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Via Electronic Filing

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W., Room TW-A325
Washington, DC 20554

Re: *Ex Parte Presentation*

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, 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

Dear Ms. Dortch:

On September 13, 2012, Larry Krevor, Vice President, Government Affairs; Richard Engelman, Director, Government Affairs; Trey Hanbury, Director, Government Affairs; and Rafi Martina, of Sprint Nextel Corporation ("Sprint"), met with John Leibovitz, Tom Peters, Chris Helzer, Stephen Zak, Kevin Holmes, Jeremy Marcus, Blaise Scinto, John Spencer, Peter Daronco, and Janet Young of the Wireless Telecommunications Bureau; Julius Knapp, Michael Ha, and Ronald Repasi of the Office of Engineering and Technology; and Gardner Foster of the International Bureau.

Sprint noted that, of the limited spectrum available for broadband use, only the PCS H Block at 1915-1920 MHz and 1995-2000 MHz is entirely cleared of incumbents, paired as expansion spectrum with the core PCS band, and available for immediate wireless broadband use. Sprint added that it values the H Block as LTE expansion spectrum and intends to bid for geographic area licenses once the Commission auctions the spectrum as directed by the Middle Class Tax Relief and Job Creation Act of 2012.

While Sprint continues to support awarding DISH Network (DISH) the ability to deploy terrestrial broadband services in its Mobile Satellite Services (MSS) spectrum, realization of this goal must not come at the cost of idling the valuable H Block spectrum. Specifically, the Commission should not permit DISH to cast emissions from its MSS spectrum into the adjacent-channel H Block in a manner that impairs use of the H Block for mobile broadband. Impairing the H Block would frustrate the principal benefits potential H Block bidders hope to achieve in acquiring the spectrum. Just as important, any impairment would also thwart the Spectrum Act's directive to use H Block auction revenue for the financial support of the FirstNet interoperable public safety network, the clearing of additional spectrum, and the achievement of other public goods. Sprint, therefore, reiterated its longstanding interest in seeing the Commission finalize its service rules for the H Block, adopt protection requirements from AWS-4 operations to H-block, auction the spectrum through competitive

bidding, and allow the license winners to quickly deploy the idle spectrum for mobile broadband use. The Commission should avoid a potentially costly waste of valuable spectrum resources when additional filters, reduced power, and other interference-mitigation techniques can be implemented on 2 GHz MSS operations.

Sprint also addressed the proposal to shift the MSS S Band uplink spectrum band from 2000-2020 MHz to 2005-2025 MHz. This upshift would allow the Commission to auction the 1915-1920 MHz and 1995-2005 MHz blocks as a unit, which would provide more PCS spectrum for auction, increase the amount of highly-valued downlink spectrum available to bidders, and, as a consequence, produce more auction revenue for the United States than auctioning the current H Block alone. Indeed, Sprint estimates that extending the current H Block allocation to encompass the 1995-2005 MHz band would more than double likely auction revenues over the status quo while providing much-needed downlink capacity for 4G LTE use. Alternatively, if the Commission shifts the MSS uplink to 2005-2025, it could auction the H block as currently configured and declare a “guard band” at 2000-2005 MHz to separate the H Block downlink from the MSS uplink. Regardless, however, of whether or not the Commission upshifts the MSS S Band, it should establish adjacent channel emissions limits for the MSS S Band that ensure maximum use and value of the adjacent H Block is not impaired.

Next, Sprint emphasized that additional international standards-setting work must still occur in support of DISH’s LTE Band 23 regardless of whether the five-megahertz upshift occurs. DISH recently initiated efforts at 3GPP to modify the existing standards in several respects, including changing the protection level from 2 GHz MSS user equipment to the G Block that Sprint depends upon for its 4G LTE network deployment. This issue will be discussed at the next 3GPP meeting in October. In addition, 3GPP will have to consider whether and how to amend the current Band 23 spurious emissions limits into the H and J Blocks once the Commission adopts protection levels from 2 GHz MSS user equipment for the H and J Blocks, or for an extended H Block if DISH is shifted up five megahertz. Thus, additional standards-setting activities will be necessary regardless of whether the Commission adopts the five megahertz upshift.

