

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

In the matter of)
)
Office of Engineering and Technology) ET Docket No. 10-123
Requests Information on Use of)
1675-1710 MHz Band)

COMMENTS OF T-MOBILE USA, INC.

T-Mobile USA, Inc. (“T-Mobile”) submits these comments in response to the Public Notice issued by the Federal Communications Commission (“FCC” or “Commission”) on June 4, 2010, regarding the potential utility of the 1675-1710 MHz spectrum band (the “1.6 GHz band”) for wireless broadband use.^{1/} T-Mobile applauds the efforts of the FCC and the National Telecommunications and Information Administration (“NTIA”) to designate additional spectrum for wireless broadband use, including the 1.6 GHz band.^{2/} With the information that the responses to the *Public Notice* will provide, the industry and the FCC will learn more about this band and its incumbent operations. Nevertheless, the Commission and NTIA should also continue to pursue the reallocation of 1755-1780 MHz band, which is ideally suited for a pairing with the 2155-2180 MHz (“AWS-3”) spectrum band already identified by the FCC for auction for commercial broadband services.

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

^{2/} T-Mobile supports the Administration’s comprehensive efforts to make additional spectrum available for wireless broadband. See Paul Kirby, *Reaction Mostly Positive to White House Announcement on Spectrum Reallocation*, TR DAILY (June 28, 2010) (noting T-Mobile’s statement that it is “pleased that the Obama Administration is making commercial wireless spectrum availability a top priority. Expanding access to additional spectrum is essential to ensuring that America stays on the cutting edge of mobile broadband deployment and satisfies consumers’ fast-growing demand for wireless data.”).

I. INTRODUCTION AND SUMMARY

T-Mobile is the fourth largest wireless carrier in the United States and serves nearly 34 million customers. Our existing 3G technology now covers markets serving 212 million people, and we have begun to implement even higher speed HSPA+ technology that will cover 185 million people by the end of the year. As *PC Magazine* recently reported, “T-Mobile’s aggressive deployment of HSPA+ in New York City, and its solid HSPA 7.2 [Mbps] showings in Boston, Baltimore, and (Washington,) D.C., made it the fastest carrier available in our four Northeastern cities overall.”^{3/}

While T-Mobile efficiently and effectively uses its current spectrum, the company, along with other wireless carriers, will require access to additional spectrum resources to continue to meet future demand for transmission capacity and to eventually launch mobile wireless services using Long Term Evolution (“LTE”) technology. The *National Broadband Plan* recognizes this need for additional spectrum to provide broadband services by proposing to make 500 megahertz of spectrum available for broadband in the next 10 years and 300 megahertz in the next 5 years for mobile use.^{4/} As part of this effort, the plan recommends that the FCC “make up to 60 megahertz available by auctioning Advanced Wireless Services (AWS) bands, including, if

^{3/} See Sacha Segal, *The Fastest Mobile Networks 2010*, PCMag.com (June 3, 2010), available at <http://www.pcmag.com/article2/0,2817,2364263,00.asp>.

^{4/} *Connecting America: The National Broadband Plan*, The Federal Communications Commission, at xii & 75 (March 2010), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“*National Broadband Plan*”). Many others have pointed out the issue and have urged the FCC to make more spectrum available for wireless broadband use. See, e.g., Comments of CTIA-The Wireless Association®, GN Docket No. 09-47, at 2 (Dec. 22, 2009) (“...current spectrum allocations are insufficient to meet the ever-growing demand for wireless broadband service.”). The FCC has also recognized the exponential demand from residential, enterprise, and institutional users for wireless broadband services. FCC Open Meeting, National Broadband Plan Presentation, Broadband Gaps, Slide 14, 15 (Nov. 18, 2009), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-294708A1.pdf.

possible, 20 megahertz from Federal allocations.”^{5/} It also suggests a target date of October 1, 2010 to identify the feasibility of pairing 20-25 megahertz from Federal allocations with AWS-3 and the J-Block (2175-2180 MHz) spectrum.^{6/}

T-Mobile supports the Commission’s efforts, which are critical to meet the spectrum needs created by the growth of its subscriber base and the bandwidth intensive data and video applications that are increasingly driving the growth of the wireless broadband marketplace.^{7/} Although T-Mobile endorses the reallocation of the 1.6 GHz band for commercial purposes, subject to the responses to the *Public Notice*, it notes that the 1755-1780 MHz spectrum band is especially well-suited for wireless broadband service when paired with the AWS-3 spectrum already slated for auction. The potential availability of the 1.6 GHz band should not impede FCC and NTIA efforts regarding the reallocation of the 1755-1780 MHz band in order to advance the Administration’s efforts to maintain America’s competitive and innovative positions of global leadership.

