
Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)
)
Service Rules for the 698-746, 747-762) WT Docket No. 06-150
and 777-792 MHz Bands)
)
Implementing a Nationwide, Broadband,) PS Docket No. 06-229
Interoperable Public Safety Network in the)
700 MHz Band)

To: The Commission

COMMENTS OF ERICSSON INC

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SUMMARY

Ericsson supports the Commission's commitment to making the public-private partnership work. This provides the best opportunity for establishing a nationwide interoperable broadband public safety network.

Auction Rules: The Commission's priority in designing its auction rules should be to facilitate the successful establishment of the partnership and deployment of the nationwide network. It is essential that the D Block license(s) be viable both as a commercial venture and as the basis for the public safety backbone. Given current economic conditions, the Commission should remove potential obstacles to a successful auction. The Commission should make certain that bidders are in fact qualified, both technically and financially, but it should avoid imposing reserve and minimum bid requirements that undermine its core objectives.

Common Air Interface: The innovative auction of a national license in parallel with dual sets of regional licenses eliminates concerns about incompatible air interfaces and the possibility of fragmented networks and the resulting lack of interoperability. Ericsson opposes the alternative of a third regional license auction with no common air interface, which would forego taking advantage of standards-based commercial off-the-shelf equipment. Moreover, establishment of a common air interface will facilitate early deployment of compatible facilities. The Commission's approach to determining the common air interface is also consistent with its policy of technology neutrality, because it allows those who will be deploying the network to determine the air interface.

Interoperability:

- The interoperability needed by public safety requires more than a common air interface; it requires a network capable of bridging multiple networks together. An LTE network permits interoperability with both wireless and wired public safety and commercial networks using a variety of standards. While network-level interoperability with legacy public safety networks can be achieved through inter-network bridges and gateways, the Commission need not specify the details of such interconnections.
- The Commission should not require multi-band, multi-mode handsets capable of radio-network interoperability with legacy networks; they would carry a cost premium and forego the many advantages of standard commercial off-the-shelf equipment.
- Ericsson supports an intersystem roaming requirement if regional licensing is used; this is essential to guarantee there is nationwide interoperability.
- There needs to be application interoperability, as well, and the Commission properly proposes to make the public safety broadband licensee ("PSBL") responsible for ensuring application interoperability through its approval process.

Suitability of LTE: LTE is a technology platform that can meet the requirements of the shared wireless broadband network ("SWBN"). It will be commercially available in 2009 and is designed to meet the next-generation needs of both public safety and commercial wireless net-

works, employing necessary security, authentication, and encryption facilities. It provides high data rates and has the advantage of being a global standard, ensuring the competitive availability of commercial off-the-shelf equipment. It is IP-based, facilitating a wide variety of services and applications. It has sophisticated controls allowing priority access in emergencies, among other capabilities.

Open Access/Wholesale: Ericsson agrees with the FCC's tentative decision not to require a wholesale business model or open access conditions for the D Block licensee(s). These potentially raise network security issues and could deter bidders.

Narrowband Relocation: Ericsson supports the Commission's actions to promptly complete narrowband relocation. The Commission should require that all information needed for determining relocation costs is submitted promptly so that funding decisions can be completed without delay. There should be no unknown relocation cost issues that could affect the auction or act as a roadblock to deployment of the shared D Block and public safety broadband network.

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COMMENTS OF ERICSSON INC

Ericsson Inc (“Ericsson”) hereby submits comments in response to the Commission’s *Third Further Notice of Proposed Rulemaking*¹ concerning the 700 MHz D Block and public safety licenses.

I. INTRODUCTION

Ericsson appreciates the commitment and hard work the Commission has put into the development of a viable plan for making interoperable broadband 700 MHz service available to public safety users nationwide. Without a source of public funding for the network, the Commission has shown great flexibility and creativity in exploring options regarding how a public-private partnership can achieve this. Ericsson continues to believe that the public-private partnership approach provides the best opportunity for the successful establishment of the broadband public safety network.

