

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

Request for Information on)
Use of 1675-1710 MHz Band) WT Docket No. 10-123
)

To: Chief, Office of Engineering and Technology

COMMENTS OF ERICSSON INC

Ericsson Inc (“Ericsson”) submits these comments in response to the Office of Engineering and Technology’s Public Notice seeking information on the use of the 1675-1710 MHz band.¹ As the Federal Communications Commission recognized in its National Broadband Plan, broadband is the engine that will drive the United States forward economically, socially, and politically.² And wireless technologies in particular are key to the widespread availability and effectiveness of broadband services. Without suitable spectrum for wireless broadband services, however, these important objectives will not be met.

Ericsson supports the Commission’s efforts to examine various additional frequency bands that may be suitable for mobile broadband services. To this end, licensing the 1675-1710 MHz band on an exclusive-use basis could provide additional spectrum for commercial broadband services, although Ericsson cautions that additional studies and data collection must be undertaken to determine whether the band is suitable for reallocation and whether there is appropriate downlink spectrum that can be paired with this band. The Commission, however, should not let this inquiry concerning the 1675-1710 MHz band distract it from pursuing efforts

¹ See *Office of Engineering and Technology Requests Information on Use of 1675-1710 MHz Band*, FCC Public Notice, DA No. 10-1035, ET Docket No. 10-123 (rel. June 4, 2010) (“OET Public Notice”).

² See FCC, *Connecting America: The National Broadband Plan*, at 19-21 (Mar. 16, 2010).

to assess the suitability of other bands, especially the pursuit of the 1755-1780 MHz band paired with the 2155-2180 MHz band (the proposed expanded “AWS-3” band).³

I. ADOPTION OF RATIONAL SPECTRUM POLICIES BY THE FCC AND NTIA WILL ENSURE THE PROPER GROWTH AND UTILIZATION OF BROADBAND SERVICES

Broadband services are changing the very nature of how people communicate, spurring new and innovative technologies, applications and services. As the Commission explained in the National Broadband Plan:

Like electricity a century ago, broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize and disseminate knowledge.⁴

It is critical that all government sectors make broadband accessibility a national priority and update their policies, set standards, and provide incentives to maximize broadband deployment.

Further, while the marketplace is characterized by a myriad of different types of broadband platforms and devices, the wireless platform, in particular, is a critical mechanism by which consumers will access broadband services.⁵ As of December 1995, there were about 34

³ NTIA has suggested the possibility of pairing AWS-3 spectrum with 1675-1710 MHz in lieu of 1755-1780 MHz, due to the time that may be required for freeing that band. See Lawrence E. Strickling, Asst. Secretary of Commerce for Communications and Information, U.S. Dept. of Commerce, Remarks at the Public Knowledge Federal Spectrum Conference, Washington, D.C. (June 3, 2010), *available at* http://www.ntia.doc.gov/presentations/2010/PublicKnowledge_Spectrum_06032010.html (“Strickling Remarks”).

⁴ National Broadband Plan at XI (Executive Summary).

⁵ By 2020, “the mobile phone... [will be] the primary Internet connection and the only one for a majority of the people across the world.’ There are 4 billion people around the world that use a cell phone. In contrast, less than a billion people have personal computers. Clearly, most people in underserved markets will first access the Internet and experience broadband over a mobile device.” 3G Americas, 3GPP Technology Approaches for Maximizing Fragmented Spectrum Allocations, 3-4 (July 2009) (citations omitted) (“3G Americas White Paper”), appended as Attachment A to Comments of 3G Americas – NBP Public Notice #6, GN Docket Nos. 09-47, 09-51, 09-137, (filed Oct. 23, 2009) (“3G Americas NBP Comments”).

million wireless subscribers in the U.S. By the end of 2009, there were more than 285 million subscribers.⁶ And wireless data services are expected to continue to grow rapidly.⁷ While *fixed* broadband use is expected to increase at a compound annual growth rate of nine percent from 2008 to 2014, *mobile* broadband use is expected to grow about three times as fast; by 2014 the number of mobile broadband users is expected to grow to two billion worldwide.⁸

