

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

In the Matter of)	
)	
Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands)	WT Docket No. 12-70
)	
Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz)	ET Docket No. 10-142
)	
Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands)	WT Docket No. 04-356
)	

REPLY COMMENTS OF NOKIA SIEMENS NETWORKS

Nokia Siemens Networks US LLC (“Nokia Siemens Networks”) respectfully submits these reply comments in the above-captioned proceedings in response to the Notice of Proposed Rulemaking (“NPRM”) and Notice of Inquiry (“NOI”) adopted and released by the Federal Communications Commission on March 21, 2012.¹ Nokia Siemens Networks joins numerous other commenters in strongly supporting the Commission’s efforts to increase the Nation’s supply of spectrum for mobile broadband by removing unnecessary barriers to flexible use of spectrum currently assigned to the Mobile Satellite Service (“MSS”) in the 2 GHz band. Nokia Siemens Networks further suggests, along with other comments, that interference from the AWS-4 band to other services can be mitigated through adoption of reasonable out of band

¹ Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands; Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz; Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands WT Docket Nos. 04-356, 12-70; ET Docket No. 10-142, *Notice of Proposed Rulemaking and Notice of Inquiry* (Mar. 21, 2012) (FCC 12-32) (“NPRM” and “NOI”).

emissions limits. The Commission's efforts to reallocate the 2 GHz MSS bands to permit terrestrial mobile broadband service represents an effective and timely way to make 40 MHz of spectrum available for commercial broadband, to the great benefit of US consumers.

I. COMMENTERS OVERWHELMINGLY SUPPORT THE COMMISSION'S EFFORTS TO MAKE MORE SPECTRUM AVAILABLE FOR COMMERCIAL BROADBAND.

Numerous commenters agreed that the demand for mobile broadband capability is dramatically escalating.² Verizon Wireless stated that “carriers will increasingly require more spectrum to meet their customers’ needs as more and more customers rely on wireless for their broadband needs, buy more devices that access the Internet, use those devices more hours each day, and download more applications that require large amounts of bandwidth.”³ One frequently mentioned factor contributing to the current strain on available wireless spectrum is the growth of consumers’ use of smartphones and other devices.⁴ As CTIA noted, the skyrocketing projections for mobile data growth make it “therefore essential that additional spectrum be identified and allocated for mobile broadband.”⁵

² See, e.g. Comments of Nokia Siemens Networks, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 2-3 (filed May 17, 2012); Comments of MetroPCS Communications, Inc., WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 14-18 (filed May 17, 2012); Comments of AT&T, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356 at 1 (filed May 17, 2012); Comments of CTIA—The Wireless Association, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 4-9 (filed May 17, 2012) (“CTIA Comments”).

³ Comments of Verizon Wireless, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 3-4 (filed May 17, 2012).

⁴ See Comments of the Telecommunications Industry Association, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 4-6 (filed May 17, 2012) (“TIA Comments”); Comments of Sprint Nextel, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356 at 2 (filed May 17, 2012) (“Sprint Comments”); Comments of the Information Technology Industry Council, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 2 (filed May 17, 2012).

⁵ CTIA Comments at 5.

The Commission's efforts to give greater flexibility to use of the AWS-4 band will play an important role in the Commission's goal of unleashing 300 MHz of spectrum for mobile broadband by 2015.⁶ Sprint noted that "licensing the H Block for flexible use promotes more efficient spectrum markets and serves the public interest by allowing carriers to respond more quickly to consumer demands and offer more robust service."⁷ Other commenters explained that freeing up the 2 GHz MSS spectrum for mobile broadband "is a critical ingredient to create jobs and enhance our global competitiveness" and will net significant economic benefits.⁸ Repurposing the 2 GHz MSS spectrum expeditiously, to allow technology neutral, flexible use of the band, will increase its utilization and result in the provision of improved services to consumers.

II. PROPER OUT OF BAND EMISSIONS ATTENUATION STANDARDS WILL HELP REDUCE THE RISK OF INTERFERENCE.

As the NPRM notes, AWS-4 terrestrial service rules will need to provide for the protection of spectrally proximate 2 GHz systems from harmful interference caused by AWS-4 systems.⁹ Nokia Siemens Networks and other commenters offered feedback on the Commission's proposals regarding interference protections that may be warranted. With adequate interference protections in place, the Commission can move forward with permitting flexible use of the AWS-4 band without risking harm to nearby systems.

⁶ The National Broadband Plan identified 300 MHz of spectrum that could be allocated for mobile broadband by 2015. Federal Communications Commission, *Connecting America: The National Broadband Plan* at 84 (2010).