¹ *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT 06-150 & PS Docket 06-229, Third Further Notice of Proposed Rulemaking, FCC 08-230 (Sept. 25, 2008) (Notice), summarized, 73 Fed. Reg. 57750 (Oct. 3, 2008).*

Ericsson's comments principally focus on some of the particulars needed for successful deployment of the public safety network: the need for a common air interface; the need to place high reliance on the availability and use of commercial off-the-shelf equipment; and the need to establish a bidding environment targeted at ensuring successful deployment rather than raising funds.

To start, the regional licensing approach proposed by the Commission provides a potentially viable alternative to nationwide licensing as a way to achieve nationwide, or near-nationwide, buildout of the network using a public-private partnership. As Ericsson previously pointed out, a critical concern about regional licensing is that there may be different air interfaces used, which would impose costs and delay deployment due to the need for multi-mode equipment if interoperability is to be maintained.² The Commission's innovative national and dual-regional auction approach, however, is designed to address this concern by ensuring that there will be a single common air interface, whether the licensing is national or regional.

Ericsson is also pleased that the Commission has recognized the suitability of LTE as a common air interface standard capable of meeting the needs of both commercial and public safety users. A network designed on this basis can provide public safety entities with the features and functions they need and desire; also, because of the synergy with commercial operators' announced technology deployment plans, public safety will benefit tremendously from widespread roaming availability and the cost efficiencies that will result from employing commercial off-the-shelf equipment. And because LTE is a continuously evolving global standard in the 3GPP family, networks employing it are assured that they will not be stranded with an unsupported technology; they will, instead, have available a continuing series of system upgrades

² Comments of Ericsson Inc at 34 (filed June 20, 2008) ("Ericsson D Block Comments").

that incorporate new technologies and features and communicate more efficiently, just as has been the case with earlier 3GPP technologies. In this regard, Ericsson confirms its commitment to the commercial availability of LTE equipment and chipsets in 2009.³

As the Commission recognizes, a common air interface, such as LTE, is only part of the necessary interoperability solution. The common air interface and frequency band provides for interoperability between a device and the radio access network, but public safety users need more than the ability of their radios to communicate with towers. Public safety users require application-level interoperability, which will allow users from diverse agencies to function together and leverage the capabilities of an integrated public safety network in emergencies. In the case of LTE and other 3GPP technologies, the IP Multimedia Subsystem (“IMS”) standard developed by 3GPP provides an IP-based standard for multi-vendor application interoperability.⁴ Ericsson supports the Commission’s decision to give the public safety broadband licensee (“PSBL”) authority to determine which applications may be used on the public safety network, in the interest of application interoperability. IMS will facilitate the PSBL’s ability to permit the use of only interoperable equipment and applications.

³ Press Release, *Ericsson Introduces World’s First Commercial LTE Platform for Mobile Devices*, <<http://www.ericsson.com/ericsson/press/releases/20080401-1205240.shtml>> (April 1, 2008); Press Release, *Ericsson Offers Complete Mobile Broadband Solutions for US 700 MHz Deployments*, <http://www.ericsson.com/us/ericsson/press/press_release_march12_2008.shtml> (March 12, 2008).

⁴ IMS is “the system that will merge the Internet with the telecom world. IMS enables the convergence of fixed and wireless networks and seamless user roaming irrespective of access technologies, and facilitates services transparency and enables common service and application development.” America’s Network, *IMS: An Executive Guide* (Feb. 27, 2007), available at <<http://www.americasnetwork.com/americasnetwork/article/articleDetail.jsp?id=406536>>.

II. THE GOAL OF THE AUCTION SHOULD BE TO ENCOURAGE CREATION OF A VIABLE PUBLIC-PRIVATE PARTNERSHIP, NOT TO RAISE FUNDS

Given the success of auction 73 in recovering a significant portion of the value of the 700 MHz band for the public, there is no need for the Commission to emphasize fund raising in the D Block auction. Instead, the Commission should, as it proposes, make additional changes in the D Block auction rules to facilitate the successful establishment of a viable public-private partnership and the deployment of the public safety network. Creation of a network that is viable both as a commercial venture and as an interoperable public safety backbone must be the highest FCC priority.

