Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications	PS Docket No. 11-153
Framework for Next Generation 911 Deployment	PS Docket No. 10-255

COMMENTS OF QUALCOMM INCORPORATED

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Dated: December 12, 2011

TABLE OF CONTENTS

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QUALCOMM Incorporated hereby submits these comments in response to the FCC's Next Generation 911 *Notice of Proposed Rulemaking* seeking more information on the best means of enabling consumers and public safety personnel to take advantage of next generation emergency communications services.[1] Qualcomm appreciates the Commission's desire to develop a broader understanding of NG911 communications capabilities and associated standards efforts, and investigate the practicality of deploying an interim emergency texting solution. In this regard, Qualcomm notes that the *NG911 Notice* raises many issues that require serious consideration as the FCC and other federal agencies, state governments, the public safety community, and the wireless industry plan the move to a fully-capable NG911 network.

INTRODUCTION AND SUMMARY

The successful development and timely transition to a fully-capable NG911 communications network is critical to supporting America's 21st century emergency

[1] *See* Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, PS Docket No. 11-15, Framework for Next Generation 911 Deployment, PS Docket No. 10-255, *Notice of Proposed Rulemaking*, FCC 11-134 (Sept. 22, 2011) ("*NG911 Notice*").

communications needs. Indeed, Qualcomm and its wireless industry partners are feverishly working on NG911 standards within organizations, such as the Alliance for Telecommunications Industry Solutions ("ATIS") and the Third Generation Partnership Project ("3GPP"),[2] to enable the reliable and low-latency transmission of voice, text, photo, and video communications to and from public safety personnel during emergency situations.

Qualcomm continues to believe that, on balance, the best means of ensuring the successful nationwide deployment of NG911 services would be to focus on the completion of wireless industry's IP-based standards, which is benefiting greatly from close cooperation with the public safety community. These necessary and important interactions will help to build a solid foundation upon which to deploy a common set of solutions for all Americans and avoid diverting significant time, effort, and substantial sums of money on temporary solutions and patchwork deployments that may unfortunately confuse the population of likely users.

Additionally, PSAPs and their associated emergency services organizations will need a sound funding mechanism in place to ensure the successful rollout of NG911 technology, which will involve the purchase and installation of new equipment and the training of emergency staff. The funding challenge only is exacerbated by the reality that many state and local jurisdictions have substantially reduced PSAP funding, while the volume of emergency calls that these PSAPs are handling has grown. The FCC, along with help from Congress and the states, must ensure

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[2] ATIS, an accredited technical standards organization, develops global, market-driven standards for the communications, information, and entertainment industries. More than 200 ATIS member companies are actively formulating standards in separate committees, which include Emergency Services and IP-Based and Wireless Technologies. ATIS is the 3GPP North American Organizational Partner, a member of the International Telecommunication Union ("ITU") Radio and Telecommunications' Sectors, and a member of the Inter-American Telecommunication Commission ("CITEL").

that a financially-sound and fair funding mechanism for NG911 tools is in place before any regulations are enacted.

Finally, in order to ensure that users know how to use NG911 communications tools, the FCC, in conjunction with state and other federal agencies, will need to carry out a thoughtful and comprehensive public awareness campaign on a community by community basis as NG911 communications services are rolled out across the U.S.

BACKGROUND

A. Qualcomm Has Pioneered The Development Of Many Innovative Wireless Technologies And Emergency Communications Tools

Qualcomm has served public safety needs since its founding more than a quarter century ago. The company's Assisted GPS ("AGPS") location accuracy technology, which is the most accurate wireless cellular position location solution in use today, reliably serves many public safety needs as it has been implemented worldwide by more than 50 wireless carriers and dozens of OEMs. Qualcomm is continuing its R&D efforts to improve AGPS and supplement emergency communications tools to take advantage of continually-improving handset and network capabilities. Many of the tools under study go hand-in-hand with enabling a variety of "location aware" technologies, which not only support public safety applications but also health care, education, social networking, advertising, machine-to-machine, and gaming applications. For these reasons, Qualcomm is working closely with the public safety community as well as its carrier customers, equipment infrastructure manufacturers, and handset vendor partners, to improve emergency communications as expeditiously as possible.