Suitable and sufficient additional spectrum is critical to meet this growing demand. Experts agree that notwithstanding the innovation that has led to increasingly efficient spectrum use, existing allocations are not sufficient to meet demand.⁹ The Commission, with the assistance of the National Telecommunications and Information Administration (“NTIA”), must move quickly to examine, identify and repurpose frequency bands appropriate for mobile broadband service. Further, these endeavors should be informed by the following guiding principles:

Avoidance of “Fragmented” Spectrum and Pursuit of Global or Regional

Harmonization of Spectrum Allocations Where Possible. Ensuring that spectrum allocations in the U.S. are, to the greatest extent possible, in accord with international allocations promotes

⁶ See CTIA Semi-Annual Wireless Industry Survey, *available at* http://www.ctia.org/media/industry_info/index.cfm/AID/10316.

⁷ 3G Americas projects that while subscriptions for fixed broadband services will increase only slightly between 2007 and 2014, mobile broadband subscriptions will increase exponentially from less than 10 million subscribers in 2007 to more than 2 billion subscribers in 2014. See 3G Americas NBP Comments at 4-5. Similarly, Cisco predicts that global mobile data traffic will double every year through 2013, increasing 66 times between 2008 and 2013, and that a single subscriber’s mobile data traffic footprint in 2015 could be 450 times what it was in 2005. See 3G Americas White Paper at 18-19 (citation omitted).

⁸ See 3G Americas White Paper at 3-4; see also Chetan Sharma Consulting, *Managing Growth and Profits in the Yottabyte Era 16* (July 2009), *available at* <http://www.chetansharma.com/yottabyteera.htm> (noting that by 2010, “mobile broadband penetration will surpass fixed penetration globally” and that “countries that are behind the curve in spectrum allocation will lag behind as a lack of spectrum will delay the launch of broadband services”).

⁹ See National Broadband Plan at 77 (“The growth of wireless broadband will be constrained if government does not make spectrum available to enable network expansion and technology upgrades.”).

innovation and investment by creating critical economies of scale.¹⁰ Similarly, harmonization facilitates global roaming and helps countries that share borders manage cross-border interference.¹¹ Harmonization also reduces complexity and cost and allows more flexibility in the form factor of the subscriber equipment. For example, allocating additional spectrum adjacent to similar services and with similar duplex distances reduces the number of bands that a device must support. Moreover, standards development can be accelerated and existing equipment can be modified, which accelerates the market availability of the devices. This can be accomplished because the selection of the additional spectrum does not increase the number of bands to be supported in a multiband device. Rather, the additional spectrum band can be treated as an extension to an existing band. As discussed below, an example of this selection is 1755-1780 / 2155-2180 MHz, which is adjacent to the AWS-1 band and, therefore, the complexity is minimized and the cost will be comparably less.

Without such harmonization, new technologies and services will be difficult to export from the U.S. to other markets, and U.S. markets will not benefit from developments in other international markets. Fragmented spectrum allocations hamper innovation and require companies to dedicate resources to developing new or adapting existing products or technologies for a single market, rather than sharing those development costs globally. This, in turn, increases the costs and limits the potential availability of products and services for American consumers. Moreover, new developments take time, delaying the availability of services and devices to serve the market and meet demand. To the extent possible, spectrum that is designated for certain

¹⁰ See 3G Americas NBP Comments at 9-10; *see also* 3G Americas White Paper at 15-16, 32; Comments of Ericsson Inc., GN Docket Nos. 09-157, 09-51, at 16 (filed Sept. 30, 2009) (“Ericsson NBP Comments”).