During the meeting, Sprint also indicated it would provide the Commission with additional information concerning the technical specifications relevant to the 1990-2000 MHz band. In this regard, Sprint notes that technical specification 3GPP TS 36.101, which applies to all LTE user equipment, establishes in section 6.6.3.2 spurious emissions requirements that are intended to permit various LTE user equipment operations in different frequency bands to co-exist. When adopting co-existence requirements for 2 GHz MSS ATC LTE operations in Band 23 and for G Block operations in Band 25, 3GPP adopted *only partial co-existence requirements for Band 23 user equipment*. 3GPP left the co-existence requirements incomplete because Sprint and the pre-bankruptcy predecessors-in-interest to DISH (TerreStar License Inc. and New DBSD Satellite Services G.P.) agreed to work outside of 3GPP to address additional co-existence requirements and then return to 3GPP with a consensus proposal. Discussions among Sprint and DISH’s Band 23 predecessors occurred over a period of several months; however, DISH’s predecessors discontinued these discussions during the course of their separate bankruptcy proceedings and these discussions have not resumed since DISH acquired the 2 GHz MSS licenses.

While Sprint would welcome the resumption of those discussions, the standards table, 3GPP TS 36.101, at present specifies spurious emission protection requirements in Table 6.6.3.2-1 from Band 23 user equipment operating in 2000-2020 MHz to adjacent PCS operations as follows:

E-UTRA Band	Spurious emission						
	Protected band	Frequency range (MHz)			Maximum Level (dBm)	MBW (MHz)	Note
23	E-UTRA Band 4, 5, 10, 12, 13, 14, 17, 23, 24, 41	F _{DL_low}	-	F _{DL_high}	-50	1	
	E-UTRA Band 2	F _{DL_low}	-	F _{DL_high}	-50	1	14, 15
	Frequency range	1998	-	1999	-21	1	14, 15
	Frequency range	1997	-	1998	-27	1	14, 15
	Frequency range	1996	-	1997	-32	1	14, 15
	Frequency range	1995	-	1996	-37	1	14, 15
NOTE 14: To meet this requirement NS_11 value shall be signalled when operating in 2000-2010 MHz							
NOTE 15: These requirements also apply for the frequency ranges that are less than Δf _{OOB} (MHz) in Table 6.6.3.1-1 and Table 6.6.3.1A-1 from the edge of the channel bandwidth.							

Source: TS 36.101 V 10.7.0 (2012-6).

The co-existence spurious emission requirements for Band 25 user equipment downlink frequencies at 1930-1995 MHz are not included in Table 6.6.3.2.-1; however, Band 23 spurious emissions are defined for portions of the H Block downlink between 1995 and 1999 MHz, and for PCS Blocks A-F, which 3GPP defines as Band 2. At the time 3GPP adopted these requirements in 2011, Sprint explained to DISH's predecessors that their operations should observe the same emissions levels into the G Block as 3GPP has routinely adopted to support co-existence between many other LTE user equipment bands, namely -50 dBm measured over one megahertz. At the same time, Sprint indicated a willingness to support less restrictive levels of up to and including -40 dBm measured over one megahertz *if testing or studies indicated harmful interference to the G Block would not result from use of the more permissive -40 dBm level*. DISH's predecessors did not provide additional information or studies to 3GPP. Nor has DISH provided additional information to 3GPP since acquiring control of the 2 GHz MSS licenses.¹

The normal user equipment co-existence spurious emission limit adopted by 3GPP is -50 dBm measured in one megahertz which can be found throughout Table 6.6.3.2-1 of the 3GPP LTE standard. As shown in the table below, a level of -50 dBm measured in one megahertz provides protection for situations where a user device transmitting in Band 23 at full power can be located at distances of between one and two meters from a user device receiving in another band.

¹ DISH's predecessors were not prepared to agree to the -50 dBm limit per megahertz within 3GPP any more than Sprint was prepared to agree to a -40 dBm limit per megahertz in the absence of additional technical support. Instead, Sprint and DISH's predecessors agreed that on this issue, as well as on potential changes to the base station spurious emissions levels from the G Block downlink at 1990-1995 MHz into the lower portion of the MSS uplink at 2000-2010 MHz, discussions would occur outside 3GPP. Notably, communications between standards representatives of Sprint and ICO Global Communications, contemplate a more stringent -50 dBm per megahertz limit in the 1990-1995 MHz band. See, e.g., Email of Mariam Sorond, ICO Global Communications, to Nick Baustert, Sprint Nextel Corporation, et al., "S-band/G-block 3GPP Coexistence Call (AKA Band 23 and Band 25)" (Sept. 15, 2010) (outlining discussion of proposal to "grant[] no special protection outside of what default 3GPP values would be" and for "Band 25 BS [base stations] [to] meet spurious emissions requirements at 10 MHz away," i.e., 1995 MHz and below).

