband systems. Accordingly, the Commission should not consider the broadband network as a near-term replacement for narrowband systems.

**V. The Commission Must Ensure That Spectrum Remains in the Control of Public Safety and That the Needs of Local Public Safety Users Are Met.**

The Commission proposes that the 12 MHz of spectrum be licensed to a single, nationwide licensee that would be responsible for implementing a nationwide system. While Motorola supports the overall goals expressed by the Commission in making this proposal, it is concerned that, given the limited amount of spectrum available under this proposal, such an approach may not meet the needs of local jurisdictions absent sufficient input at the local level and flexibility to deploy the most appropriate technology.

Public Safety entities have traditionally deployed their own communications networks and maintained control over those networks to meet their specialized requirements and needs. Although many commenters criticize this system of individual licensing and control, it has in fact given public safety the tools necessary for the agencies to best meet their specific needs. Furthermore, the public safety community has made significant progress in deploying statewide and regional networks based on the TIA P25 interoperability standard. Today there are 32 statewide public safety networks, most of which are based on the P25 interoperability standard. These networks not only provide the foundation for nationwide interoperability, but they also allow local users to participate as part of a statewide system, while still maintaining the ability to have local networks suited to the community's unique needs.

While a single nationwide public safety licensee may provide certain benefits by ensuring deployment of a system that is fully interoperable and fully integrated, any structure created by the Commission must allow the network to meet the needs of the local user in terms of the timing of when the network is deployed, the network coverage and the services provided.

If the Commission moves forward with a nationwide license in this spectrum there are a number of things that the Commission can do to help ensure that the structure is responsive to the local needs of public safety:

- 1) *Governance* – The Commission should ensure that the public safety licensee includes representation from as broad range of the public safety community as possible, including from the local level.
- 2) *Funding and timing of rollout* – Because of the limited amount of spectrum available under this proposal, there may be limited interest from commercial entities to help fund deployment of the network. Accordingly, public funds, traditionally provided through States and localities as well as at the Federal level,

will be needed to construct and operate the network. These local funding bodies will likely want to continue to have some control over the timing, coverage and robustness of the network in their area. Accordingly, provisions should be made to allow local entities to build sections of the network in their local area in a manner that both meets their local needs and timing requirements while being consistent with the overall structure, guidelines and agreements established by the nationwide licensee.

- 3) *Technology* – The Commission should provide flexibility to deploy both broadband and wideband technologies in order to best meet local needs. The nationwide licensee would establish overall requirements for interoperability between these technologies. Such compatibility could be handled at the device or network level as appropriate.
- 4) *Control* – The network and license must remain under the control of public safety. Motorola supports the Commission’s proposal to prohibit a commercial entity from having an ownership interest in the license. Provisions should be made to provide at least some local control over the actual operation of the network, including setting priorities for use in that area.

These safeguards will help ensure that a nationwide licensee creates a system that is not only fully interoperable and fully integrated system, but also one that meets the public safety needs of the state and local communities.

Finally, the Commission should adopt provisions to ensure that public safety remains the primary user of the spectrum and that preemption over commercial users is assured. Public Safety must retain control of how provision for public safety preemption of commercial uses is implemented in this spectrum. Public Safety should decide whether unconditional ruthless preemption, where public safety would actually interrupt commercial communications, is required in all instances or whether preemption for less time sensitive communications can be done by putting the public safety user first in the queue to wait for the next available transmission opportunity. Allowing public safety to control the implementation of priority preemption will help ensure that any implementation best meets public safety’s needs.

**VI. In Choosing a Broadband System, the Commission and Public Safety Must Leverage Commercial Technologies and Should Consider Next Generation Technologies, Including LTE.**

If the Commission goes forward with a single nationwide license, the licensee must have the ability to evaluate and determine the most suitable technology to meet the needs of public safety. Unlike narrowband and wideband, which have standards, TIA P25 and TIA 902 (SAM) respectively, developed by and for public safety and which support the unique requirements of the public safety community; broadband does not have a developed standard with a similar focus. Thus, the public safety community will be in the best position to evaluate and choose the most appropriate technology for broadband.

Both public safety and the Commission have expressed interest leveraging the greater economies of scale for broadband equipment provided by widely used commercial technology. Motorola strongly supports this position. Because of the vastness of the commercial broadband market, any appreciable change in economies of scale for public safety must leverage commercial technologies. Motorola estimates that the public safety market, even with federal and critical infrastructure added, is well under 10 million units in the United States. In contrast, the commercial market consists of over 230 million units in the United States.

