

**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
)	
Service Rules for the 698-746, 747-762 And 777-792 MHz Bands)	WT Docket No. 06-150
)	

COMMENTS OF HARRIS CORPORATION

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EXECUTIVE SUMMARY

Harris fully supports the granting of the waiver requests made by local, state, and regional jurisdictions (hereinafter “Petitioners”) to make initial network deployments in the 700 MHz public safety broadband spectrum, on a case by case basis. Harris also supports the Commission’s efforts to establish a nationwide interoperable public safety broadband network based on LTE technology and is encouraged by the Commission’s proposal in the National Broadband Plan to provide a source of federal funding for the deployment of the network. The Commission should continue to accept and evaluate waivers for initial deployment in the 700 MHz public safety broadband by local, state, and regional public safety entities as they are submitted.

Harris believes that the National Public Safety Telecommunications Council Broadband Task Force Report (hereinafter “BBTF Report”), which Harris participated in developing, and the Public Safety Spectrum Trust’s (“PSST”) recommendations provide a good starting point for the work of the Emergency Response Interoperability Center when developing final rules for the, interoperable, nationwide public safety broadband network (hereinafter “PSBN”). However, mandating these recommendations as conditions of waiver would be premature as the LTE standard is still in development, especially in the context of public safety usage. In such an evolving environment Harris suggests that the Commission use the BBTF Report and PSST recommendations as guidelines for deployment rather than mandatory conditions of waiver.

Allowing initial deployments in the 700 MHz public safety broadband spectrum prior to the establishment of final rules will ultimately expedite the future build out of the PSBN. These initial deployments will also provide valuable information on network capacity, loading and traffic models, and performance of various software applications that are of interest to public

safety and different from applications typically used on commercial broadband networks. In fact, once the Commission establishes final rules governing the framework of the PSBN, jurisdictions may be able to leverage infrastructure deployed in initial deployments under the waiver process.

Harris believes a status based licensing approach will preserve Petitioners' ability to choose the equipment and applications most beneficial to a jurisdiction's communications needs, while ensuring through market based forces, that initial network deployments are interoperable with the PSBN and able to comply with future PSBN rules. Under a status based licensing model all initial deployments approved under the waiver process will agree to hold a secondary license, while all jurisdictions permitted to deploy under the final PSBN rules will be granted a primary status license. In addition, any process adopted by the Commission for approving waivers must include conditions that prevent interference with mission critical narrowband voice communications.

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To: The Commission

COMMENTS OF HARRIS CORPORATION

This filing is submitted on behalf of Harris Corporation (“Harris”) before the Federal Communications Commission (“Commission”) in response to the Commission’s Public Notice¹ seeking comment on the National Public Safety Telecommunications Council Broadband Task Force Report² (hereinafter “BBTF Report”) and Public Safety Spectrum Trust’s (“PSST”) recommendations³ for initial deployments under the Commission’s waiver process in the 700 MHz public safety broadband spectrum. Harris is an international communications and information technology company serving government and commercial markets in more than 150 countries. Harris is a leading technology developer and manufacturer of mission-critical wireless communications for the public safety communications market with more than 500 critical

¹ See Comment Sought On NPSTC Broadband Task Force and Public Safety Spectrum Trust Technical Recommendations for 700 MHz Public Safety Broadband Deployments, Public Notice, DA 10-458 (rel. Mar. 17, 2010).

² National Public Safety Telecommunications Council, “700 MHz Broadband Task Force Report and Recommendations” (Sept. 4, 2009), *available at* http://www.npstc.org/documents/700_MHz_BBTF_Final_Report_0090904_v1_1.pdf (“BBTF Report”).

³ Letter from Harlin McEwan to Chairman Julius Genachowski, PS Docket No. 06-229, WT Docket No. 06-150 (Dec. 15, 2009).

communications systems deployed world-wide. As a pioneer in the development of IP based networks for private radio and broadband applications, Harris supplies industry-leading brands such as VIDA Broadband™, EDACS®, OpenSky®, NetworkFirst™, and Provoice™. In addition, Harris now offers first responders full-spectrum multiband products for joint public safety operations on the local, state, and federal levels: the Harris Unity™ XG-100 and RF-1033M. Harris is also an active member of numerous standards and technical committees including the TR-8 Mobile and Personal Private Radio Committee of the Telecommunications Industry Association.

I. Granting the Waiver Requests At Issue Will Move The Commission One Step Closer to Achieving Its Goal of Establishing a Nationwide, Interoperable Wireless Broadband Network for Public Safety.