II. WITH FURTHER EVALUATION, THE 1.6 GHZ BAND MAY BE USEFUL SPECTRUM FOR MOBILE BROADBAND SERVICES

Based on the limited information available to date, the 1.6 GHz band appears to have some attractive characteristics for wireless broadband services, although there are some drawbacks that could impact effective deployment of the band. As CTIA and others have noted,

^{5/} *National Broadband Plan* at 86.

^{6/} *Id.* at 86-87.

^{7/} *See, e.g.*, T-Mobile Notice of Ex Parte, GN Docket No. 09-47 (May 12, 2010) (noting meeting with FCC officials to discuss the Commission’s efforts to identify additional spectrum for wireless broadband deployment); Reply Comments of T-Mobile USA, Inc., GN Docket No. 09-191, at 4-5 (observing that “One of the foremost challenges facing wireless broadband providers is the critical need for spectrum,” and noting how spectrum scarcity is converging with the continued development of bandwidth intensive applications); T-Mobile Notice of Ex Parte, WT Docket No. 06-150 (Mar. 24, 2010) (noting meeting with FCC officials to explain the immediate and substantial need for additional mobile broadband spectrum).

contiguous spectrum below 3 GHz is particularly valuable for commercial wireless use due to, among other reasons, the effective propagation qualities of frequencies in those bands.^{8/} While the 1675-1710 MHz band is adjacent to the 1710-1755 MHz band – the current uplink spectrum for the AWS-1 band (the AWS-1 bands are 1710-1755/2110-2155 MHz) – the better pairing of the AWS-3 spectrum is with the 1755-1780 MHz band, a position that is widely held by many in the wireless industry.^{9/} As the 1675-1710 MHz spectrum is directly adjacent to uplink spectrum for AWS-1 (at 1710-1755 MHz), the best potential allocation for this spectrum would also be for

^{8/} See e.g., Comments of CTIA – The Wireless Association®, GN Docket No. 09-51, at 18-19 (Oct. 23, 2009).

^{9/} See *National Broadband Plan* at 86-87. Others have supported the *National Broadband Plan*'s recommendation with respect to pairing Advanced Wireless Service spectrum. See, e.g., CTIA- The Wireless Association® Notice of Ex Parte, GN Docket No. 09-51, at 2 (May 27, 2010) (“[S]trongly support[ing] the pairing of AWS-3 spectrum with the federal spectrum in or around 1.7 GHz,” because such a “pairing would: make available a significant amount of additional spectrum for mobile broadband use; further harmonize domestic mobile allocations with international spectrum usage; and eliminate the interference threat posed by unpaired use of the AWS-3 band.”). See also *Constructing a Nationwide, Interoperable, Public Safety Broadband Network: Hearing Before the H. Comm. on Energy and Commerce Subcommittee on Communications, Technology and the Internet*, 111th Cong. (June 17, 2010) (testimony of Steven E. Zipperstein, Vice President, Legal and External Affairs and General Counsel, Verizon Wireless), available at <http://energycommerce.house.gov/documents/20100617/Zipperstein.Testimony.06.17.2010.pdf> (“The FCC’s *National Broadband Plan* noted that this [2155-2180 MHz band] spectrum would be best used if paired with additional spectrum in the 1755-1850 MHz band that is currently allocated to the federal government.... We concur with the Commission’s recommendation to pair 2155-2180 with 25 MHz of contiguous spectrum in the 1755-1850 MHz band.”). Regardless of the potential limitations of the 1.6 GHz Band, the most important factor for the Commission to consider in its evaluation of the potential use of Federal spectrum is ensuring that the AWS spectrum at 2155-2180 MHz be paired. Over the past several years, T-Mobile and others in the wireless industry have highlighted the significant deleterious interference effects of allowing unpaired TDD use of the 2155-2180 MHz band directly adjacent to T-Mobile’s AWS-1 mobile broadband services. See, e.g., Comments of T-Mobile USA, Inc., *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*, WT Docket No. 07-195, at 3-7 (filed Dec. 14, 2007); Comments of Verizon Wireless, WT Docket No. 07-195, at 5-13 (filed Dec. 14, 2007); Comments of MetroPCS, WT Docket No. 07-195, at 6 (filed Dec. 14, 2007); see also Letter from Patricia Paoletta, Counsel to 3G Americas, to Marlene Dortch, Secretary, FCC, WT Docket No. 07-195, at 4-5 (filed Jun. 25, 2008); Letter from Cecily Cohen, Nokia, to The Hon. Kevin Martin, Chairman, FCC, et al., at 1-2, WT Docket No. 07-195 (filed June 5, 2005); Letter from Mark Racek, Ericsson Inc., and Lee Hill, Sony Ericsson Mobile Communications Inc., to The Hon. Kevin Martin, Chairman, FCC, et al., at 1-2, WT Docket No. 07-195 (filed June 4, 2005); Comments of Motorola, WT Docket No. 07-195, at 7-8 (filed Dec. 14, 2007). Any Commission decision that fails to find suitable spectrum to pair with the 2155-2180 MHz band should be rejected.