In its previous comments, Ericsson endorsed Commission establishment of a D Block reserve price just high enough to ensure the winning bidder's commitment, rather than one linked to the stand-alone value of the D Block.⁵ Given the economic conditions that now prevail, the Commission clearly should revisit the related issues of the reserve price and minimum bid. Now, the primary emphasis should be on assurance that a public-private partnership will be successfully established and that the partnership will be able to deploy a network. To this end, the Commission, to the extent possible, should remove potential obstacles to a successful auction and negotiation of a network sharing agreement ("NSA") by implementing auction rules and terms that facilitate — and expedite — actual deployment of the network.

Further, given today's constraints on commercial credit, a qualified auction winner should expend its funds in network deployment, rather than in paying large sums into the Treasury for the license. While it is important that the Commission make certain that bidders are in

⁵ Ericsson D Block Comments at 33.

fact qualified, it should not impose minimum payment requirements that are not necessary to achieving this goal.

Ericsson suggests elimination of reserve prices altogether and reduction of the minimum opening bids (which effectively function as reserve prices) on all of the licenses being auctioned as much as possible, assuming the FCC finds minimum opening bids necessary at all. Modifying the auction in this manner will encourage the submission of national bids and also the widest variety of regional bids. To the extent the Commission does retain minimum opening bids for regional licenses but fails to receive opening bids for all of the regional licenses, that will constitute the market's signal that the obligations of the D Block licensee to the PSBL are too burdensome to justify bidding at the minimum opening price, in at least some regions. Again, the Commission should affirmatively act to avoid such a result in two ways: (1) by not setting the minimum bid (if any) too high, and (2) by not setting the obligations of a D Block licensee so high that the D Block is viewed as commercially infeasible.

At the same time, Ericsson recognizes that the Commission must be vigilant about ways in which potential bidders might "game the system," obtaining licenses they are not effectively able to deploy or obtaining licenses and later seeking to avoid buildout and other obligations, through subsequent rule changes or waivers. For this reason, Ericsson suggests that the Commission should undertake a reasonable inquiry into each winning bidder's financial and technical capability of carrying out its obligations under the NSA prior to granting a license.

In sum, the public interest is best served by maximizing the likelihood that a nationwide interoperable broadband network will be built that meets the needs of public safety as well as commercial customers. Rather than precluding or limiting the participation of qualified bidders, the Commission should place priority on making this auction attractive to bidders that are able to

develop and deploy a network that would serve the needs of commercial customers and public safety users nationwide.

III. THE COMMISSION SHOULD ADOPT POLICIES AND RULES THAT WILL ENCOURAGE ESTABLISHMENT OF A NATIONWIDE INTEROPERABLE BROADBAND PUBLIC SAFETY NETWORK

A. The Common Air Interface

As discussed in the Introduction, the use of a common air interface results in meeting a critical objective—the deployment of a nationwide-compatible, nationwide-interoperable service. The innovative auction scheme proposed by the Commission will lead to the establishment of a national common air interface, either by issuance of a nationwide license or by issuance of regional licenses using the one air interface that wins the regional auction. The alternative of allowing bidders for regional licenses to choose their own technology should be rejected because it presents the risk that the licensees in the various regions would choose different technologies, undermining the fundamental objective of having a nationwide interoperable public safety network.

As the Commission noted, it might be technically possible to work around the incompatibility of multiple air interfaces through the use of handsets that can operate over multiple broadband air-interfaces or through use of software defined radios.⁶ However, the Commission also recognized that such equipment comes at additional expense, and with attendant delays and additional complexity. This approach also requires the development of equipment unique to the

⁶ Notice at ¶ 110.

United States, which would sacrifice the cost efficiencies, availability, and other advantages attendant to using commercial off-the-shelf equipment.⁷

B. Facilitating Early Deployment

Once the common air interface is chosen, early deployment of public safety facilities will be greatly facilitated. If, for example, LTE were determined to be the common air interface, then public safety agencies wishing to deploy networks in advance of the D Block/PSBL schedule would be able to do so in a manner that would be compatible with the ultimate buildout of those licensees' networks, rather than through use of incompatible technologies.