To date, seventeen jurisdictions and one commercial provider—New EA d/b/a Flow Mobile—have filed Petitions for Waiver (hereinafter “Petitioners”) to make initial network deployments in the 700 MHz public safety broadband spectrum.⁴ As stated in previous filings,⁵ Harris fully supports the granting of the waiver requests made by the Petitioners on a case by

⁴ To date, requests have been filed in PS Docket No. 06-229 by: City of Boston (filed Dec. 11, 2008, amended May 28, 2009); the City and County of San Francisco, the City of Oakland and the City of San Jose (filed Mar. 24, 2009, amended May 27, 2009); the State of New Jersey (filed Apr. 3, 2009); New York City (filed June 8, 2009); the District of Columbia (filed June 26, 2009); the State of New York (filed June 30, 2009); Chesapeake, VA (filed July 8, 2009); the City of San Antonio on behalf of the San Antonio UASI Region (filed July 10, 2009); the State of New Mexico (filed July 10, 2009); the State of North Dakota (filed July 27, 2009 and later withdrawn, re-filed on Aug. 18, 2009); the City of Charlotte, NC (filed Aug. 4, 2009); the Iowa Public Safety Broadband Coalition (filed Aug. 7, 2009 and withdrawn on Oct. 15, 2009); the County of Maui, the County of Hawaii, the County of Kauai, the City and County of Honolulu and the State of Hawaii (filed Aug. 19, 2009); the Iowa Statewide Interoperability Communications System Board (filed Oct. 15, 2009); Los Angeles RICS Joint Power Authority (filed Nov. 16, 2009); the City of Pembroke Pines, FL (filed Nov. 18, 2009); Adams County Communications Center, CO (filed Dec. 10, 2009); the City of Seattle (filed Jan. 15, 2010); and the Mississippi Wireless Communication Commission (filed Mar. 23, 2010). In addition, one commercial party, New EA d/b/a Flow Mobile, also filed a petition (filed July 7, 2009).

⁵ See Comments of Harris Corporation, Implementing a Nationwide Broadband Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229 (filed Oct. 16, 2009).

case basis.⁶ The Commission should continue to accept and evaluate waivers for initial deployment in the 700 MHz public safety broadband spectrum by local, state, and regional public safety entities as they are submitted. Harris commends the Commission’s efforts to establish a nationwide interoperable public safety broadband network (hereinafter “PSBN”) based on LTE technology and is encouraged by the Commission’s proposal in the National Broadband Plan to provide a source of federal funding for the deployment of the network. Harris believes that the BBTF Report, which Harris participated in developing, and PSST recommendations provide a good starting point for developing final rules for the PSBN. Nevertheless, mandating these recommendations as conditions of waiver would be premature as the LTE standard is still in development, especially in the context of public safety usage.

Currently, the 10 MHz of spectrum requested for use by the Petitioners—763-768/793-798 MHz (hereinafter the “700 MHz public safety broadband spectrum”)—and licensed to the PSST, is laying fallow. Although broadcasters have successfully vacated the 10 MHz of 700 MHz public safety broadband spectrum, public safety entities have been unable to utilize this valuable spectrum. As evidenced by the Petitioners’ waiver requests, public safety entities have a demonstrated need for access to the 700 MHz public safety broadband spectrum.⁷ The importance of this spectrum to public safety is underscored by the fact that even in a time of economic uncertainty many state and local governments stand ready to invest funds and leverage

⁶ At this time Harris takes no position on the waiver request submitted by New EA d/b/a Flow Mobile. However, Harris encourages the Commission to give preference to evaluating waivers submitted by local, state and regional government entities and consider making the sole commercial waiver the subject of a separate Public Notice in order to allow interested parties to fully consider the unique issues surrounding the disposition of that waiver request.

⁷ See, e.g., Comments of the City and County of San Francisco, City of Oakland, and City of San Jose, Request for Waiver of the Commission’s Rules to Allow Establishment of a 700 MHz Interoperable Mobile Public Safety Broadband Network, PS Docket No.06-229, pp. 6-7 (filed Mar. 24, 2009); Comments of the City of San Antonio, Texas, Request for Waiver of the Commission’s Rules to Allow Establishment of a 700 MHz Interoperable Mobile Public Safety Broadband Network, PS Docket No.06-229, pp. 3-4 (filed July 10, 2009); Comments of the City of Boston, Request for Waiver of the Commission’s Rules to Allow Establishment of a 700 MHz Interoperable Mobile Public Safety Broadband Network, PS Docket No.06-229, pp. 8-10 (filed May 28, 2009).

existing assets to deploy networks in the 700 MHz public safety broadband spectrum.⁸ Allowing initial deployments in the 700 MHz public safety broadband spectrum prior to the establishment of final rules will ultimately expedite the future build out of the PSBN. These initial deployments will also provide valuable information on network capacity, loading and traffic models, and performance of various software applications that are of interest to public safety and different from applications typically used on commercial broadband networks. In fact, once the Commission establishes final rules governing the framework of the PSBN, jurisdictions may be able to leverage infrastructure deployed in initial deployments under the waiver process.

