

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554**

In the Matter of)
)
Spectrum Needs of)
Emergency Response Providers) WT Docket No. 05-157

**COMMENTS OF
NORTHROP GRUMMAN INFORMATION TECHNOLOGY**

Patrick K. Talty
Director
NORTHROP GRUMMAN INFORMATION
TECHNOLOGY, TASC, INC.
14672 Lee Road, Suite 600
Chantilly, Virginia 20151
Tel: (703) 961-7200

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EXECUTIVE SUMMARY

Northrop Grumman Information Technology (“NGIT”) welcomes the opportunity to submit comments in response to the Commission’s *Public Notice* seeking input for the Commission’s Congressionally-mandated study assessing the short-term and long-term spectrum needs of emergency response providers.

The tragic events of September 11th highlighted the inadequacy of the communications systems used by the nation’s first responders. The older communications systems are designed to operate on narrowband channels and are incapable of supporting many of today’s public safety needs for reliable video and data, as well as voice communications. The Report of the 9/11 Commission was clear that enabling effective and interoperable public safety communications using wireless broadband technologies must be made a priority in the nation’s homeland security effort and ongoing war against terrorism. The 9/11 Commission therefore recommended that the government “[a]llocate more radio spectrum and improve connectivity for public safety communications....”

As the Commission is aware, the Public Safety Wireless Advisory Committee (“PSWAC”) in its *Final Report* to the Commission and NTIA in 1996 concluded that approximately 25 MHz of spectrum was needed immediately for public safety and that an additional 70 MHz is needed by 2010. Consistent with PSWAC’s recommendation, in 1997 Congress directed the Commission to allocate 24 MHz at 700 MHz for public safety purposes from the spectrum to be recovered from analog broadcasters at the end of transition to digital television. In addition, in 2002 the Commission allocated an additional 50 MHz of spectrum at 4.9 GHz for public safety purposes.

However, the two recent allocations are inadequate to meet today’s public safety requirements for a flexible two-way broadband mobile system covering the entire geographic area of public safety agencies. The 700 MHz spectrum is channelized for narrowband voice and data services with insufficient bandwidth for broadband video and data. The additional 50 MHz at 4.9 GHz can support broadband uses at the sites of incidents, but its short propagation characteristics make it difficult and prohibitively expensive for public safety entities to construct a wide-area broadband network that will reliably cover the entire geographic area in which agencies rely upon communications to protect the public’s safety.

The limitations of the 700 MHz and 4.9 GHz allocations lead NGIT to urge the Commission to recommend that Congress mandate the allocation for public safety and homeland security purposes of at least an additional 10 MHz of contiguous spectrum at 700 MHz to support wireless broadband applications. Such an additional allocation is essential to upgrade public safety communications because the technical propagation characteristics of 700 MHz are capable of supporting wireless broadband networks throughout urban, suburban, and rural geographic areas with reliable coverage. The additional allocation of 700 MHz spectrum also would create important synergies with other 700 and 800 MHz public safety systems that would facilitate the integration of systems and interoperability across jurisdictions and platforms at reasonable cost.

The 9/11 Commission recognized that equipping first responders with modern wireless broadband technologies will greatly enhance the ability of public safety and homeland security agencies to protect the public. No spectrum currently allocated for public safety purposes is suitable for supporting broadband coverage of wide areas. NGIT therefore urges the Commission to recommend to Congress that additional 700 MHz spectrum be mandated for public safety use. Doing so will support reliable broadband communications coverage throughout all geographic areas, rural as well as urban and suburban.

I. NORTHROP GRUMMAN'S INTEREST IN FIRST RESPONDER COMMUNICATIONS NEEDS

NGIT is a leading provider of IT, systems engineering, and systems integration for the Department of Defense, national intelligence, federal civilian and state/local agencies and commercial customers. Its solutions support simulation and training, information assurance, combat systems, software engineering, weather systems, military intelligence, enterprise systems, secure communications, and space systems. In addition, NGIT has a major presence in homeland security initiatives: it is the leading provider of security solutions to the federal government and one of the world's largest suppliers of 911 First Responder Computer-Aided Dispatch systems. NGIT's TASC unit provides leading edge expertise in communications, command, control and intelligence ("C3I") and Information Systems Research ("ISR"); systems engineering, integration and development; geospatial, wireless, signals intelligence, communication and software technologies; information operations and analysis; and operations support to the intelligence, defense and homeland security communities.