Qualcomm is a world leader in developing innovative wireless technologies, including Code Division Multiple Access ("CDMA") -based and Orthogonal Frequency Division Multiple Access ("OFDMA") -based cellular technologies used throughout the world for voice and

broadband communications and countless mobile products and services. Qualcomm's chip division, Qualcomm CDMA Technologies ("QCT"), is the world's largest provider of wireless chipset technology that is used in cell phones and consumer electronics devices. QCT's chipsets support all major frequency bands, the full gamut of standardized, globally harmonized 3G and 4G wide area mobile broadband and cellular technologies, multiple AGPS location tools, Bluetooth, Wi-Fi, and many operating systems, such as Android, Windows Mobile, Symbian, and Qualcomm's own Brew Mobile Platform.[3]

Qualcomm Government Technologies division ("QGOV") has been at the forefront of developing wireless communication solutions for public safety personnel, pioneering efforts in cellular standards, microelectronics design, mobile broadband data, encryption, and value-added end-user applications for wireless phones. QGOV adapts Qualcomm's commercial products to meet the specialized needs of federal and state emergency personnel. By leveraging the company's wireless innovations and expertise, QGOV offers products, engineering, and advisory services to meet government needs for classified and unclassified solutions in the areas of deployable mobile broadband, information sharing, interoperability, as well as tracking, locating, and situational awareness.

B. Public Safety Personnel Rely On Qualcomm's gpsOne Technology, Which Is Deployed Worldwide And Integrated Into Hundreds Of Wireless Devices

Qualcomm's gpsOne solution is the most widely deployed GPS-based location technology, with more than 700 million gpsOne-enabled handsets in use around the world. The

[3] Brew Mobile Platform represents 40% of today's feature phone market share in the U.S. with an estimated 65.5M users. In fact, five of the top ten handsets in the U.S.-installed based today are Brew-based devices. *See* Brew: Bringing Mobile Apps to the Mass Market, The Case for Developing for the Brew Market, COMSCORE (Oct. 2011) *available at* http://www.brewmp.com/sites/default/files/press/pdf/comScore_brew_whitepaper.pdf.

technology is a particularly important tool for police and other public safety personnel. For example, gpsOne technology has allowed law enforcement personnel to locate kidnapping victims in a timely manner. More broadly, gpsOne has enabled network operators to cost-effectively meet the FCC's E-911 mandate and offer a wide range of services leveraging location data. Qualcomm also is extending the gpsOne platform to cameras, pocketable computers, and mobile gaming devices to support location-aware applications in next generation products.

QPoint. Qualcomm's QPoint ubiquitous location determination solution integrates gpsOne technology with location-based server software accompanied by a complementary set of location-based tools and services. QPoint is used by a number of large carriers as well as smaller wireless carriers that lack the resources to operate their own position determination system or prefer to contract with Qualcomm to do so.

Gobi Mobile Platform. Qualcomm's Gobi worldwide mobile platform for notebook computers integrates on a single chipset gpsOne technology and all major 3G and 4G frequency bands, *e.g.*, CDMA2000, EV-DO Rev. A and Rev. B, HSPA+, dual-carrier HSPA+, and LTE, and is backwards compatible with the earlier HSPA and EV-DO technologies. Qualcomm's latest Gobi-enabled 4G platform features the Gobi Application Programming Interface and includes software enhancements for select RF chipsets that enable a common software interface to help connect, locate, and manage 3G/4G devices regardless of wireless interface and operating system.[4] Thus, Gobi is well suited to support public safety services with devices that require broad coverage and connectivity to multiple interfaces while public safety personnel are on the

[4] *See Qualcomm Announces Commercial Availability of Gobi 4000 Platform for 4G LTE Connectivity, Fourth Generation Gobi Platform Provides High-speed 4G LTE Connectivity with Backward Compatibility to EV-DO and HSPA+ Networks* (Nov. 15, 2011) *available at* http://www.qualcomm.com/news/releases/2011/11/15/qualcomm-announces-commercial-availability-gobi-4000-platform-4g-lte-connec

road and within facilities, homes, and businesses, for it readily enables emergency responders to select the best available connection from multiple networks and obtain the best possible cellular service at the lowest possible cost.

FlashLinq. Qualcomm's FlashLinq technology allows thousands of wireless devices within the same neighborhood to discover one another automatically and communicate directly at broadband speeds via direct peer-to-peer ("P2P") and device-to-device ("D2D") communications.[5] This technology provides interesting opportunities for public safety applications, for it creates a form of "Proximal Communications" using OFDMA, whereby mobile users (and devices) can discover each other up to one kilometer away, and then continuously connect, disconnect, and directly communicate with other mobile users (and devices) at ranges of up to several hundred meters. FlashLinq is designed to use unpaired licensed spectrum in a new, highly efficient manner, whereby devices that are near one another communicate directly *without* cellular infrastructure. Operating in a 5 MHz unpaired allocation, FlashLinq allows thousands of devices to remain "aware" of one another in a continuous background fashion, effectively creating mutual awareness in what Qualcomm calls a "neighborhood area network."