Harris fully supports the granting of the waiver requests made by the Petitioners and believes initial deployments in the 700 MHz public safety spectrum is possible even as the LTE standard continues to evolve. However, in such an evolving environment Harris suggests that the Commission use the BBTF Report and PSST recommendations as guidelines for deployment rather than mandatory conditions of waiver. In order to ensure that initial deployments achieve technical interoperability and comply with future PSBN rules, Harris proposes instituting a status based licensing framework. Harris believes a status based licensing approach will preserve Petitioners' ability to choose the equipment and applications most beneficial to a jurisdiction's communications needs, while ensuring through market based forces, that initial network deployments are interoperable with the PSBN and able to comply with future PSBN rules. Under a status based licensing model all initial deployments approved under the waiver process will agree to hold a secondary license, while all jurisdictions permitted to deploy under the final PSBN rules will be granted a primary status license.

⁸ "Generally, each of the Petitioners suggests that it has sufficient funding in place or plans for funding to be secured, such that it could deploy a public safety broadband network. Petitioners assert that they can fund such a build out independently, while others assert that they would seek out commercial or other partners on their own." Public Safety and Homeland Security Bureau Seeks Comment on Petitions for Waiver to Deploy 700 MHz Public Safety Broadband Networks, Public Notice, 24 FCC Rcd. 10814, 10814 (rel. Aug. 14, 2009).

In addition, any process adopted by the Commission for approving waivers must include conditions that prevent interference with mission critical narrowband voice communications.

II. The BBTF Report and PSST Recommendations Serve As An Excellent Starting Point For Structuring the Final Technical Parameters of the PSBN And Should Be Endorsed As Guidelines For Making Initial Deployments Under the Waiver Process Rather Than Mandatory Conditions of Waiver.

While the BBTF Report and PSST recommendations provide an excellent foundation for the work of the proposed Emergency Response Interoperability Center (“ERIC”), some of the technical requirements outlined in the BBTF Report may not be technically feasible for initial deployments to ensure interoperability with a future PSBN network. While the Commission has recognized the importance of having public safety roll-out its LTE system in conjunction with commercial LTE systems, the development process for LTE and necessary network requirements are vastly different between commercial and public safety networks. Although planned,⁹ detailed interoperability demonstrations in a public safety setting have yet to take place. In addition, key features such as priority preemption, roaming, and voice are still being standardized, especially in a public safety context.

Harris supports the Commission’s goal of developing a LTE based interoperable PSBN, but mandating waiver conditions based on a technology that is still in development, as noted in a

⁹ The National Institute of Standards and Technology has formally announced its intention to build a 700 MHz Public Safety Broadband Demonstration Network, which will provide manufacturers and first responders a location for early deployment of their systems in a multi-vendor, neutral host environment. *See* 75 F.R. 9586-9587 (Mar. 3, 2010).

700 MHz PSBN technical panel hosted by the Commission,¹⁰ may be premature. In particular, some of the features referred to in the BBTF Report are not likely to be in the first commercial LTE releases, and other features are more appropriate to commercial carriers with legacy 2G/3G networks, which may not be optimal for public safety. For example, all of the optional security requirements of 3GPP TS 33.401, referenced in *Section 6.3.3 Security* of the BBTF Report,¹¹ are likely not planned to be in the first commercial LTE release.

In addition, some of the features described in the BBTF Report were defined under the assumption of a commercial carrier providing the complete network and may not provide an optimal implementation for public safety. For example, in *Section 6.3.2.4 Text Messaging*,¹² the BBTF Report proposes using 3GPP TS 23.204 V8.4.0 and 3GPP TS 24.341 V8.1.06 for SMS support. This method is based on the assumption that the network is deployed by a carrier with a legacy SMS system. However, this may not be the optimal approach for a Greenfield system deployed through the waiver process by an entity that does not have a SMS system.