¹¹ See 3G Americas White Paper at 16.

services should be allocated adjacent to like-service spectrum bands, with similar duplex distances, to maximize performance and efficiencies.¹²

Promotion of Globally Accepted Standards. Technical standards are the foundation for service providers and manufacturers to develop competitive products and services. Also, standards help manage regulatory compliance, establish patent policies for use of essential technologies, and provide a platform for third party supplier solutions. The ability to rely on globally accepted technical standards facilitates investment.¹³ In addition, it allows companies to take advantage of economies of scale that lower costs and promote growth, maximizing opportunities for innovation.¹⁴ The Commission should, where possible, ensure that its technical rules and requirements comport with the criteria developed by global standards organizations.¹⁵

In many instances, globally accepted standards are developed with specific spectrum bands in mind and take into consideration coexistence with adjacent services. Therefore, whether certain spectrum has been harmonized and whether a standard exists should be factored into any reallocation analysis.

Assignment of Licenses with Wider Bandwidth. Technologies that support mobile broadband capability, such as Long Term Evolution (“LTE”), will increasingly require more spectrum to meet consumer demand for bandwidth intensive and content-rich services.¹⁶ Wider bandwidth technologies maximize spectrum use by accommodating more bits and allowing more

¹² See FCC, Spectrum Policy Task Force Report, ET Docket No. 02-135, at 22 (Nov. 2002), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228542A1.pdf (“Spectrum Policy Task Force Report”).

¹³ See 3G Americas White Paper at 6; Ericsson NBP Comments at 5.

¹⁴ See Ericsson NBP comments at 5.

¹⁵ Such organizations include, but are not limited to, the International Telecommunication Union (“ITU”), Alliance for Telecommunication Industry Solutions, Electrical and Electronics Engineers, Inc., and 3rd Generation Partnership Project (“3GPP”).

¹⁶ LTE can be deployed in a range of bandwidths from 1.4, 3, 5, 10, 15 to 20 MHz. LTE-Advanced can be deployed in bandwidths up to 100 MHz.

resources to be pooled for sharing among users. Any spectrum allocations by the Commission should be in sufficiently large, contiguous blocks to accommodate the future growth of mobile broadband. Specifically, particularly in urban and suburban areas, allocations should focus, at a minimum, on 2x10 MHz blocks.¹⁷ It also is necessary that the Commission review its technical rules to ensure a technology neutral approach for wider bandwidth technologies.¹⁸

Licensing of Spectrum on an Exclusive Use Basis. Further, Ericsson urges the Commission to focus on the allocation of spectrum for broadband purposes under an exclusive-use licensing regime. Such an approach has fostered innovation and investment and is critical to the provision of needed broadband services. Exclusively-licensed spectrum provides entrepreneurs the needed incentive to innovate and invest in tomorrow's networks. By contrast, spectrum sharing can raise concerns about exclusion zones, and an unpredictable RF environment poses specific concerns in locating and rectifying sources of interference. Similarly, allowing secondary uses in a licensed band could create significant spectral congestion and other technical problems, reducing the quality and reliability of services for all users. The uncertainty and potential uncontrollable interference will be obstacles to investment. Indeed, an exclusive-use framework has been the foundation for the success of the wireless industry and is an essential component in the development of standards work to ensure high quality services and premium performance of applications over IP-based wide area broadband networks.

¹⁷ See, e.g., 3G Americas NBP Comments at 8 (recommending 2x20 MHz and 2x30 MHz pairs for LTE wireless deployment); Ericsson NBP Comments at 14-17.

¹⁸ The Commission's current Out Of Band Emission ("OOBE") rules negatively impact broadband systems that use wider bandwidths because the emission limits are based upon designated bandwidth. Thus, Ericsson proposes that the Commission modify its OOBE rules by establishing a fixed attenuation for technologies greater than 5 MHz, which will ensure that the rules are technology neutral and support innovation and services deployment. See Comments of Ericsson Inc., GN Docket Nos. 09-47, 09-51, 09-137 (filed Oct. 23, 2009).