II. THE COMMISSION SHOULD RECOMMEND TO CONGRESS DEDICATED SPECTRUM FOR AN INTEROPERABLE, BROADBAND MOBILE PUBLIC SAFETY COMMUNICATIONS NETWORK

The tragic events of September 11th focused national attention on the need to improve communications among and between the nation's first responders. The events of that and subsequent days highlighted that the country's first responders are struggling to perform their jobs protecting the public because they are using older communications systems designed to operate on narrowband channels that are incapable of supporting today's public safety communications need for reliable broadband voice, video and data with confirmed delivery capability.

The review of those terrible events by the National Commission on Terrorist Attacks Upon the United States (the “9/11 Commission”) made it clear that enabling effective and interoperable public safety communications using the most advanced wireless broadband technologies must be made a priority in the nation’s homeland security effort and ongoing war against terrorism. However, today’s public safety spectrum is regulated based upon narrowband technologies and is inadequate to support new state-of-the-art digital systems using broadband technologies.

Recognizing the first responder communications problem and the need for additional spectrum to rectify it, the 9/11 Commission recommended that the government “[a]llocate more radio spectrum and improve connectivity for public safety communications...”³ In addition to the 9/11 Commission’s recommendation, many members of the House of Representatives and the Senate recognize the need for additional public safety spectrum and increased interoperability, and have introduced legislation and conducted hearings over the past two years addressing issues related to making additional public safety spectrum available in an expeditious manner⁴ and improving interoperability and increasing funding for public safety communications

³ See *Public Notice* at n.2 (citing National Commission on Terrorist Attacks Upon the United States, *The 9/11 Commission Report: Final Report of National Commission on Terrorist Attacks Upon the United States*, Executive Summary, 20 (2004)).

⁴ See e.g., *The Spectrum Needs of Our Nation’s First Responders: Hearing Before the House Comm. on Energy and Commerce, Subcomm. on Telecommunications and the Internet*, 108th Cong. (June 11, 2003); Spectrum Availability for Emergency-Response and Law-Enforcement To Improve Vital Emergency Services Act (“SAVE LIVES Act”), S. 2820, 108th Cong. (2004); Homeland Emergency Response Operations Act (“HERO Act”), H.R. 1425, 108th Cong. (2003); Faster and Smarter Funding for First Responders Act of 2003, H.R. 3266, 108th Cong. (2003); Smarter Funding for all of America’s Homeland Security Act of 2004, H.R. 5430, 108th Cong. (2004); Emergency Preparedness and Response Act of 2003, S. 930, 108th Cong. (2003).

equipment and networks.⁵

In the Intelligence Reform Act, Congress directed the FCC to study and report on the 9/11 Commission's recommendations that more public safety radio spectrum be made available and that connectivity for public safety communications be improved. Among other things, Congress:

- required the establishment of a national program to enhance public safety interoperable communications at all levels of government;⁶
- required the provision of technical guidance, training, grants and other assistance to support the rapid establishment of consistent, secure and effective interoperable communications between all levels of government in areas with consistently high levels of risk of terrorist attack;⁷
- stated the Sense of Congress that Congress “must act to pass legislation in the first session of the 109th Congress to establish a comprehensive approach to the timely return of analog broadcast spectrum” and that “any delay in the adoption of legislation...will delay the ability of public safety entities to begin planning to use this needed spectrum;”⁸ and

⁵ See e.g., Public Safety Interoperability Implementation Act, H.R. 3370, 108th Cong. (2003); Preparing America to Respond Effectively Act of 2003 (“PREPARE Act”), H.R. 3158, 108th Cong. (2003); Connecting the Operations of National Networks of Emergency Communications Technologies for First Responders Act of 2004, H.R. 4400, 108th Cong. (2004); National Preparedness Standards Act, H.R. 3237, 108th Cong. (2003); First Responders Homeland Defense Act of 2004, S. 2632, 108th Cong. (2004); Homeland Security Interagency and Interjurisdictional Information Sharing Act of 2004, S. 2701, 108th Cong. (2004); Homeland Emergency Response Act of 2003, H.R. 1389, 108th Congress (2003); Winning the War on Terror Act of 2004, H.R. 5291, 108th Cong. (2004); *First Responder Interoperability: Can You Hear Me Now?: Hearing Before the House Comm. on Government Reform, Subcomm. on National Security, Emerging Threats and International Relations and Subcom. on Technology, Information Policy, Intergovernmental Relations and the Census*, 108th Cong. (Nov. 6, 2003); *Combating Terrorism: Assessing Federal Assistance to First Responders: Hearing Before the House Comm. on Government Reform, Subcomm. on National Security, Emerging Threats and International Relations*, 108th Cong. (Sept. 15, 2003).