In the case of a public safety system, SMS support could be provided through a more straightforward and cost effective implementation because a public safety LTE system may have the option of delivering SMS using the mechanism defined in 3GPP. These mechanisms include SMS over IP, as specified in 3GPP TS 23.204 and 3GPP TS 24.341, and SMS over SGs, as specified in 3GPP TS 23.272. Either of these approaches provides a solution for both the full

¹⁰ “Activity is now *ongoing* to take that same type of principles and standardize it on an LTE network. This is *ongoing* in 3G PP as well as the next generation Getz forum here in U.S., and they are coordinated.” (*emphasis added*) Patrick Ringovist, Vice President, Wireless Network Solutions, Ericsson, Inc., Federal Communications Commission 700 MHz Nationwide Interoperable Public Safety Wireless Broadband Technical Panel, p. 41 (Mar. 17, 2010) available at <http://www.fcc.gov/pshs/docs/public-safety-spectrum/031710/transcript-100317.pdf>; “I mentioned that there is a work *ongoing* in the next generation Getz forum, they have a *draft specifications* that they’re working on that is 400 pages long, which I will not go through here. So sufficient to say there is a lot of work, a lot of energy being spent right now how this should work in an LTE environment.” (*emphasis added*) *Id.*, at 87.

¹¹ BBTF Report, *supra* note 2, at 21.

¹² *Id.*

IMS based LTE network, as well as, a solution for networks that have a legacy SMS delivery mechanism in place. The analysis of *Sections 6.3.2.4 and 6.3.3* of the BBTF Report demonstrates the need for further refinement of the BBTF Report, especially as the LTE standard continues to evolve, and represents two of a number of examples revealing why adoption of the BBTF Report and PSST recommendations as conditions of waiver may be premature.

Encouraging innovation and regional flexibility in initial deployments is the best way to determine what exact requirements should be a part of the framework for the PSBN. Initial deployments will be an opportunity for both the Commission and public safety to evaluate technologies, establish best practices based on both technical and operational factors, collect real-time user data, examine network performance, and look at public safety application performance—especially during emergencies. ERIC, in coordination with other public safety technical bodies, will serve as good outlets to collect and dissect information gathered from initial deployments.

Currently, much uncertainty exists around these recommendations and no consensus has been reached amongst all interested parties as to the technical capability and operational desirability of the Commission's proposed 700 MHz roaming and priority access plan. The Commission should be wary of mandating waiver conditions in such an uncertain environment. Ultimately, the BBTF Report and PSST recommendations would be most appropriately examined under the purview of ERIC—in coordination with other public safety technical entities—especially after the issues surrounding the D-Block, the structure of the PSBN, the framework of roaming and priority access in the 700 MHz band, and public safety's 700 MHz spectrum allocations are resolved.

III. Flexibility and Interoperability Are Not Mutually Exclusive Concepts.

Mandating the BBTF Report and PSST recommendations as a condition of waiver at such an early stage in the technological development of LTE will restrict public safety organizations ability to design networks in a manner that is most beneficial to their unique and present needs. Because the requirements of first responders vary with a number of factors, including environment, terrain, geographic coverage, operational issues, and economics, every public safety entity needs the ability to uniquely tailor their own communications solutions. Additional evaluation of the BBTF Report and PSST recommendations is necessary to ensure that sufficient flexibility is provided to support deployment plans in what is a rapidly evolving environment.

The BBTF Report and PSST recommendations were made under the assumption that public safety would have direct access to 20 MHz of spectrum—using the public safety broadband spectrum and D-Block—either through a direct spectrum allocation or a shared nationwide wireless broadband network. However, the Commission outlined a new course for the PSBN as part of the National Broadband Plan. In the National Broadband Plan the Commission recommends that public safety, while maintaining its current 700 MHz public safety broadband spectrum allocation, be provided access to commercial 700 MHz spectrum—up to 80 MHz of spectrum, including the D-Block¹³—through voluntary roaming agreements and priority access rules with commercial carriers.¹⁴ This recommendation would be in lieu of a

¹³ Julius Genachowski, Chairman, Federal Communications Commission, Public Safety Briefing, p. 3 (Feb. 25, 2010), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296504A1.pdf.

¹⁴ Report to Congress, A National Broadband Plan For Our Future, Federal Communications Commission, pp. 86 and 315-319 (March 16, 2009), available at <http://www.broadband.gov/download-plan/> (“National Broadband Plan”).

dedicated allocation of 20 MHz, as advocated by public safety, and the Commission's plan for a 20 MHz shared wireless broadband network, as adopted in Commission rules.¹⁵

So long as equipment is compatible with the final PSBN rules and LTE standard, end users should be allowed to choose the communications solutions that best meet their needs. Jurisdictions' procurement processes, the open marketplace, and the proposed status based licensing model¹⁶ will help ensure that technology and applications are ultimately interoperable with the PSBN. As 4G technologies, such as 3GPP LTE, continue to evolve determinations as to the proper equipment should be left to the jurisdiction or region deploying a public safety network. Regardless of the results of this and future PSBN proceedings, Harris urges the Commission to focus any requirements and standards on technical performance and user requirements.