This is important not only because it provides certainty and encourages compatibility, but also because it helps avoid potential disputes over compensation for early deployment. Once the Commission has established that a particular technology is to be used, it can also make clear that local public safety entities engaging in early deployment must use that technology if they wish to be compensated for their facilities. This will give local public safety entities a considerable incentive to deploy compatible networks in markets where the NSA does not call for prompt deployment. By giving explicit notice that other technologies would not be eligible for compensation, the Commission would encourage early deployment of compatible public safety networks, thereby serving the public interest.

C. A Common Air Interface Is Consistent with Technology Neutrality

The Commission has not proposed, nor should it, that a licensee must use a particular technology of the Commission's choice. A bidder for a national license should use the technology it finds most suitable, subject to the negotiation of a NSA for a network employing that

⁷ Notice at ¶ 110.

technology. The Commission has proposed, as an alternative, that bids be accepted for regional licenses using either of the two technologies that are envisioned to be candidates for a 4G standard, namely LTE and WiMAX. Moreover, LTE is an internationally recognized standard for next generation wireless service that is supported for both commercial and public safety networks with bands specifically identified by 3GPP for 700 MHz. Ericsson supports the Commission's proposals on this.

Ericsson opposes the other alternative on which Commission sought comment, namely whether it should create yet another set of regional license bids that would allow the licensees to choose their own technology, competing with the LTE and WiMAX sets of regional bids.⁸ The problem with this is that it does not lead to a single common air interface. It will, instead, potentially lead to multiple, incompatible, isolated public safety networks with unserved areas in between. Moreover, as California has previously pointed out, the "vision of a nationwide Shared Wireless Broadband Network ('SWBN')" cannot be realized by deploying a multitude of discrete, non-standardized systems.⁹ Simply put, a lack of uniformity increases cost, delays deployment, and creates islands of incompatibility. Any alternative bidding opportunity that does not require use of a common air interface for all regional licensees would undermine the goals of this proceeding.¹⁰

⁸ Notice at ¶ 252.

⁹ Comments of the State of California at 7 (filed June 20, 2008), *quoted in Notice* at ¶ 295.

¹⁰ As discussed below, if there were multiple regional licensees, each of whom could each choose its own technology, there is no way the Commission could be certain that regional deployments of the licenses offered in that alternative auction would ultimately be fully interoperable on a radio access network basis. For example, if one used LTE, one used WiMAX, and one used EVDO, *none* of them could use each others' networks, absent multimode handsets. It would be difficult to ensure even backbone network interoperability through gateways with so many air interfaces.

In addition, such an approach would, in practice, draw the Commission into a position where it would have to impose technology standards, because the only way to be certain of radio network interoperability would be for the Commission to require each network to employ one or more particular air interfaces chosen by other regional bidders, as well as its own choice. By contrast, the establishment of a common air interface, either by a single national D Block licensee or by companies bidding for their chosen technology in the regional auction, would allow the Commission to maintain complete neutrality as to the air interface that is ultimately employed.

D. The Types of Interoperability Required

1. Access Interoperability and Inter-Network Interconnection

The Commission's tentative decision to require a common air interface will provide all 700 MHz broadband public safety users with a technical means of access to both the D Block and the PSBL networks. But this, alone, will result only in interoperability at the radio access network ("RAN") level. Additional levels of interoperability will also be needed. Accordingly, Ericsson supports the Commission's tentative decision to require that the shared network have the capability of supporting inter-network interconnections *via* bridges and gateways.¹¹ In particular, the PSBL network can and should be designed to provide network-level interoperability with other wireless networks. The architecture proposed by the Commission, as it would be implemented in an LTE-based network, would also support interoperability with wired networks via standardized interfaces similar to those used for network-level interoperability with wireless public safety networks.¹²

¹¹ See Notice at ¶ 114.