⁶ *Intelligence Reform Act*, § 7303, 118 Stat. at 3843-3847.

⁷ *Id.*

⁸ *Id.* at § 7501, 118 Stat. at 3854-3855.

- required the FCC to study and assess the short-term and long-term spectrum needs of emergency response providers and submit a report to Congress, which is the subject of this proceeding.⁹

These provisions of the Intelligence Reform Act and the testimony, debate, and commentary leading up to the Act provide a substantial record demonstrating the immediate need to improve public safety communications. Congress deferred to the FCC as the expert regulatory agency, in consultation with the Department of Homeland Security, for a specific recommendation of additional spectrum suitable to meet the need of first responders for a public safety interoperable broadband mobile communications network providing reliable and flexible wireless broadband communications capabilities.

III. CURRENT PUBLIC SAFETY SPECTRUM IS INADEQUATE TO DEPLOY WIRELESS BROADBAND TECHNOLOGIES NEEDED FOR PUBLIC SAFETY AND HOMELAND SECURITY PURPOSES

Over a decade ago, in 1993, Congress required the FCC to study public safety spectrum needs and to develop a plan that ensures the availability of adequate frequencies through the year 2010.¹⁰ The Commission's report to Congress concluded that it required more information from public safety agencies and other interested parties to define the scope of the public safety agencies' spectrum needs.¹¹ To study and report on public safety spectrum needs, the FCC and the National Telecommunications and Information Administration ("NTIA") jointly convened the Public Safety Wireless Advisory Committee ("PSWAC").

⁹ *Id.* at § 7502, 118 Stat. at 3855-3856.

¹⁰ See Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, Title VI, § 6002, 107 Stat. 312, 47 U.S.C. § 309 (j)(10)(B)(iv).

¹¹ See FCC, *Report and Plan for Meeting State and Local Government Public Safety Agency Spectrum Needs Through the Year 2010, Report and Plan*, FCC 95-55 (rel. Feb. 9, 1995).

Exactly five years before the events of 9/11, on September 11, 1996, the PSWAC submitted its *Final Report* to the Commission and NTIA. It determined that approximately 25 MHz of spectrum was needed on the short term and recommended that spectrum to be recovered from television broadcasters at the end of their transition to digital be considered to meet this need. The PSWAC also concluded that an additional 70 MHz of spectrum would be needed by 2010. Consistent with the *Final Report*, in 1997 Congress by statute directed the Commission to allocate 24 MHz at 700 MHz for public safety purposes from the first 60 MHz to be recovered from analog broadcasters resulting from the transition to digital television.¹² This spectrum subsequently was allocated by the FCC and service rules were adopted to govern its use by public safety agencies.¹³

Separately, in 2002, the Commission allocated an additional 50 MHz of spectrum at 4.9 GHz for public safety purposes. The Commission concluded that this new spectrum will support broadband applications such as local area networks for incidence scene management.¹⁴

These two allocations, however, have proved inadequate to meet today's public safety requirements for a flexible two-way broadband system reliably covering the geographic reaches of public safety and homeland security agencies.

¹² See Balanced Budget Act of 1997, Pub. L. 105-33, Title III, 111 Stat. 251 (1997), *codified at* 47 U.S.C. § 337 (“Budget Act of 1997”).

¹³ See *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, *First Report and Order*, 14 FCC Rcd 152 (1998) (“First Report and Order”); *Second Memorandum Opinion and Order*, 15 FCC Rcd 16844 (2000) (“Second MO&O”) (subsequent history omitted).

¹⁴ See *The 4.9 GHz Band Transferred from Federal Government Use*, WT Docket No. 00-32, *Second Report and Order and Further Notice of Proposed Rulemaking*, 17 FCC Rcd 3955 (2002); *Memorandum Opinion and Order and Third Report and Order*, 18 FCC Rcd. 9152 (2003).