⁷ Sprint Comments at 5.

⁸ Comments of Alcatel-Lucent, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 4 (filed May 17, 2012) ("Alcatel-Lucent Comments"). *See also* TIA Comments at 6; Comments of DISH Network Corporation, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, at 3 (filed May 17, 2012) ("DISH Comments").

⁹ *NPRM* at ¶ 29.

Nokia Siemens Networks agrees with the Commission that the emissions limit of -100.6 dBW/4 kHz EIRP to protect federal operations in the 2200-2290 MHz range is considerably more stringent than the standard OOB limit of $43+10 \log(P)$ dB.¹⁰ To meet this OOB limit in the spectrum above 2200 MHz, a filter would be necessary with between 1 and 5 MHz of bandwidth for the rolloff, depending on the size, complexity, and cost of the filter. Commenters stated that this rolloff would negatively impact the amount of available spectrum capacity for carriers to use.¹¹ To minimize this impact on the carriers, Nokia Siemens Networks would support creating a guard band above 2200 MHz to allow the carrier to use the entire 20 MHz of spectrum and avoid having a rolloff region of unusable spectrum.¹²

As per the levels that were agreed upon among operators and vendors during the 3rd Generation Partnership Project (“3GPP”) process, Nokia Siemens Networks supports the Commission’s proposed Out of Band Emission (“OOB”) attenuation of:

- $70+10 \log(P)$ dB below 1995 MHz from mobile stations transmitting in the 2000-2020 MHz band to protect PCS receivers from harmful interference in the 1930-1995 MHz band;¹³ and,
- $43+10 \log(P)$ dB at 2000 MHz along with linear interpolation to $70+10 \log(P)$ dB at 1995 MHz in the AWS H Block (1995-2000 MHz).¹⁴

¹⁰ *NPRM* at ¶ 49.

¹¹ *See also* Alcatel-Lucent Comments at 7-8, 14 (explaining that the 2180-2200 MHz block requires a sharp cutoff filter to meet the stringent OOB levels above 2200 MHz, and the filter’s rolloff in the 2190-2200 MHz block likely reduces the capacity of any carriers placed in this block); DISH Comments at 5.

¹² As Nokia Siemens Networks has no insight into the use of the 90 MHz of spectrum between 2200-2290 MHz, it is not possible for Nokia Siemens Networks to recommend a guard band size as a trade off for the filter size, cost, and complexity. However, a 5 MHz guard band would be optimum for protecting base station operations.

¹³ *NPRM* at ¶ 35. Other commenters also supported this proposal. *See* TIA Comments at 10; DISH Comments at 26. This spectrum is allocated for PCS downlink operations.

¹⁴ *NPRM* at ¶¶ 36-37.

In addition, consistent with the levels determined by operators and vendors in the 3GPP process, OOB limits from operations in the 1930-1995 MHz band at and above 2000 MHz should be set at $60+10 \log(P)$ dB.¹⁵

Nokia Siemens Networks also agrees with the Commission's proposed attenuation requirement of:

- $43+10 \log(P)$ dB for emissions above 2020 MHz from mobile units operating in the 2000-2020 MHz band, to protect operations in the AWS-2 J Block and 2025-2110 MHz bands;¹⁶ and
- $43+10 \log(P)$ dB for emissions below 2180 MHz from base stations operating in the 2180-2200 MHz band to protect operations in the AWS-2 J Block and AWS-3 band.¹⁷

With the above OOB limits in place, interference can be managed between AWS-4 and adjacent bands as well as between different blocks within the AWS-4 band. The Commission should adopt these proposals to protect existing and future operations while enabling efficient use of the 2 GHz MSS band.

III. CONCLUSION

Nokia Siemens Networks and the majority of commenters are encouraged by the Commission's efforts to make more spectrum available to help meet the escalating demand for mobile broadband connectivity. The Commission should expeditiously repurpose the 2 GHz MSS allocation for technology neutral, flexible use.

¹⁵ See also DISH Comments at 28 (supporting this proposal).

¹⁶ NPRM at ¶¶ 44-45. Nokia Siemens Networks notes that attenuation of $43+10 \log(P)$ dB at the 2020 MHz boundary provides even further protections for the operations 5 MHz away in the 2025-2110 MHz band.

¹⁷ *Id.* at ¶ 46. This level should be sufficient to protect systems in the adjacent spectrum blocks when they are deployed with the same duplex directions—meaning, uplink next to uplink and downlink next to downlink.

