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"PUBLIC SAFETY INTEROPERABLE COMMUNICATIONS -- THE
700 MHz D BLOCK PROCEEDING"

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION
PUBLIC *EN BANC* HEARING
BROOKLYN BOROUGH HALL
JULY 30, 2008

Good morning Mr. Chairman and Commissioners. My name is Rick Taylor, Senior Principal Engineer of Technology, Tyco Electronics M/A-COM. I am very pleased to be here today to discuss how innovation has already changed the name of the game in public safety communications. TE M/A-COM deploys wireless public safety radio networks based on IP (Internet Protocol) Architecture. We are here to answer any questions you may have about the current state of the art in public safety communications and what is in store for the future.

M/A-COM HAS BEEN DEPLOYING END-TO-END IP NETWORKS

Much has been said about the promise of IP. Some even think that we can only access IP from commercial carriers. I am here to tell you that we are deploying IP technology for mission critical applications by public safety today. We are solving the interoperability problem in major state and regional systems across the nation, through IP, which can transcend disparate frequencies, make, model and protocol or equipment and other traditional barriers that have kept our first responders from talking to each other. The power of IP is that it permits public safety to keep using their legacy equipment for interoperable communications, while laying a path for broadband data, video and more efficient voice.

This is why the State of New York chose M/A-COM's VIDA network solution for their Statewide Wireless Network. VIDA is an IP-based, secure, flexible and scalable network solution. The New York Statewide Wireless Network will be one of the most advanced systems for public safety and public service in the world. It is an integrated network that provides optimal levels of coverage, capacity and features for New York State's varied

geography and populations. M/A-COM's VIDA network will allow New York State to mix-and-match technologies to best fit their regional and fiscal needs, all on a single, unified network.

Neighboring Commonwealth of Pennsylvania was the first statewide public safety system to utilize IP technology and revolutionize the state of public safety communications in 1999. M/A-COM has deployed its OPENSKY technology across the Commonwealth. OpenSky is the most advanced, highest-capacity public safety grade technology available in the U.S. today. The system is designed to support up to 150,000 users. We are expanding the use of technology in Pennsylvania with our NetworkFirst Interoperability network product to connect county and city systems to the statewide network to provide seamless interoperability among Federal, State and Local entities.

Another example of IP technology is the deployment of a trunked $P25^{IP}$ (P25 to the power of IP) radio communications system, including its NetworkFirst Interoperability solution in the National Capital Region. The NCR system will link more than 5,000 Federal personnel and up to 58 public safety agencies in and around the NCR region. The NCR system is the first completely operational Department of Defense Land Mobile Radio IP-Based P25 system to serve the U.S. Army. NCR Phase I provides interoperable mission-critical voice communications with civilian public safety agencies in the NCR region, including greater Washington D.C., Maryland, Virginia, and Fort Hamilton, NY.

THE PATH TO THE FUTURE STARTS WITH LEGACY SYSTEMS

In the *Second D Block NPRM*, the Commission sought "comment on the extent to which the public safety broadband network will or should be interoperable with existing voice and data networks" and asked how it can "encourage interoperability with legacy public safety systems."[1] We agree that any nationwide public safety broadband network should be interoperable with existing voice and data networks. Many of our networks use IP technology today to allow users to interoperate with existing voice and data networks.

Mr. Chairman and Commissioners, this country has billions of dollars invested in an installed base of public safety and public service communications equipment spanning all the public safety frequency bands, many technologies including analog and digital and with system ages from 1 to 30 years. We have all seen statistics of how much it would cost and how long it would take to replace all these disparate systems with one compatible technology or standard. This is not necessary. Interoperability solutions based on IP technology can connect disparate legacy systems creating immediate interoperability. This enables our first responder agencies to fund, upgrade or replace existing systems. They now have the flexibility to purchase equipment and systems that make sense for their individual situations and those of their neighbors to create regional capabilities. When true end-to-end IP technology is used to achieve interoperability, the solution is transparent to the user and is always on. It is a permanent solution that requires no training on new equipment or last minute deployment or patches when time is a critical factor in responding to a disaster. Once an IP network is established, it is scaleable and future proof.

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1 *Second FNPRM* ¶ 34.

With respect to how the Commission can "encourage interoperability with legacy public safety systems, TE M/A-COM recommends that the Commission take the lead in supporting its fellow federal agencies in the construction of an IP backbone to connect all the licensed mutual aid channels to form a nationwide network for disaster relief and response. A national IP network built by the federal government would be a cost-effective way to create immediate voice interoperability for mission critical communications in the face of a widespread disaster. This interoperability approach has been proven in the State of Florida where statewide emergency communications interoperability is achieved through connecting mutual aid channels through IP technology. A network for disaster emergency communications will give the nationwide public safety community needed voice interoperability during widespread emergency situations in the short term, while the nationwide 700 MHz broadband network is being rolled out over the next 5-10 years.