A. Public Safety Spectrum Allocations and Channelizations In the 700 MHz Band are Based on Pre-Broadband Technology

While Congress and the Commission long have recognized the needs of public safety entities for dedicated spectrum,¹⁵ the public safety spectrum allocations directed by Congress in 1997 were made based on pre-September 11th and pre-broadband technology. Congress in the Intelligence Reform Act envisions that in the post-September 11th world public safety entities should have access to reliable advanced broadband applications to fulfill the communications needs of homeland security and public safety first responders.

As discussed below, the 24 MHz of spectrum that Congress in 1997 directed the Commission to allocate for public safety fails to facilitate use of today's wireless broadband technologies and applications. Even with this additional spectrum, public safety entities will continue to have limited communications capacity to fulfill their increased responsibilities. The Commission must recognize this limitation and should recommend that Congress direct the allocation of additional 700 MHz spectrum in a manner that is suitable for the development of a nationwide broadband mobile network that will support interoperability and deployment of advanced broadband applications.

B. Recent Spectrum Allocations Are Not Suitable for Reliable Broadband Communications

In 1997 Congress by statute directed the Commission to allocate 24 MHz of spectrum in the 700 MHz band.¹⁶ However, this spectrum allocation is inadequate to support a nationwide interoperable broadband mobile network capable of providing advanced broadband applications

¹⁵ See *Final Report of the Public Safety Wireless Advisory Committee to the Federal Communications Commission and the National Telecommunications and Information Administration*, submitted in the FCC's WT Docket No. 96-86, *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*.

¹⁶ *Supra* note 12.

because the spectrum is allotted and channelized for narrowband voice and data services with insufficient bandwidth for broadband uses. The other spectrum allocation to public safety in the past decade - - the additional 50 MHz allocated for public safety at 4.9 GHz - - supports broadband uses at the sites of incidents, but short propagation characteristics make use of this allocation prohibitively expensive for public safety entities to construct a wide-area broadband network to support modern broadband applications throughout the geographic area where they must protect the public's safety.

Public safety entities generally, and first responders in particular, require access to broadband applications that will provide immediate, rapid and multi-media communications between multiple first-responders, including fire, police, emergency medical services, and others. Currently, first-responders must rely on voice communications to receive time-sensitive information about an emergency incident, but too often that information comes too late or the transmission is lost. Broadband wireless networks would dramatically improve these types of first responder communications when timeliness and reliability are critical by providing, among other applications, data messaging capabilities that will resend messages until acknowledged by the receiving unit to ensure their receipt. Such networks also would support transmission to multiple first responders of high quality images such as photographs, finger prints, blue prints and maps, as well as full-motion, high-resolution video and other bandwidth-intensive monitoring applications. A readily-available and reliable array of such communications choices would allow first responders to share the time-critical information needed to respond more effectively to both routine and catastrophic events.

The requirements for communication by a single first responder on a wireless broadband network may range from low-speed web browsing at 50-200 kilobits per second (kbps) to multiple real-time streaming video images transmitted at 1-2 megabits per second (Mbps). Current public safety spectrum allocations at 700 MHz and 4.9 GHz do not meet these needs. At 700 MHz data speeds do not meet individual and aggregate demand levels, and at 4.9 GHz service is limited geographically and first responders either must travel to hotspots to secure information or portable hotspots would be required with the capability to connect to a wire broadband connection or transmit on other broadband spectrum for backhaul to the central network.

C. The 24 MHz of Public Safety Spectrum in the 700 MHz Band is Channelized for Narrowband Voice and Data Use, Not Broadband Wireless Use

In the Budget Act of 1997, Congress mandated that the Commission reallocate 24 MHz of spectrum in the 700 MHz band to public safety services. This is spectrum that will be recovered from the broadcast television stations operating on Channels 60 through 69 as a result of the transition to digital television. To carry out the Congressional mandate, the Commission allocated the 764-776 and 794-806 MHz bands for public safety use and adopted regulations governing its use.¹⁷ Full access to this spectrum is contingent upon its vacation by TV broadcast stations transitioning to digital. The DTV transition has no definite deadline, however, although Congress is considering a hard cut-off in the 2007-2009 timeframe. In urban areas, where spectrum is most urgently needed by public safety entities, analog broadcast operations continue to operate and thereby prevent its use by public safety entities.

¹⁷ *Supra* note 13.

In addition, for this 24 MHz allocation the Commission established a band plan and eligibility requirements based on narrowband technologies. The Commission designated 12.5 MHz for General Use, 50% of the total allocation; 2.6 MHz for Interoperability (10.8%); 2.4 MHz for State Licensees (10%); 0.3 MHz for Low Power Operations (1.25%); 0.2 MHz for Secondary Trunking (0.8%); and 6.0 MHz was reserved (25%). Within these divisions, the Commission designated 1,920 narrowband channels and 240 “wideband” channels. The widest channel, however, is only 150 kHz (.15 MHz).