¹² LTE's network components can support American National Standards Institute ("ANSI"), and European Telecommunications Standards Institute ("ETSI") wired network signaling protocols, while integration of Internet-based services is enabled by IMS and the ETSI's

(continued on next page)

a. Narrowband Voice Network-Level Interoperability

Ericsson agrees with the Commission that interoperability of the PSBL network with narrowband public safety voice networks is desirable.¹³ Interoperability through the use of bridges and gateways would allow the PSBL to link its network with, for example, 800 MHz public safety networks in use in the same area. A bridge between the networks would allow first responders using a 800 MHz network to communicate with their colleagues who use the newer 700 MHz network, and *vice versa*. Obviously, the 800 MHz users will continue to rely on their legacy 800 MHz network as their RAN, unless they upgrade their devices to include 700 MHz capability.

There is no need, however, for the Commission to specify the types, capacities, and capabilities of the intersystem bridges and gateways. Such bridges and gateways, and their installation and maintenance costs, are not part of the core shared network, because they will not be used by commercial subscribers. Instead, they are an extension of the shared network devoted exclusively to the provision of public safety services, and these costs need to be borne by public safety users, unless arrangements are made by the D Block licensee(s) with the PSBL to cover such costs. Moreover, such interconnections need to be accomplished in ways that are both technically and economically feasible.¹⁴ The Commission must make certain that it does not take actions that increase the complexity of the network or undermine the goal of bringing an interoperable broadband network to fruition.

(footnote continued)

Telecommunications & Internet Converged Services & Protocols for Advanced Networks (“TISPAN”) standards.

¹³ See Notice at ¶ 114.

¹⁴ These legacy land mobile radio interoperability bridges can either be connected to a regional operator IMS (if there is not a single nationwide D Block licensee), or could be interconnected to an outsourced IMS platform if the regional operator declines to offer and operate such services.

Facilities for interoperability with other networks are already being developed, in response to market demand for such capabilities. Currently, for example, Ericsson is developing applications to allow interoperability with traditional public safety narrowband voice push-to-talk systems. A solution that supports traditional public safety voice dispatch communications, coupled with interoperability to analog conventional, P25 conventional, and select digital trunked radio systems will be available at network launch and can be incorporated into the PSBL network as needed.

b. Multi-Mode Handsets Should Not Be Required for Interoperability with Legacy Radio Networks

The *Notice* also asks about the development of handsets that would work on both the PSBL system and legacy systems, but does not specifically propose to require that such handsets be made available.¹⁵ Ericsson opposes any Commission mandate in this area. In fact, the Commission itself explains why multi-network user devices should not be required in the next paragraph in the *Notice*:

[S]uch equipment comes at additional expense that would be borne by all public safety users. It is also not clear from the record when handsets able to work over all the broadband platforms chosen by the various licensees would be available. Further, if these multi-mode handsets were produced solely to serve the public safety broadband networks, the Public Safety Broadband Licensee would have less opportunity to equip first responders with off-the-shelf handsets that could be obtained at significantly less cost than customized public safety user devices.¹⁶

Multi-band radios would impose a considerable cost premium over radios designed to perform only on the 700 MHz PSBL and D Block networks. The Commission should not require a costly feature that affects the commercial feasibility of network deployment by poten-

¹⁵ See *Notice* at ¶ 109.

¹⁶ *Id.* at ¶ 110.

tially reducing the number of public safety users. Furthermore, to the extent there are particular regions or public safety service provider groups that need RAN interoperability, marketplace solutions will be developed.

Rather than seeking to have every part of the public safety network meet the needs of each and every niche user, Ericsson respectfully urges the Commission to focus on ensuring the initial deployment of a technically and commercially feasible network that meets public safety's core needs. To that end, there should be maximal reliance on the use of commercial off-the-shelf terminals and handsets.

2. Public Safety Roaming

Public safety roaming is closely related to radio network interoperability, because one purpose of interoperability is to allow public safety users to use the 700 MHz public safety network in areas where they are providing public safety services, which can be outside the user's home region. If there is a single nationwide PSBL, roaming will not be necessary because the user would simply be using the same network in a different region. However, if there are multiple regionally-licensed public safety systems, the Commission has proposed to require intersystem roaming, with the NSA specifying the relevant terms and conditions.¹⁷ Ericsson supports this approach, which is essential if there is to be nationwide interoperability to support public safety users during times of emergency.