uplink purposes. Allowing downlink operations, including Time Division Duplex (“TDD”), raises significant interference concerns – issues that T-Mobile and other carriers and vendors have noted and documented in the rulemaking process concerning the 2155-2175 MHz band.^{10/} Moreover, the spectrum directly below 1675 MHz, 1670-1675 MHz, has been provided to a single national licensee and could be used more effectively if added to the 1675-1710 MHz spectrum.^{11/}

While there are a number of benefits to using the 1.6 GHz band for mobile broadband, the FCC should also consider the limitations of the band. Most significantly, the 1.6 GHz band has not been internationally designated for mobile broadband services. This lack of harmonization has the potential to eliminate economies of scale for handset manufacturers who will be faced with designing and producing U.S.-specific devices, thus adding costs to both the supply and distribution chains of the wireless industry (and higher retail prices for consumers). Moreover, existing base station infrastructure may require costly modification to recognize the spectrum used in 1.6 GHz band-capable handsets. For example, current base station antennas that have been optimized to receive the 1710 to 2100 MHz band, like those typically used in

^{10/} See, e.g., Comments of T-Mobile USA, Inc., WT Docket Nos. 07-195 and 04-356, at 6 (Apr. 10, 2009) (“As extensive empirical evidence submitted in the record has conclusively demonstrated, the principal source of interference under the FCC’s proposal for the AWS-3 band would be [out-of-band-emissions] from the AWS-3 licensee leaking into the adjacent AWS-1 band where T-Mobile and other carriers are offering broadband services today.”); Letter from David Shively, AT&T, Charles Jackson, CTIA, Ahmad Armand, MetroPCS, Randy Leenerts, Nokia, and Yasmin Karimli, T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-195, at 1 (filed Sept. 10, 2008) (“AT&T, *et al.* Sept. 2008 Letter”); Letter from David Shively, AT&T, David Urban, Comcast, Charles Jackson, CTIA, Jonas Naslund, Ericsson, Bill Alberth, Motorola, Randy Leenerts, Nokia, Vish Nandall, Nortel, Roberto Padovini & Jamshid Khun-Jsuh, QUALCOMM, Cole Brodman & Neville Ray, T-Mobile, Jeff Baenke, U.S. Cellular, to Chairman Martin and Commissioners Copps, Adelstein, Tate and McDowell, FCC, WT Docket Nos. 07-195 and 04-356 (filed Oct. 20, 2008); CTIA-The Wireless Association®, WT Docket No. 07-195, at 41 (July 25, 2008) (“filtering is no solution to the interference caused by OOB”).