II. REALLOCATING THE 1675-1710 MHZ BAND FOR COMMERCIAL BROADBAND SERVICES

Reallocating the 1675-1710 MHz band could provide additional spectrum for commercial broadband services as envisioned by the National Broadband Plan. And, at the outset, there are certain characteristics of the 1675-1710 MHz band that support further consideration of this spectrum for commercial use. For example, it is adjacent to the AWS-1 band, which creates some synergies that would make it suitable for mobile broadband services. Service providers and equipment manufacturers may be able to use or adapt existing AWS-1 band equipment to spectrum that effectively could be an extension of that band. Further, placing “like” services in adjacent spectrum bands reduces the risk of harmful interference between licensees.¹⁹

As noted above, however, additional studies and data collection must be undertaken to determine whether the 1675-1710 MHz band is otherwise suitable for commercial mobile broadband services. As the OET Public Notice indicated, this band currently is allocated on a co-primary basis for federal and non-federal use for the Meteorological Aids Service and the Meteorological Satellite Service.²⁰ And because a license is not required for receive-only earth stations utilizing this band, neither the Commission nor the public has information on the extent of non-federal use in the band. Therefore, responses to the OET Public Notice will help inform the industry and Commission’s analysis regarding this band.

In addition, the Commission’s and NTIA’s analysis should take into consideration the criteria described in Section I. For example, the allocation would be “fragmented” spectrum in the U.S. that is not harmonized with international or regional allocations. Thus, licensees may face delays in the development of appropriate equipment, increased deployment costs and regulatory uncertainty impacting the provision of services. And, to the extent the 1675-1710

¹⁹ See Spectrum Policy Task Force Report at 22.

²⁰ OET Public Notice at 1-2.

MHz band is pursued for commercial reallocation, the Commission and NTIA also must work together to identify appropriate downlink spectrum that could be paired with this band to ensure a technology neutral approach. Again, the selection of appropriate downlink spectrum should try to achieve as many of the principles set forth above as possible to ensure that products and services can be developed quickly and that the selection of spectrum will attract investment by the potential global economies of scale.

III. THE FCC AND NTIA SHOULD INTENSIFY THEIR EFFORTS TO MOVE FORWARD WITH PAIRING 1755-1780 MHZ WITH THE AWS-3 BAND

The National Broadband Plan recommends making 500 MHz of spectrum available for broadband use within the next decade, including 300 MHz between 225 MHz and 3.7 GHz.²¹ The 1675-1710 MHz spectrum band, however, would satisfy only a small fraction of the spectrum called for by the National Broadband Plan. Thus, the Commission and NTIA should not let the inquiry concerning the availability of the 1675-1710 MHz band distract them from moving forward with pairing the 1755-1780 MHz band with the 2155-2180 MHz band,²² which meets the objectives outlined above in Section I.

Specifically, as Ericsson and others have previously advocated, the Commission and NTIA should concentrate their efforts to reallocate the 1755-1780 MHz band for commercial

²¹ See National Broadband Plan at 75.

²² Allowing Time Division Duplex (“TDD”) operation in the AWS-3 band, which is adjacent to the Frequency Division Duplex (“FDD”) downlink operations in the AWS-1 F Block, causes significant interference issues. A consistent U.S. allocation to the bandplan adopted by the ITU and the Inter-American Telecommunication Commission of the Organization of American States (“CITEL”) would achieve harmonization of spectrum use throughout Region 2 and would provide enormous consumer benefits. Lack of harmonization and allowing uplink transmissions in the AWS-3 band would require service providers and manufacturers to overcome various technological, engineering and economic challenges. See Comments of Ericsson Inc and Sony Ericsson Mobile Communications (USA) Inc, WT Docket Nos. 07-195, 04-356, at 7-10 (filed July 25, 2008).

mobile services on a primary basis, and to pair that spectrum with the AWS-3 band.²³ This is consistent with ITU and CITELE decisions endorsing the pairing of the 2110-2170 MHz band with the 1710-1770 MHz band as an option for North and South American implementation of 3G services.²⁴ Global standards also have been developed that support the ITU and CITELE endorsement.²⁵ In fact, as far back as 2000, NTIA acknowledged that reallocation of 1755-1780 MHz for commercial use is entirely possible, albeit with some challenges.²⁶ In addition, the 2110-2170 MHz portion of the band is a global FDD downlink band, which has available products in the market today. Further, the 1755-1780 MHz band is adjacent to the AWS-1 band uplink band and overlaps with GSM1800, which will help reduce the need for more technology developments and minimize the number of new bands in multiband devices.