3. Application Interoperability

The Commission recognizes the need for application interoperability, but rather than adopting rules to address the issue, it relies on the use of an appropriate network architecture and

¹⁷ Notice at ¶ 111.

PSBL oversight.¹⁸ Ericsson supports this approach and, as a proponent of LTE for public safety needs, discusses herein the benefits of LTE architecture in ensuring necessary application interoperability. In an LTE-based network, IMS and a Service Delivery Platform (“SDP”) provide the foundation to integrate client and service applications that originate from diverse standards and networks. In particular:

- IMS provides the critical infrastructure to interoperate real-time sessions across multiple networks. The 3GPP IMS standards body includes IMS requirements from a variety of sources, such as TISPAN and Packet Cable. Further, application servers create the session control services necessary to create a positive and responsive user experience.
- The SDP allows diverse applications to interface and share information. Information can be collected from IMS enablers, from database servers, or web services. SDP controls the information flow, renders data appropriate to the platform, authenticates the service use, and accounts for usage via the billing system.

Between the session control provided by IMS and the service delivery capabilities provided by SDP, applications from multiple, disjointed sources can be integrated and delivered to the user in a meaningful manner, such as “mash-ups” that combine and display information from many sources in ways that enhance its usefulness.¹⁹

4. The PSBL Should Be Responsible for Interoperability Approval of Equipment and Applications

The Commission proposed to assign the PSBL responsibility for determining the equipment and applications that may be used on its network; public safety entities would have the right to choose subscriber equipment and applications, at their expense, that have been approved

¹⁸ See Notice at ¶¶ 115, 310.

¹⁹ The openness of the Internet has facilitated the development of such mash-ups. Many websites combine mapping capabilities from Google or Yahoo with data and display attributes from a variety of other sources. Thus, for example, the California Governor’s Office of Emergency Services provides an interactive fire map that is a mash-up of Google Maps with state databases of fire information and public safety facilities. See <<http://www.oes.ca.gov/WebPage/oeswebsite.nsf/InteractiveMap?readForm>>.

by the PSBL.²⁰ Ericsson supports this approach as an effective way to promote interoperable services. It will lead to the use of widely standardized equipment, which can readily be provided by vendors without the need for extensive customization. This means that (a) vendors have an incentive to make devices commercially available in quantity shortly after PSBL approval, thus ensuring ready availability; and (b) the approval process will lead to equipment being made available as standardized commercial off-the-shelf equipment, also maximizing availability and reducing cost.

The use of commercial off-the-shelf handsets and terminal devices gives public safety entities the ability to migrate their user devices and platforms to the 700 MHz PSBL network over time, as terminal technology improves in response to demand. Moreover, once the user migration has been completed, the users will be able to switch terminals easily in case of a malfunction, changing needs, to access newly available features and characteristics (*e.g.*, devices that are ruggedized, smaller, less expensive, more intuitive interfaces), or to employ new applications that are enhanced by availability of new features.

E. The LTE Platform Facilitates Achievement of the Commission's Objectives

The Commission correctly recognized that LTE is one of the technology platforms most likely to be used for the D Block and public safety networks.²¹ For the record, in this section Ericsson discusses some of the capabilities and features of LTE that can meet public safety needs.

²⁰ Notice at ¶¶ 115, 310.

²¹ See *id.* at ¶ 108.

1. Introduction

LTE is scheduled to be commercially available in 2009,²² and it will significantly enhance the capabilities available to public safety organizations. Public safety will benefit from the availability of demanding applications such as full-motion video and from the ability to employ commercial off-the-shelf equipment. Moreover, LTE provides mobile voice, video, and data capability that is seamlessly interoperable across agencies, jurisdictions, and geographic areas, and with the flexibility to meet evolving requirements. Commercial off-the-shelf radio network products will have a number of features that simplify the building and management of next-generation networks, such as plug-and-play, self-configuration, and self-optimization features, which will also reduce the cost and timing issues associated with network roll-out and management.