^{11/} See <http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2551606> for licensee information.

today's AWS-1 systems, may need to be replaced to be able to receive the 1675-1710 MHz band – substantially increasing costs for companies that have deployed those antennas, and impacting rapid roll-out of services in the band overall.^{12/}

These circumstances may lead to diminished wireless industry interest in the 1.6 GHz band (if paired with the 2155-2180 MHz band), resulting in reduced auction revenues. As described in more detail below, pairing the 2155-2180 MHz band with the 1755-1780 MHz band would significantly enhance the value of the spectrum to the benefit of consumers, service providers, and U.S. taxpayers. Significantly, if spectrum is to assist in funding a nationwide interoperable public safety network as the Administration and Congress are now suggesting, ensuring sufficient value for that purpose also has a significant public interest benefit to be taken into consideration.^{13/}

Nevertheless, because more spectrum is certainly needed to ensure that the U.S. remains competitive in mobile broadband globally, the Commission and NTIA should continue to investigate the reallocation of the 1.6 GHz band and initiate a rulemaking to determine the most effective and appropriate use for this band, subject to evaluation of whether the band can be effectively cleared of incumbent users and made available for commercial operations. We look forward to reviewing the record produced by the *Public Notice* to learn more about the current occupants of this spectrum and how they use the band.

^{12/} Additional costs for deploying in the 1755-1780 MHz band would be significantly less; the embedded base of T-Mobile AWS-1 handsets can accommodate virtually all of the AWS-3 spectrum paired with the 1755-1780 MHz band.

^{13/} See Public Safety Broadband Act of 2010, H.R. ___ (not yet added), 111th Cong. (2010) (describing actions the Commission “shall take...to ensure the deployment of a nationwide public safety interoperable broadband network in the 700 MHz band...”); Fact Sheet, The White House, Office of the Press Secretary, *Fact Sheet: Doubling the Amount of Commercial Spectrum to Unleash the Innovative Potential of Wireless Broadband* (June 28, 2010), available at <http://www.whitehouse.gov/the-press-office/fact-sheet-doubling-amount-commercial-spectrum-unleash-innovative-potential-wireles>.

III. NTIA AND THE FCC SHOULD CONTINUE TO PURSUE THE USE OF THE 1755-1780 MHZ BAND WHILE INVESTIGATING 1675-1710 MHZ BAND

While the *Public Notice* initiates the process for the potential reallocation of the 1.6 GHz band for commercial wireless broadband use, the Commission's efforts should not foreclose the potential reallocation of the band 1755-1780 MHz for similar commercial purposes. As noted above, the *National Broadband Plan* identifies the need to dedicate 300 megahertz of additional spectrum for wireless broadband use in the next five years and 500 megahertz in ten years; the 1.6 GHz and 1755-1780 GHz bands identified in the *National Broadband Plan* and now the *Public Notice* together represent only a small fraction of that amount that would be reallocated from the Federal government—even considering the potential reallocation of both bands. Indeed, a Presidential Memorandum released today commits the Federal government to a sustained effort to free up additional spectrum for broadband use, and directs NTIA and strongly urges the FCC to meet the spectrum goals announced in the *National Broadband Plan*.^{14/}

It is reasonable to do the analysis, due diligence and hard work that could make *both of these bands* available for commercial use in the future, and T-Mobile looks forward to working with NTIA and the FCC in those efforts. Consideration of Federal spectrum above 1755 MHz for potential commercial use should not be discarded prematurely. T-Mobile urges the FCC and NTIA to issue a Public Notice to obtain from all stakeholders additional information on the 1755-1780 MHz band, including the benefits of international harmonization and technical compatibility, as well as any perceived limitations of its use for commercial services.

^{14/} Press Release, The White House, Office of the Press Secretary, *Presidential Memorandum: Unleashing the Broadband Revolution* (June 28, 2010), available at <http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution>. Among other things, the Memorandum directs the Secretary of Commerce, working through NTIA, to collaborate with the FCC to make available a total of 500 megahertz of Federal and non-Federal spectrum over the next ten years, suitable for both mobile and fixed wireless broadband use. The Secretary of Commerce is similarly directed to collaborate with the FCC to complete by October 1, 2010, a specific plan and timetable for identifying and making available the 500 megahertz of spectrum.

While the Federal government has raised general concerns that it may be unable to reallocate the 1755-1780 MHz band in the time contemplated by the *National Broadband Plan*,^{15/} the Commission and NTIA should nevertheless continue to pursue the potential use of this spectrum. If there is insufficient time to fully investigate reallocation of the 1755-1780 MHz band by the recommended October 1, 2010 negotiation deadline specified in the *National Broadband Plan*, the value of the band militates in favor of continuing the evaluation beyond that deadline.