Spurious/Out-of-Band Emissions Protection			Band UE distance (m) for UE transmit			
LTE Band Number (Frequencies)	dBm	MHz	23dBm	15dBm	10dBm	5dBm
4 (1710-1755 / 2110 - 2155 MHz)	-50	1	1.0	.4	.2	.1
5 (824-849 / 869 - 894 MHz)	-50	1	1.5	.6	.3	.2
10 (1710-1770 / 2110 - 2170 MHz)	-50	1	1.0	.4	.2	.1
13 (777-787 / 746-756 MHz)	-50	1	1.8	.7	.4	.1
14 (788-798 / 758-768 MHz)	-50	1	1.8	.7	.4	.1
23 (1915-1920 / 1995-2000 MHz)	Variable (-21 to -37)	1	Variable	Variable	Variable	Variable
25 (1910-1915 / 1990-1995 MHz)	Not yet defined	1	Not available	Not available	Not available	Not available

In February 2012, DISH contributed a proposal to 3GPP that would adopt an emissions protection level for the 1990-1995 MHz band. To Sprint's surprise, however, DISH proposed a protection level of -40 dBm per megahertz instead of the more protective -50 dBm per megahertz level that applies to most other LTE bands.² Because DISH's February 2012 3GPP submission provided no technical or engineering support for the contention that -40 dBm would offer adequate protection for LTE operations in the 1990-1995 MHz band, Sprint asked 3GPP to defer consideration of the proposal until the next 3GPP meeting in October 2012 to allow the proponents to offer additional technical support for their proposal. Consistent with its standard practice, 3GPP agreed to defer consideration of the item pending additional technical study.

In recent ex parte presentations to Commission staff subsequent to the 3GPP meeting, however, DISH appears to have represented that Sprint previously agreed to accept the more permissive protection level of -40 dBm per megahertz in the 1990-1995 MHz G Block. Representations about the existence of such an out-of-band emissions agreement between Sprint and DISH are incorrect. While DISH and Sprint reached a confidential private settlement of certain relocation expense cost-recovery disputes in November 2011, nothing in the agreement specifies an out-band-emissions level for the 1990-1995 MHz band. Moreover, Sprint's concern about the likelihood of MSS causing harmful out-of-band emissions interference into PCS G Block is well documented.³

During Sprint's ex parte meeting with Commission staff, Sprint noted that the co-existence requirements within 3GPP are often more stringent than the specific regulatory requirements adopted within a particular country because individual countries, including the United States, typically adopt an

² See R4-124057, "Addition of missing UE coexistence requirements for Band 23 to TS 36.101 (Rel-10)", DISH Network; R4-124058, "Addition of missing UE coexistence requirements for Band 23 to TS 36.101 (Rel-11)," Dish Network; R4-120616, "Correcting UE Coexistence Requirements for Band 23," DISH Network.

³ See, e.g., Comments of Sprint Nextel Corporation, ET Docket No. 10-142, WT Docket Nos. 04-356, 07-195 (July 8, 2011), available at <http://apps.fcc.gov/ecfs/document/view?id=7021691574> ("For example, there is potential for interference to the PCS G Block under some of the proposals in the Public Notice for the 1995-2000 MHz band (currently for AWS H Block downlink transmissions) and the 2000-2020 MHz band (currently for MSS uplink transmissions). Those proposals contemplate having spectrum used for downlink transmissions (i.e., mobile receive) adjacent to spectrum used for uplink transmissions (i.e., mobile transmit), which could result in: (1) out-of-band emissions ("OOBE") interference from mobile transmitters in new frequency bands falling into the existing PCS mobile receive frequency bands; and (2) potential PCS mobile receiver overload from nearby mobile transmitters on adjacent spectrum. In addition, uplink base station receivers could be susceptible to interference from existing PCS downlink base station transmitters. Filters may be able to ameliorate some of these concerns; others may require the Commission to establish guard bands or transition bands between prospective 2 GHz terrestrial broadband operations and existing PCS networks.")

additional measure of protection in the event of actual harmful interference, which triggers mutual coordination among the licensees. These country-specific coordination obligations represent an important safeguard not found in the 3GPP standard. In this case, section 25.252(c), which governs the out-of-band emission requirements of 2 GHz MSS licensees, provides for exactly this scenario. The full text of section 25.252(c) is as follows:

(c) For ATC operations in the 2000–2020 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency within the 2000 to 2020 MHz band outside the licensee's frequency band(s) of operations, emissions shall be attenuated by at least $43 + 10 \log (P)$ dB.

(2) Emissions on frequencies lower than 1995 MHz and higher than 2025 MHz shall be attenuated by at least $70 + 10 \log P$. Emissions in the bands 1995–2000 MHz and 2020–2025 MHz shall be attenuated by at least a value as determined by linear interpolation from $70 + 10 \log P$ at 1995 MHz or 2025 MHz, to $43 + 10 \log P$ dB at the nearest MSS band edge at 2000 MHz or 2020 MHz respectively.