IV. CONCLUSION

The Commission and NTIA have an important role to play in ensuring sufficient and suitable spectrum is made available to meet the growing demand for content-rich wireless broadband services as underscored in the National Broadband Plan. As discussed herein, the

²³ See Ericsson NBP Comments at 15, 22; 3G Americas NBP Comments at 9-10; 3G Americas White Paper at 9.

²⁴ See Ericsson NBP Comments at 22; see also XXI Meeting of Permanent Consultative Committee III: Radiocommunications, CITELE, *Final Report*, OEA/Ser.I/XVII 4.3, PCC.3/doc. 2371/02 rev.2, at 21 (July 25, 2002) (Option 5, "Mobile transmit band 1 710–1 770 MHz, paired with the global base transmit band 2 110–2170 MHz, consistent with a duplex separation of 400 MHz."), available at http://www.citel.oas.org/pcc3_old/final/P3-2371r2_i.doc.

²⁵ E.g., 3GPP Technical Specification Group SA, Meeting #25, Palm Springs, USA, September 13-16, 2004, *Proposed Final Submission toward Rev 5 of M.1457*, SP-040694, at 13, available at http://www.3gpp.org/ftp/tsg_sa/tsg_sa/TSGS_25/Docs/PDF/SP-040694.pdf.

²⁶ See NTIA, U.S. Dept. of Commerce, *Federal Operations in the 1755-1850 MHz Band: The Potential for Accommodating Third Generation Mobile Systems, Interim Report*, NTIA Special Publication 01-41 (Nov. 15, 2000), available at <http://www.ntia.doc.gov/osmhome/reports/imt2000/imt2000.pdf>. This report included a thorough analysis of the electromagnetic compatibility between major federal systems in the 1755-1850 MHz band and advanced wireless systems, relocation costs, operational impacts of federal migration, and the time requirements should DOD systems move from the band. See also Letter from Chris Pearson, President, 3G Americas, to Lawrence Strickling, Asst. Secretary for Communications and Information, U.S. Dept. of Commerce (May 25, 2010).

1675-1710 MHz band is a possible candidate for mobile broadband use, although additional studies are needed to determine how the band can be paired and utilized. The Commission, however, must continue to analyze other spectrum bands for potential reallocation – in particular the 1755-1780 MHz band – and should move quickly to resolve the allocation issues surrounding the AWS-3 band. Specifically, pairing the 1755-1780 MHz band with the 2155-2180 MHz band represents a significant opportunity in the U.S. for the provision of broadband services by creating an environment suitable for investment with associated economies of scale. Therefore, Ericsson looks forward to the Commission’s and NTIA’s further analysis of this proposal,²⁷ and to the details of any timeframe challenges expressed by NTIA.²⁸

Respectfully submitted,

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²⁷ See National Broadband Plan at 86-87 (“NTIA, in consultation with the FCC, should conduct an analysis, to be completed by October 1, 2010, of the possibility of reallocating a portion of the 1755–1850 MHz band to pair with the AWS-3 band. NTIA has commented that, ‘the Administration supports exploring both commercial and government spectrum available for reallocation.’ If there is a strong possibility of reallocating federal spectrum to pair with the AWS-3 band, the FCC, in consultation with NTIA, should immediately commence reallocation proceedings for the combined band.”).

²⁸ See Strickling Remarks (“We have concluded from our preliminary review of that band that there are too many agencies and assets involved to allow for a pairing [of the 1755-1780 MHz band] with AWS-3 in the timeframe the FCC has set for an auction.”).