There are a number of benefits to reallocation of the 1755-1780 MHz band. First, the use of the band when paired with 2155-2180 MHz offers synergies that the 1.6 GHz band does not in a similar pairing. As others have pointed out, the 1755-1780 MHz band is ideally paired with spectrum that the FCC has already identified for AWS use – the AWS-3 band at 2155-2175 MHz and the “J Block” spectrum at 2175-2180 MHz.^{16/} The 1755-1780 MHz band is also immediately adjacent to the 1710-1755 MHz band, allocated for AWS-1 mobile operations (while the band 2155-2180 MHz is immediately adjacent to the spectrum at 2110-2155 MHz allocated for AWS-1 base station operations). By utilizing a spectrum pairing that has the same separation between base and mobile operations as is present in the AWS-1 band (400 MHz between base and mobile), wireless device manufacturers will be able to design and deploy new devices more quickly. This consistent base/mobile separation would not be maintained if the 1.6

¹⁵ See e.g., http://www.ntia.doc.gov/presentations/2010/PublicKnowledge_Spectrum_06032010.html (noting NTIA Administrator Strickling’s determination that the 1755-1780 MHz band could not be reallocated in the time requested by the FCC).

^{16/} See, e.g., Comments of 3G Americas, LLC, GN Docket No. 09-47, at 9-10 (Oct. 23, 2009) (“As an immediate step, the Commission can pair 25 MHz of contiguous spectrum in the 1755-1780 MHz government band with the 25 MHz ‘extended’ (2155-2180 MHz) band,” and, in doing so, “American consumers will realize the benefits of rapid deployment of mobile broadband and advanced services, as well as more affordable handsets.”); Comments of AT&T, Inc. GN Docket No. 09-47, at 13 (Nov. 13, 2009) (noting that “[The FCC] and NTIA should work together to relocate federal users in the 1755-1780 MHz band, and pair that spectrum with the orphaned ‘extended’ AWS-3 spectrum at 2155-2180 MHz.”).

GHz Band were to be paired with the 2155-2180 MHz band (the frequency separation would instead be 480 MHz). Therefore, pairing of 1675-1710 MHz with 2155-2180 MHz would require new filtering to be developed and deployed to allow for use of this non-standard frequency separation.

Second, the 1755-1780 MHz band is identified internationally for mobile broadband services, allowing for economies of scale and scope in the development of both infrastructure and mobile devices. Because of the international nature of the allocation, handsets incorporating this band can be manufactured for use in other parts of the world, driving the unit cost for those handsets down. In addition, existing AWS-1 base station receive antennas will readily accommodate the 1755-1780 MHz band without extensive modification.

Third, the 1755-1780 MHz band is encumbered by Federal government uses that are predominantly similar to the uses of the 1710-1755 MHz band that T-Mobile has been clearing over the past several years. T-Mobile believes its recent experience, as well as the experience of other AWS-1 licensees in Federal relocation, with proper planning, can enable efficient relocation of the 1755-1780 MHz band. Indeed, T-Mobile has preliminarily monitored the use of the 1755-1780 MHz band in selected markets across the country and, although the band is occupied by Federal users, T-Mobile has not identified any activity that would make clearing this band more challenging than AWS-1.

Accordingly, the Commission and NTIA should continue discussions about the potential for reallocating the 1755-1780 MHz band. The benefits of international harmonization and compatibility with domestic AWS-1 use would lead to a more rapid deployment of mobile broadband services – a clearly articulated goal of the Commission and the *National Broadband Plan*.

IV. CONCLUSION

T-Mobile applauds the Administration's efforts to make commercial wireless spectrum availability a top priority. It supports the Commission's efforts to investigate with NTIA the use of the 1675-1710 MHz band and encourages the Commission to complete those efforts as envisioned by the *National Broadband Plan*. The Commission should continue the reallocation process for this spectrum band, while not precluding ongoing work with NTIA to identify additional spectrum for reallocation, especially the 1755-1780 MHz band. T-Mobile particularly urges the FCC and NTIA to issue a Public Notice to obtain additional information on the potential use of the 1755-1780 MHz band.

Respectfully submitted

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