Broadband technologies being deployed today and being developed for tomorrow are highly efficient and can be deployed in a 1:1 frequency reuse configuration with the same channel available at every site, allowing Public Safety users to interoperate and roam into adjacent jurisdictions nationwide. This configuration also provides flexibility to expand systems by adding available channels as capacity requirements increase. These

same technical efficiencies also apply to commercial systems and their subscribers. The 1:1 frequency re-use configuration can also facilitate and simplify coordination with public safety deployment of wideband technologies in areas where wideband is a more suitable selection based on local requirements by helping to avoid overlap between broadband and wideband channels.

As the Commission and public safety make decisions about broadband technologies, they must look to using the next generation of technologies which will offer improved performance and lower costs over current technologies, as well as the potential for a vibrant lifespan for the next 15 years. Examples of this next generation technology include Orthogonal Frequency Division Multiplex (OFDM) based technologies, such as WiMax and LTE. LTE stands for Long Term Evolution and is the evolution path in 3GPP for GSM/UMTS/HSPA technologies. Indeed, GSM carriers and the multiple manufacturers who supply GSM technology have focused on LTE as the likely migration path for broadband. Therefore, LTE will ultimately be able to leverage the economies of scale of a technology that currently has over 2 billion subscribers and deployments in 200 countries. Benefits of these OFDM-based technologies include wider bandwidths, greater spectral efficiency and true orthogonality resulting in greater throughput and capacity, improved performance in multi-path environments, lower self-interference, and lower latency.

LTE maximizes the potential for competition. Multiple manufacturers including Motorola, Ericsson, Qualcomm, Nokia and others have contributed Intellectual Property Rights (IPR) to the standard being developed for LTE. The multitude of companies contributing to the technology will also reduce the impact of costs associated with IPR.

Additionally, the diverse and global interest in LTE will ensure widespread availability of products in a strong competitive market.

Given that no broadband technology has been developed specifically taking into consideration the unique needs of public safety, it would be inappropriate for the Commission to mandate a broadband standard at this time. Instead it should ensure that whatever structure is adopted for managing this spectrum, there is an opportunity for the public safety community to evaluate technologies, including next generation technologies such as LTE, and implement the most appropriate one for meeting their requirements, both now and in the future.

## **VII. Interoperability Requirements.**

In allowing public safety to evaluate and determine the most appropriate broadband technology, the Commission should also allow public safety to adopt requirements for interoperability. While an IP backbone can provide connectivity between networks, it does not provide the last mile connection to the user. This connection requires an air interface capable of communicating with whatever network is deployed in a given area. As previously stated, to the extent that wideband is permitted, the Commission should require that those devices support TIA 902 (SAM).

Unfortunately, because no such standard exists for broadband technologies, it would be premature to adopt a broadband standard.

Implementing new data systems, whether wideband or broadband, will likely require incorporation of multi-mode and possibly multi-band devices to improve both interoperability and operability. These devices not only provide interoperability across networks, but they also improve operability by being able to work with different

networks in an area, so that if one network experiences problems the device can take advantage of a geographically overlapping network.

Motorola plans to provide public safety agencies both broadband and wideband solutions so they can choose the one that best matches their operability needs. In addition, Motorola anticipates the need to include provisions for public safety wideband devices to also be capable of communicating using broadband technologies to help enable interoperability. For example, a TIA 902 based wideband mobile could also include a broadband slot to provide some basic interoperability at an incident scene where both technologies are being used.

### **VIII. Conclusion.**

Motorola applauds the Commission's effort to create a comprehensive plan to best promote the rapid deployment of a nationwide, interoperate public safety network. Nonetheless, because public safety requires access to critical data during critical times, the Commission must ensure that, with this new network, public safety has the tools necessary to carry out its vital functions. Accordingly, Motorola supports reconfiguring the public safety spectrum to better accommodate broadband technologies by consolidating the narrowband channels into a single block. In creating a strong public safety network, the Commission must maintain flexibility for public safety to deploy both broadband and wideband technologies, depending on the needs of the local public safety community. Furthermore, because mission critical voice services being deployed on the narrowband spectrum provide the backbone of public safety communications, the Commission must ensure the continued protection from interference of this spectrum by not allowing secondary use of the narrowband spectrum at this time. Finally, the

Commission must take the necessary steps to guarantee that the public safety spectrum remain in control of public safety. Under these guidelines, the development of a national public safety broadband network warrants further consideration.

Respectfully Submitted,

/s/ Steve B. Sharkey

Steve B. Sharkey

Director, Spectrum and Standards Strategy

Motorola, Inc.

1455 Pennsylvania Avenue, NW

Suite 900

Washington, DC 20004

TEL: 202.371.6900

February 26, 2007