(3) *When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, in its discretion, require greater attenuation than specified in paragraphs (c)(1) and (2) of this section.*

(4) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

Note to §25.252: The preceding rules of §25.252 are based on cdma2000 system architecture. To the extent that a 2 GHz MSS licensee is able to demonstrate that the use of a different system architecture would produce no greater potential interference than that produced as a result of implementing the rules of this section, an MSS licensee is permitted to apply for ATC authorization based on another system architecture.⁴

The Commission elaborated on its rationale for section 25.252(c)(3) when it adopted rules for an MSS ancillary terrestrial component. After defining specific emissions levels, the Commission noted that its out-of-band emissions rules would extend beyond numerical limits: “in the event that a PCS operator receives harmful interference from ancillary ATC base stations or mobile terminals, we will also require that the ATC operator must resolve any such interference.”⁵ The Commission added that “If the MSS ATC operator claims to have resolved the interference and other operators claim that interference has not been resolved, then the parties to the dispute may petition the Commission for a

⁴ 47 C.F.R. § 25.252(c)(3) (emphasis added).

⁵ *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, IB Docket No. 01-185 and IB Docket No. 02-364, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd. 1962, ¶ 119 (2003) (“*Flexibility Order*”).

resolution of their claims.”⁶ The Commission held that numerical restrictions and an obligation to avoid actual harmful interference “will adequately protect incumbent PCS operations in the 1930 to 1990 MHz band from interference from MSS ATC and still maintain the usefulness of spectrum in the 2000-2020 MHz band for ATC operations” and that these “more stringent out-of-band limitations will further the public interest in helping the Commission to establish more effective and efficient spectrum management.”⁷ In short, the Commission’s rules and *Flexibility Order* require DISH to correct any harmful interference that may occur regardless of the numerical limits on MSS ATC emissions. As a result, 3GPP has an obligation to investigate the potential for harmful interference even when the Commission’s numerical limits are observed and, if warranted, adopt co-existence requirements that are more stringent than bare numerical emissions targets.⁸

During the meeting, Sprint repeatedly emphasized its desire to see DISH move forward with deployment of its network. Sprint’s goal within 3GPP is simply to ensure that Sprint’s existing PCS operations, including the LTE operations in the G Block, and potential future H Block operations receive protection from MSS ATC interference. To advance Sprint’s continuing effort to support DISH’s effort to deploy terrestrial operations within its MSS spectrum, Sprint commits to collaborating with DISH and other members of the 3GPP standards-setting process to adopt out-of-band emissions protections for the 1990-1995 MHz band segment as quickly as possible. Sprint’s internal studies indicate that -40 dBm will not offer adequate protection to the G Block; however, Sprint approaches the forthcoming 3GPP standards-setting process with a willingness to fully and completely consider any evidentiary demonstrations that DISH may submit that a -40 dBm limit in the 1990-1995 MHz band offers interference protection adequate protection against harmful interference..

Finally, though not discussed during the ex parte meeting, Sprint would like to address the level of protection the H Block downlink spectrum should receive from DISH. With a growing consumer demand for video on-demand, file downloads, podcast updates, and other data-intensive traffic, data use is growing substantially and the majority of those uses consume downlink capacity from network base stations to end users. The principal value of the H Block accordingly rests on providing robust downlink capacity to support faster downloads and a larger number of mobile devices. Service rules and protection levels for the H Block, which remain pending before the Commission, should fully reflect the value of using the 1995-2000 MHz band for mobile broadband downlinks. To permit unimpeded use of the PCS H Block downlink, the Commission should ensure adjacent-channel licenses observe an out-of-band emissions limit of not less than $70+10\log P$ over a one-megahertz measuring bandwidth and should reiterate the existing requirement that MSS licensees remain responsible for eliminating harmful interference into PCS in the event that it occurs. Moreover, any operational constraints on the H Block downlink beyond those applicable to PCS would limit the capacity, coverage, or throughput of the H Block and should be avoided.

⁶ *Id.*

⁷ *Id.*

⁸ In another notable distinction, the Commission’s rules are meant to provide protection to PCS operations regardless of technology; however, the 3GPP co-existence requirements are meant to provide LTE-to-LTE protection requirements. These different objectives – combined with the absence of coordination obligations in the 3GPP documents – can, and routinely do, result in somewhat different emissions levels in the 3GPP standard and national requirements.

Pursuant to Section 1.1206 of the Commission's rules, this letter is being electronically filed with your office. Please let me know if you have any questions regarding this filing.

Respectfully submitted,

/s/ Lawrence R. Krevor

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