4.9 GHz BROADBAND CAN CONSERVE 700 MHz CAPACITY

I would now like to raise the matter of public safety broadband applications at 4.9 GHz, 50 MHz of which the Commission allocated five years ago. With respect to the D Block, the Commission has envisioned the 700 MHz broadband network as a wide-area, mobile broadband data solution. The amount of spectrum available to this network (10 MHz or 20 MHz during emergencies) will satisfy many public safety mobile broadband needs.[2] Nonetheless, in response to the Commission's question regarding "how does the use of

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[2] *See Second FNPRM* ¶ 59 (mandating "[s]pecifications for a broadband technology platform that provides *mobile* voice, video, and data capability that is seamlessly interoperable across agencies, jurisdictions, and geographic areas") (emphasis added).

10 or 20 megahertz of shared spectrum affect the throughput of the broadband network and the functions it can support,"[3] 10 MHz may be insufficient to accommodate many of the envisioned uses. Broadband networks are expected to carry surveillance video from fixed surveillance cameras throughout a city to public safety vehicles in the field.[4] As typical IP surveillance video operates at 500 kbps–1.5 Mbps,[5] the available 5 MHz of public safety uplink spectrum can accommodate only a limited number of cameras per cell before these fixed wireless video applications exhaust the spectrum. The 700 MHz mobile broadband spectrum should be used for the mobile operations—carrying the video to the vehicles in the field. Public safety can use the 50 MHz of spectrum in the 4.9 GHz band for many of these fixed applications, such as wide-area fixed video surveillance. The use of 4.9 GHz can complement the 700 MHz network and, thus, TE M/A-COM continues to encourage the Commission to make all fixed 4.9 GHz links that are part of a

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3 *Id*. ¶ 34. *See also id*. ¶ 208 ("Will the 10 megahertz of public safety spectrum allocated for broadband be sufficient to support a nationwide, interoperable broadband network for public safety?").

4 *See* The SAFECOM Program, Department of Homeland Security, Statement of Requirements for Public Safety Wireless Communications & Interoperability 48 (2004), http://www.safecomprogram.gov/NR/rdonlyres/3FFFBFBA-DC53-440E-B2EF-ABD391F13075/0/SAFECOM_Statement_of_Requirements_v1.pdf (explaining that an incident commander should be able to "access video from private, non-public safety sources, such as schools, banks, area surveillance cameras, news cameras, traffic cameras").

5 *See* Bosch, Estimating Bandwidth: White Paper, http://www.boschsecurity.us/pdf/EN/Estimating%20Bandwidth%20WP%20low_res.pdf; John Honovich, *Convergence Review: Bandwidth Tutorial for IP Video Surveillance Systems*, IP Video Market Info, June 8, 2008, http://ipvideomarket.info/reviews/show/122; Cisco Systems, Cisco Systems IP Network-Centric Video Surveillance, http://www.cisco.com/en/US/prod/collateral/vpndevc/ps6918/ps6921/ps6938/prod_white_paper0900aecd804a3e89_ps6937_Products_White_Paper.html.

public safety network primary to allow this band to be fully and flexibly used by public safety.[6]

Similarly, the Commission has emphasized its desire for a D-Block licensee to have access to public safety broadband spectrum on a secondary basis,[7] creating further potential for straining the capacity of the D-Block spectrum to satisfy public safety broadband needs. In this regard, the Commission seeks comment on whether there are services or applications that are "too inefficient" or too "far removed" from public safety needs to justify their use in the D-Block spectrum to the exclusion of a D-Block licensee's access on a secondary basis. As an example, the Commission questions whether it would be appropriate to prohibit or restrict continuous or routine video surveillance in the D-Block spectrum.

TE M/A-COM believes that the Commission should afford public safety agencies maximum flexibility in the use of the D-Block spectrum. Continuous or routine video surveillance is inherently spectrum "inefficient." Rather, certain applications—which may find critical use in some instances—are more bandwidth "intensive" than others. Even with access to the entire 20 MHz of potentially available D-Block spectrum, competition for access to D-block spectrum among commercial and public safety users with potentially large bandwidth requirements could result in congestion.

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6 *See* Petition for Clarification or, in the Alternative, Petition for Rulemaking of M/A-COM, Inc., WT Docket No. 00-32 (filed July 22, 2005, amended Aug. 23, 2005) ("Amended Petition"); M/A-COM Ex Parte Letter, WP Docket No. 07-100 (filed Apr. 22, 2008); M/A-COM Ex Parte Letter, WP Docket No. 07-100 (filed Mar. 13, 2008).

7 *See Second FNPRM* ¶ 78 (stating "[o]ne of the key elements of the 700 MHz Public/Private Partnership is the D Block licensee's access to the public safety broadband spectrum on a secondary basis to defray the cost of building a nationwide network serving both commercial and public safety users").

The 4.9 GHz band is prime spectrum for supporting such applications and all 4.9 GHz links, including permanent fixed links that could be used for video surveillance or other fixed applications should be granted primary status. Such status would encourage public safety agencies to deploy 4.9 GHz for appropriate, bandwidth-intensive applications, which would in turn conserve capacity on any 700 MHz broadband network.

Mr. Chairman and Commissioners, we are technology leaders with proven deployments and we offer our assistance to you and any other government agency to help in the adoption of technology that will without a doubt accelerate the state of interoperability among our nation's first responders.