IV. A Status-Based Waiver Condition Will Provide Public Safety Flexibility When Making Initial Deployments While Ensuring Waiver Networks Are Interoperable With the Future Public Safety Broadband Network.

Harris proposes utilizing the Commission's 'primary' and 'secondary' licensing status framework¹⁷ as a way of ensuring initial deployments under the waiver process are interoperable with the PSBN and comply with future Commission rules. Under Harris' proposal any jurisdiction making an initial deployment under a waiver will agree to hold a secondary license to all systems deployed following the adoption of and complying with the final PSBN rules. All systems constructed after the final rules for the PSBN are adopted, and built in compliance with

¹⁵ See 47 C.F.R §§ 27.1301-27.1340 (establishing rules and procedures relating to the 700 MHz Public/Private Partnership entered into between the 700 MHz D-Block winning bidder, 700 MHz D-Block licensee and, the Public Safety Broadband Licensee).

¹⁶ See *infra* pp. 9-11.

¹⁷ Under the Commission's rules being assigned 'secondary' status prohibits operations that may cause interference to operations authorized on a primary basis and does not provide interference protection from entities operating on a primary basis. See, e.g., 47 C.F.R. § 2.105(b)(2)(2009) and 47 C.F.R. § 90.7 (2009).

the Commission's regulations, will be granted a primary status license. A jurisdiction that fields an initial deployment under the waiver process will become and remain secondary until that jurisdiction fulfills the requirements placed on primary licensees.

This model can be applied in either a regional or nationwide approach to the PSBN. In practice, a jurisdiction could operate its system in perpetuity until it causes interference with, and use is requested by, a primary status PSBN network licensee. Adopting this status-based licensing model as a condition of waiver would allow public safety entities immediate access to the 700 MHz public safety broadband spectrum, while ensuring future regulatory compliance and technical interoperability with the PSBN. Jurisdictions that are granted waivers to operate in the 700 MHz public safety broadband spectrum will have clear economic and operational incentive to comply with Commission's future PSBN regulations.

Initial deployments will potentially provide public safety entities with additional infrastructure resources to leverage in order to quickly expand the reach of the PSBN and lower future deployment costs. While there may be a cost associated with upgrading a waiver network to primary status, costs may be lower than building a new network because waiver jurisdictions may be able to leverage existing, public safety hardened, PSBN compatible infrastructure. For example, most state of the art base stations are software defined and would likely require little, if any, hardware changes in order to be upgraded from a secondary status waiver system to a primary status PSBN compliant system. Such a leveraged model approach is directly in line with the Commission's PSBN recommendations that were made in the National Broadband Plan.¹⁸ Furthermore, the operational benefits gained from a waiver network being upgraded and

¹⁸ "The FCC should encourage network solutions that reduce costs and should provide options for the public safety community to leverage commercial networks, private networks or both." National Broadband Plan, *supra* note 14, at 315.

integrated into the PSBN, will outweigh any burden placed on the jurisdiction as a result of the upgrade process.

V. The Commission Must Take Steps To Prevent Interference with Narrowband Voice Communications.

Prior to granting a waiver to operate in the 700 MHz public safety broadband spectrum, the Commission should require that applicants demonstrate that their proposed broadband system will not cause interference with surrounding narrowband systems and that the remedy to resolve such interference is the responsibility of the waiver applicant. The Commission must continue to support and protect mission critical voice systems, which remain the life blood of public safety communications. While public safety broadband technology continues to evolve and move towards a converged voice and data environment, narrowband voice communications currently supply public safety with geographic coverage and reliability vastly superior to current public safety broadband capabilities. Although the benefits of public safety broadband will be enormous, deployment must not be completed at the detriment of mission critical voice operations.

VI. Conclusion.

For the reasons set forth above, Harris supports the Petitioners' waiver requests for initial deployments in the 700 MHz public safety broadband spectrum and the Commission's effort to deploy a LTE based PSBN. The PSST and BBTF Report recommendations will serve as an excellent foundation for the work of ERIC and should be endorsed as guidelines for making initial deployments, not mandatory conditions of waiver. A status based licensing model will provide flexibility to jurisdictions when making their initial deployments while ensuring future regulatory compliance and technical interoperability with the future PSBN. Harris also stresses

the importance of implementing safeguards as a condition of waiver that protect and prevent interference with mission critical narrowband voice communications.

Respectfully submitted,

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