FlashLinq thus enables entirely new types of direct P2P/D2D wireless services, offloads traffic from the cellular network, and offers important benefits for first responders, who can use it to directly discover and communicate with one another and with victims during emergencies. Because FlashLinq communications are proximal (*i.e.*, relatively short range), transmission

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[5] *See Qualcomm to Demonstrate New Peer-to-Peer Technology at Mobile World Congress* (Feb. 8, 2011) *available at* http://www.qualcomm.com/news/releases/2011/02/08/qualcomm-demonstrate-new-peer-peer-technology-mobile-world-congress.

power levels are kept low, and high levels of spectrum reuse are achieved on par with cellular OFDMA and substantially higher than unlicensed technologies.

C. Qualcomm Is Providing Enhanced Emergency Communications Services Through Partnering With Service Providers And Public Safety Agencies

Lifecomm Mobile Personal Emergency Response Solution. Qualcomm, Hughes Telematics, and American Medical Alert Corporation have combined forces to deliver mobile health services through Lifecomm LLC, a joint venture of all three companies. Early next year, the joint venture plans to launch in the U.S. a mobile Personal Emergency Response Service ("mPERS") to offer seniors and their caregivers enhanced freedom of movement and peace of mind.[6] Whereas today's PERS operations send messages like "I've fallen and can't get up" from users in their homes to emergency service providers, caregivers, and family members, the mPERS solution extends this capability outside users' homes to any place they may travel.

The mPERS solution will contain a cellular modem to support wireless voice and data communications with an emergency call center, an embedded GPS module, and other sensors to enable location-based monitoring. A personalized web portal for users, their families and caregivers will provide detail about users' activities and movement. This mPERS platform will be a major step forward in providing fully-connected and affordable emergency services.

Qualcomm's Worldwide Wireless Reach Initiative Is Working With Public Safety To Reduce Crime. Qualcomm's Wireless Reach initiative supports quality-of-life programs in the

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[6] *See Qualcomm-Backed Venture Tries to Aid Seniors, Stylishly,* Wall Street Journal Blog (Jan. 5, 2011) *available at* http://blogs.wsj.com/digits/2011/01/05/qualcomm-backed-venture-tries-to-aid-seniors-stylishly/; *see also Hughes Telematics, Qualcomm and American Medical Alert Corporation Announce Joint Venture to Create Lifecomm, New company to offer mobile Personal Emergency Response products and services* (May 12, 2010) *available at* http://www.qualcomm.com/news/releases/2010/05/12/hughes-telematics-qualcomm-and-american-medical-alert-corporation-announce-.

areas of public safety, education, health care, and the environment, by introducing the benefits of wireless connectivity to underserved regions. Wireless Reach, which was founded in 2006, currently has 73 projects in various stages of development in 31 countries around the world. Each project focuses on empowering underserved communities through the use of 3G and other advanced wireless technologies.

One Wireless Reach public safety project involves the Municipality of Santa Tecla and the National Civilian Police in El Salvador in collaboration with RTI International and the United States Agency for International Development, wherein a wireless security system using 3G technology is being used to collect and share vital crime information in real time.[7] This project enables law enforcement and government personnel to use mobile phones and web-based applications to reduce crime by reporting crime incident locations and related information.

DISCUSSION

I. The Wireless Industry And The Public Safety Community Are Hard At Work Developing Standards To Ensure A Successful and Timely NG911 Transition

Qualcomm strongly supports the development of – and smooth transition to – an NG911 system based upon broadband, IP-based connectivity. At this time, Qualcomm is actively working with its wireless industry partners, within standards groups such as ATIS and 3GPP, and the FCC's Communications Security, Reliability, and Interoperability Council ("CSRIC") and its broad collection of stakeholders, to develop standards, guidelines and best practices to support NG911 services.[8]

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[7] *See* Qualcomm Wireless Reach – Public Safety in El Salvador: Wireless Security, Helping Reduce Crime *available at* http://www.qualcomm.com/citizenship/wireless_reach/projects/public_safety.html.

[8] ATIS's membership, which includes wireless and wireline operators, network and consumer equipment manufacturers, broadband providers, and public safety agencies, has been

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The Commission should continue to encourage these collaborative efforts, for they offer the best means of ensuring the successful rollout of interoperable and reliable NG911 services. Indeed, Qualcomm and its wireless industry partners have made substantial investments over the past two decades to develop a robust E911 system that emergency personnel rely upon to serve wireless emergency callers across the country, and these same communications technology providers are making similar investments to similarly deploy and deliver NG911 services.

A. The FCC Should Focus Its Efforts On Enabling A Fully-Capable And IP-Based NG911 Emergency Communications Architecture

The best means of ensuring the successful nationwide deployment of NG911 services would be to finish work on wireless industry's IP-based standards, specifically the 3GPP Session Initiation Protocol/Internet Protocol Multimedia Subsystem ("SIP/IMS") -based solutions, that will provide a solid foundation upon which to deploy a common collection of solutions for all Americans.