While this spectrum will help meet ongoing public safety voice and messaging needs, the narrowband channelization and division among various eligible users makes it unsuitable for a nationwide broadband mobile network that supports a full array of audio, video, and data wireless broadband applications even when the spectrum becomes fully available at the conclusion to the DTV transition. Advanced broadband applications for public safety require complete coverage of entire communities with “four 9’s” reliability, with individual user throughput up to 2 Mbps, and net throughput up to 74 Mbps. At a minimum, broadband applications require 10 MHz of contiguous spectrum.

By comparison, the Commission’s service rules for the 700 MHz of public safety spectrum establish a maximum channel bandwidth of 150 kHz and the approved technologies that have been designed for this channel bandwidth, such as the standardized TIA-902 Scalable Adaptive Modulation, offer data rates limited to only 460 kbps. In addition, these narrow bandwidths do not support multiple video streams for users. Finally, the spectrum designated for “wideband data” must be shared among multiple states and over a dozen public safety agencies. Therefore, no one group can expect more than three or four paired channels offering peak

citywide net throughput of 1.4 to 1.9 Mbps, which is much less than projected citywide demand and aggregate demand for each individual site.

D. The 4.9 GHz Public Safety Band Provides Limited Propagation Paths

Recently the Commission allocated 50 MHz of spectrum at 4.9 GHz for public safety use.¹⁸ However, use of this spectrum is limited by inherent radio propagation limitations. As a practical matter, the propagation characteristics at 4.9 GHz limit wireless broadband use by public safety entities to small, discrete geographic areas measured in feet rather than miles. Any attempt to utilize the 4.9 GHz spectrum for wide-area purposes will result in extremely high deployment and operational costs because of the small coverage area possible for each access point. While combining access points into a “mesh network” may be feasible for commercial services in areas of high population, public safety agencies must ensure reliable communications throughout the entire area they serve, including the most rural. Mesh networks would be economically infeasible in many circumstances.

Assuming the deployment of the same technology, complete coverage of a city like Washington, DC would require significantly more transmission sites at 4.9 GHz rather than at 700 MHz. The District of Columbia, for example, has estimated that about 420 sites would be needed to provide comprehensive coverage throughout the city at 4.9 GHz, whereas only 10 sites would be required at 700 MHz. The difference represents a significant savings in deployment and operational costs.¹⁹

¹⁸ See *The 4.9 GHz Band Transferred from Federal Government Use*, Memorandum Opinion and Order and Third Report and Order, WT Docket No. 00-32, 18 FCC Rcd 9152 (2003).

¹⁹ See *Protecting Homeland Security: A Status Report on Interoperability Between Public Safety Communication Systems: Hearing before the House Comm. on Energy and Commerce, Subcomm. on Telecommunications and the Internet*, 108th Cong. (June 23, 2004) (prepared testimony of Robert

These comparisons, based on free-space propagation from fixed sites, are optimistic. The mobile propagation environment is even less inviting at 4.9 GHz. As described in a white paper published by TROPOS networks,²⁰ at 4.9 GHz natural or man-made obstacles add propagation losses to free space propagation losses. In the referenced paper, the authors compare 2.4 GHz to 4.9 GHz propagation characteristics. The difference in propagation between 700 MHz and 4.9 GHz is even greater.

The 4.9 GHz spectrum is fundamentally limited in reach and would require hundreds of access points to cover even limited areas. The significant additional signal losses at the higher frequencies suggest that 50 to 100 times more sites would be needed for wireless coverage at 4.9 GHz to match coverage at 700 MHz. As the Commission noted when it allocated the spectrum for public safety purposes, the 4.9 GHz band is best suited to line-of-sight propagation such as local communication at the site of an incident, rooftop-to-rooftop communications, or mesh-type networks where users can create a daisy chain for end-to-end communications.

In contrast to these particularized needs, public safety agencies require absolutely reliable broadband applications that can support first responders wherever they are located, whether driving a car in a park or ascending the fire escape in a skyscraper. The 700 MHz band is the best-suited spectrum to support those applications.

LeGrande, Deputy Chief Technology Officer in the Office of the Chief Technology Officer for the District of Columbia).