2. Data Rates

LTE is fully capable of meeting the uplink and downlink data speed requirements proposed in the *Notice* for the shared wireless broadband network.²³ The 3GPP standard for LTE provides for data rates of at least 100 Mbps in the downlink and RAN round-trip times (latency) of less than 10 ms. In fact, the technology allows for speeds of 300 Mbps — and potentially higher — and Ericsson has already demonstrated LTE at data rates of 160 Mbps. Using a 20

²² See note 3.

²³ See *Notice* at ¶ 121 (“We propose that the shared wireless broadband network typically provide data speeds of at least 1 Mbps in the downlink direction and 600 Kbps in the uplink direction. Irrespective of this requirement, the D Block licensee(s) must provide public safety users with data speeds that are at least as fast as the best data speeds provided to commercial users of the shared wireless broadband network. We also propose that, at the edge of coverage, the shared wireless broadband network shall provide for data rates of a minimum of 256 kbps directions in urban environments, 128 kbps for suburban and rural areas, and 64 kbps on highways, all under 70 percent loading conditions, in both the downlink and uplink directions . . .”).

MHz (2×10 MHz) band of spectrum, LTE allows for peak data rates *per sector* of approximately 50 Mbps, well in excess of the Commission’s requirements.

3. Standardized Equipment

LTE offers considerable advantages for the developer of the shared network. First, it is a technology that has already been chosen by several commercial operators in adjacent or nearby bands, ensuring the availability of commercial off-the-shelf equipment at highly competitive prices. This is true not only of handsets and smartphones, but other, data-intensive devices that will be of interest to public safety entities, such as notebooks, ultra-portables, monitoring devices and cameras that will be manufactured with embedded 700 MHz LTE modules. Moreover, LTE has been designed as the latest evolution of the 3GPP wireless technologies, and, as such, it has superior, well-established support for high-speed mobile usage and hand-over/roaming to existing mobile networks, providing ubiquitous mobile broadband coverage from day one. The capability of LTE to support high-speed mobile usage is superior to all competing technologies.

LTE is not only a radio access network standard; it also incorporates a standards-based core network that is IP-based, which means it has the capability of including a wide variety of current and evolving state-of-the-art technologies as they become available in the commercial marketplace, enhanced with features beneficial to the public safety community. In addition, the IP network simplifies the incorporation of narrowband voice service using VoIP technology, as and also facilitates the establishment of bridges and gateways to other public safety networks.²⁴

²⁴ In the core network, the next step in the architecture evolution specified together with LTE in 3GPP — the System Architecture Evolution (“SAE”) — will deliver flat two-node architecture for simplified QoS, scalability and cost-efficient deployment for the delivery of IP services. LTE/SAE will also accommodate other access technologies, such as CDMA/CDMA 2000 and non-3GPP access technologies like WLAN (*e.g.*, Wi-Fi).

4. Applications and Services

As discussed above, LTE incorporates the IP Multimedia Subsystem, or IMS. IMS has been specifically defined to enable content- and feature-rich services and the use of different types of networks. It allows for creation of a wide range of communication sessions, including combinations of different media. IMS can support one centralized IMS core delivering applications and services to public safety officers on multiple networks. IMS can also support multiple IMS core networks (operated by each regional carrier) with the appropriate IMS design.²⁵ For example, IMS can facilitate establishment of unified, transparent multi-network approaches to interconnection standards, application compatibility, and authentication. IMS also enables combinations of services. For example, it is possible to enhance an ongoing voice call by adding images or a video session to that call, enabling parallel image/video and voice communication. Another example would be IMS's facilitation of a video and computer data feed that draws video and statistical data from diverse sources by providing secure, authenticated access and data transfers among the various data and video sources.

5. Emergency Response

LTE also has advantages for facilitating public safety's response to emergencies. The Commission has proposed that, under emergency conditions, the D Block licensee must provide public safety users with priority access to 20% or 40% of the commercial D Block spectrum capacity, depending on the nature of the emergency.²⁶ The LTE admission control and scheduling

²⁵ The network operator need not provide IMS on its own, or might decide to provide IMS on its own only in certain regions. Thus, there could also be an outsourced IMS core in some areas that would facilitate delivery of applications where the operator chooses not to deploy IMS.