This work, in conjunction with the National Emergency Number Association ("NENA") i3 solution for PSAPs,[9] will provide all PSAPs and the communities they serve, very capable and robust NG911 tools. These tools include the delivery of real-time textual information, photos, video, and audiovisual material, to emergency response personnel. The 3GPP IMS-based Multimedia Emergency Services ("MMES") standard will support emergency communications

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actively working together for several years on NG911 issues, particularly voice services and more recently Non Voice Emergency Services ("NOVES").

[9] *See* NENA Functional and Interface Standards for Next Generation 9-1-1 Version 1.0 (i3) *available at* http://www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/NENA_08-002-v1_Functional_Interface_Standards_NG911_i3.pdf (the "NENA i3 Solution").

by persons with disabilities consistent with the 21st Century Communications and Video Accessibility Act.[10]

Focusing on a core group of emergency communications services that can meet these requirements will help to ensure a successful deployment. If too many services are included in NG911, it increases the likelihood that PSAPs, network providers, and equipment suppliers will support different subsets, which will lead to fragmented deployments and interoperability issues. Also, because many communications services can be direct and nearly direct substitutes for one another, it is more efficient, from a technology deployment and economic perspective, to focus on deploying a core group of services that meet the needs of virtually all Americans.

B. Prioritization Of Emergency Calls and Messaging Requires Careful Consideration And Collaborative Thinking Among 911 Stakeholders

The FCC should also look to ATIS, 3GPP, and CSRIC to study the difficult issue of prioritizing emergency calls and messaging,[11] for collaborative thinking between public safety professionals and wireless service providers and equipment vendors on this issue is essential. Prioritization would be needed most during a wide scale emergency situation when numerous callers are seeking help relating to the same general issue and identifying the related emergencies to address first requires split second decision-making that often must be made based upon incomplete information.

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[10] To the extent the Commission seeks to require a texting tool for persons with disabilities in the short-term, Qualcomm suggests that the FCC consider the ATIS Interim Non-Voice Emergency Services ("INES") Incubator proposals, which would offer a straightforward migration to the long-term MMES solution. *See NG911 Notice* at ¶¶ 51, 54-56. Indeed, whereas the SMS-to-911 approach the FCC currently prefers would need to be replaced in the long-term, the resources used now to facilitate the INES Incubator approach would subsequently support the long-term solution that ATIS is working towards enabling.

[11] *See NG911 Notice* at ¶¶ 60-67. Qualcomm notes that the LTE standard offers means of prioritizing traffic.

II. NG911 Success Will Depend On A Sound Funding Mechanism And Close Cooperation Among Public Safety And User Communities, The Wireless Industry, And Federal, State And Local Governments

To ensure the successful rollout of NG911 services, PSAPs and their regional emergency services organizations will need a fiscally-sound funding mechanism in place to support upgrades to their existing equipment, the purchase and installation of new equipment, as well as the training of emergency staff on how to use the new equipment to elicit critical information from callers and other sources. In addition, PSAPs should be required to demonstrate a certain level of technical NG911 capability at the regional level before wireless service providers are required to deliver such services to the relevant PSAPs, as currently is the case with E911 regulations.[12]

Moreover, because NG911 capabilities will be deployed across states and local communities on a rolling basis, supplying the user community with timely information of the availability of the new services is critically important to ensuring NG911 success.[13] The federal government, the FCC, Department of Homeland Security, and other agencies, in conjunction with state and local governments, must engage in a broad and thoughtful public awareness campaign, as NG911 services are rolled out across America. Such public outreach is essential so the community of users, particularly the elderly and disabled, are informed of and, if necessary, taught how to access, new and unfamiliar NG911 services. These efforts also will empower the public to communicate effectively with emergency responders and further support their critical response efforts.

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12 *See NG911 Notice* at ¶ 91. E911 rules require CMRS providers to make Phase I and Phase II service available only if the designated PSAP administrator "has requested the services required…and is capable of receiving and utilizing the data elements associated with the service." 47 C.F.R. § 20.18(j).

13 *See NG911 Notice* at ¶¶ 105-06, 109-110.

CONCLUSION

The Commission should maintain its focus on assisting the public safety community and wireless industry to develop standards for a core group of low-latency IP-based emergency communications tools. In addition, the FCC should continue its work with Congress, other federal agencies, and state and local governments, to ensure that PSAPs are adequately funded to properly support NG911 equipment and services, and that the public is given thoughtful, timely, and repeated instruction on to use these next generation emergency communications tools as there are deployed on a community-by-community basis across America. Qualcomm looks forward to working with its wireless industry partners and the public safety community as NG911 services are developed and deployed.

Respectfully submitted,

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Dated: December 12, 2011