²⁰ See *Broadband Public Safety Data Networks in the 4.9 GHz Band: Potential, Pitfalls & Promise*, A Technology Whitepaper by Tropos Networks, Inc. (March 2004), available at http://www.troposnetworks.com/pdf/Spectrum_Whitepaper.pdf.

IV. CONGRESS SHOULD DIRECT THE ALLOCATION OF AT LEAST 10 MHz OF ADDITIONAL SPECTRUM IN THE 700 MHz BAND FOR WIRELESS BROADBAND TECHNOLOGY FOR PUBLIC SAFETY AND HOMELAND SECURITY PURPOSES

The technical propagation characteristics of 700 MHz are well-known and considered ideal for public safety communications. The spectrum is capable of supporting wireless broadband networks in urban, suburban, and rural geographic areas with reliable coverage throughout. In urban and suburban areas, antennas and powers can be kept at relatively low levels to provide substantial re-use of the spectrum, while in rural areas higher antennas and powers will permit economical and reliable coverage for substantial distances.

Another propagation advantage of 700 MHz is the ability of radio signals to penetrate buildings. At higher frequencies, building penetration becomes an increasingly difficult factor. As a practical matter, the power used by public safety handheld units is limited by battery power and the need for units to be ultra-reliable in life-and-death situations inside buildings. Propagation at 700 MHz is ideal to provide reliable communications with manageable battery drain and reasonable handheld weight.

Another important benefit of providing more 700 MHz spectrum for broadband networks is that doing so would create important synergies with 700 and 800 MHz public safety systems. Providing spectrum in this range would allow multi-function radios to use the new spectrum for broadband data, voice and video, yet also communicate on the existing 700 and 800 MHz channels already in use for narrowband communications. Providing an appropriate additional allocation in this range would permit integration of systems and interoperability across jurisdictions and platforms at reasonable cost.

NGIT and others have broadband wireless technologies suitable for 700 MHz operations which would provide substantial benefit to public safety and homeland security agencies. While NGIT's technology can be used at other frequencies, in addition to the propagation factors discussed above, we note that transmitter parts and technology is well-developed at 700 MHz and that this fact would translate into lower cost than if higher spectrum bands were allocated.

The combination of synergies with neighboring public safety and homeland security operations in the existing 700 and 800 MHz bands, superior propagation characteristics capable of providing "four 9's" of reliable signal coverage throughout an agency's area of responsibility, and the expected relative cost-savings for equipment to be manufactured using this spectrum range make this spectrum especially attractive for public safety use.

Specifically, NGIT suggests that the spectrum at 752-762 or 782-792 MHz (the "Upper 700 MHz D Blocks"), currently designated for commercial auction but not yet auctioned, could be reallocated for public safety. As the Commission is aware, Congress delayed auctioning the Upper 700 MHz D Block spectrum, as well as Lower 700 MHz spectrum until an underdetermined date in the future.²¹ The Commission reported to Congress that auctioning this spectrum likely will not take place until completion of the transition to digital television (*e.g.*, December 31, 2006 or later).²² Therefore there is still ample time for Congress to allocate to public safety a 10 MHz block of contiguous spectrum in the Upper 700 MHz D Block and for the Commission to adjust commercial and guard bands and adopt appropriate service rules.

²¹ See Auction Reform Act of 2002, Pub. L. No. 107-195, 116 Stat. 715, sec. 3 (adding para. 15 to 47 U.S.C. § 309(j)).

²² See *Auction Reform Act of 2002, Report to Congress*, 18 FCC Rcd 12556, ¶ 74 (2003).

V. CONCLUSION

Modern wireless broadband technologies will greatly enhance the ability of public safety and homeland security agencies to protect the public. However, no spectrum currently allocated for public safety purposes is suitable for supporting reliable broadband coverage of wide areas. We therefore urge the Commission to recommend to Congress that at least an additional 10 MHz of contiguous spectrum at 700 MHz be mandated for public safety. Doing so will enable highly reliable mobile broadband communications throughout all geographic areas, rural as well as urban and suburban.

Respectfully submitted,

**NORTHROP GRUMMAN
INFORMATION TECHNOLOGY**



Patrick K. Talty
Director
NORTHROP GRUMMAN INFORMATION TECHNOLOGY,
TASC, INC.
14672 Lee Road, Suite 600
Chantilly, Virginia 20151
Tel: (703) 961-7200

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