²⁶ Notice at ¶ 87.

algorithms can be modified to the set point between guaranteed bit rate and non-guaranteed bit rate sessions to deliver content at the appropriate priority and pre-emption level.

6. Security and Encryption

LTE also provides the shared broadband network with the ability to maintain security and encryption features consistent with commercial best practices and with capabilities described in the Technical Appendix to the *Second Report and Order*. It implements controls to ensure that public safety priority and secure network access are limited to authorized public safety users and devices, and utilizes an open standard protocol for authentication. LTE also provides the capability for public safety network authentication, authorization, automatic logoff, transmission secrecy and integrity, audit control capabilities, and other unique attributes.

F. The Commission Should Reject Mandatory Open Access and Wholesale Requirements

Ericsson supports the Commission's tentative conclusion not to impose a mandatory wholesale or open access condition on the D Block licensee.²⁷ The Commission correctly concluded that the commenters supporting such conditions had not established the impact on the public safety services to be provided via the public-private partnership.²⁸ That remains the case today. An open access environment potentially raises network security issues that could affect the reliability of the network used for the delivery of essential emergency services. Moreover, mandating either an open access or wholesale business model could deter bidders, thus imperiling the establishment of the public-private partnership.

²⁷ Notice at ¶ 309.

²⁸ *Id.*

As discussed above, Ericsson supports the PSBL's right to determine what public safety equipment and applications will be authorized for use on the network. This will allow the PSBL to make certain that such equipment and applications are consistent with FCC rules and the NSA and to determine that they will not adversely affect the management or operation of the public safety network. The PSBL²⁹ is the most appropriate party to perform these functions, as a national representative of the public safety community. Having it act as the single point of decision on authorization matters will provide economies of scale and other efficiencies concerning the review of network and subscriber equipment and applications.

G. The Commission Should Require Prompt Completion of Narrowband Relocation

Ericsson supports the Commission's actions to require the prompt completion of the narrowband relocation.³⁰ In doing so, the Commission should take additional steps to see that any deadline is firmly enforced, does not impact access to the band by the D Block licensee(s) and the PSBL, and is not put off due to delays in determining the funding.

Detailed information on narrowband deployment in the broadband spectrum is needed promptly, so the relocation funding decisions can be completed quickly. At a minimum, the Commission should have all the information needed and should establish the relocation funding levels before the scheduled date for the D Block auction. By resolving issues in advance, the Commission can make sure that unknown relocation costs do not overshadow the auction and that the relocation process does not act as a roadblock to the deployment of the shared D Block/public safety network. A swift but thorough narrowband relocation process will encour-

²⁹ Depending on the provisions of the NSA(s), the PSBL may be able to obtain the assistance of the D Block licensee(s) in the equipment and applicant authorization process.

³⁰ See Notice at ¶ 437.

age narrowband cooperation and thereby facilitate the quick and efficient establishment of the nationwide interoperable public safety broadband network.

IV. CONCLUSION

Ericsson urges the Commission to adopt rules consistent with its foregoing comments. In particular, Ericsson confirms that:

- The Commission should take steps to facilitate a bidding environment targeted at ensuring a successful auction and prompt deployment of a public safety network. The dual-technology regional auction in parallel with the national license auction is an appropriate way to move toward this objective.
- A common air interface is the essential foundation for the interoperable public safety network, especially if a regional network implementation is pursued.
- Application interoperability provides the ability for communications to occur between networks and data sources. IMS offers a standards-based vehicle for supplying this.
- A successful auction and subsequent network deployment is the opportunity for the U.S. to be a leader in broadband networks for public safety in the 700 MHz band.
- Globally standardized, commercial off-the-shelf equipment can provide solutions at a lower cost. In contrast, unique network requirements will be costly and delay network deployment.
- LTE is a global standard designed to address the next-generation broadband wireless needs of both public safety and commercial networks, and it provides a solid base of competitive, standardized equipment that will be available worldwide.
- LTE provides application interoperability as well as radio network and inter-network interoperability, along with the needed levels of security and authentication.

Respectfully submitted,

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