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December 7, 2012

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte Presentation in WT Docket No. 12-70, *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*; ET Docket No. 10-142, *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*; and WT Docket No. 04-356, *Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands*

Dear Ms. Dortch:

Pursuant to Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, DISH Network Corporation ("DISH") submits this response to an *ex parte* letter, dated December 6, 2012, in which Sprint Nextel Corporation ("Sprint") raised various straw man arguments in support of its proposed out-of-band emission ("OOBE") limits for AWS-4 and H Block operations.¹ Ultimately, Sprint raises procedural, not technical, concerns with DISH's proposal, and those procedural concerns are either easily remedied or wholly speculative and without factual foundation. As a result, Sprint's filing lacks credibility on many fronts, as explained below.

DISH's own proposal (*i.e.*, terrestrial guard band at 2000-2005 MHz, OOBE limit of -30 dBm/MHz at 2000 MHz for AWS-4 mobiles, and OOBE limit of -49 dBm/MHz at 2005 MHz for H Block base stations) offers the only solution before the Commission that achieves the Commission's twin goals of expediting an auction and increasing the value of the H Block for productive broadband use while allowing a new entrant, DISH, to quickly enter the mobile broadband market and deploy service using AWS-4 spectrum. Sprint's strident opposition to DISH's proposal is merely another transparent attempt by the incumbent, Sprint, to block a new entrant from competing in the marketplace.

¹ See Letter from Marc S. Martin, Counsel for Sprint, to Marlene H. Dortch, Secretary, FCC, WT Dkt. Nos. 12-70 and 04-356 and ET Dkt. No. 10-142 (Dec. 6, 2012) ("Sprint December 6 Letter"). DISH's response is limited to the issues raised in the Sprint December 6 Letter and is permitted under Section 1.1206(b)(2)(iv) of the Commission's rules. See 47 C.F.R. § 1.1203(c); see also *Amendment of the Commission's Ex Parte Rules and Other Procedural Rules*, 26 FCC Rcd 4517 ¶ 60 (2011).

First, contrary to Sprint's contention,² DISH's commitment to designate the 2000-2005 MHz band as a terrestrial guard band would be binding on DISH and its successors, and is simply not subject to conditions requiring further rulemaking proceedings.

Second, the Commission should reject as moot Sprint's argument that DISH's proposed OOB limit of -30 dBm/MHz at 2000 MHz is subject to uncertain future events, such as an auction of the H Block and use of the spectrum for full-power LTE. In a concurrent filing, DISH offered its -30 dBm/MHz proposal without conditions, thus settling that matter.

Third, contrary to Sprint's claim,³ DISH's proposal in no way suggests that AWS-4 equipment could be sold and used without complying with the -30 dBm/MHz limit. DISH expressly disavows any intention to do so, and Sprint's speculation to the contrary is baseless and its inclusion here further undermines the credibility of their arguments on all fronts.

Fourth, Sprint has failed to provide any technical justification for why a -40 dBm/MHz level is required to protect either the G Block or H Block. Since the initial stages of the 3GPP Band 23 and Band 25 development, multiple studies supporting substantially higher OOB levels have been published.⁴ Despite numerous requests by multiple 3GPP delegates, Sprint has not yet produced any accurate, technically justifiable analysis to support a -40 dBm/MHz level. Rather, Sprint merely has relied upon a legacy ancillary terrestrial component ("ATC") requirement (*i.e.*, -40 dBm/MHz) that: (i) applies only at 1995 MHz, not 2000 MHz; and (ii) has never been supported by substantial technical support submitted to the Commission.

Sprint included in its December 6 letter a simple picture of a stadium containing red and yellow highlighted circles with incorrectly calculated radii,⁵ but this rough, unscientific illustration offers no technical justification to refute extensive industry analyses that performed real world simulations demonstrating the sufficiency of an OOB limit of -30 dBm/MHz or higher for broadband devices.⁶ Moreover, AWS-4 devices will operate at much lower transmit power levels, and the H Block devices will operate with a significant amount of margin. Thus, no

² See Sprint December 6 Letter at 2.

³ See *id.* at 3-4.

⁴ See, e.g., *Derivation of a Block Edge Mask (BEM) for Terminal Stations in the 2.6 GHz Frequency Band (2500-2690 MHz)*, ECC Report 131 (Jan. 2009) ("ECC Report"), available at <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP131.PDF>; 3GPP TSG RAN WG4 R4-B26ah-0009, *Results of Monte Carlo Simulations for Band 26 Coexistence Scenarios*, Qualcomm, Incorporated (Jan. 17-19, 2012) ("Qualcomm Study"), available at http://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_AHs/R4_AH_Band-26/Docs/R4-B26ah-0009.zip; 3GPP TSG RAN WG4 R4-B26ah-0035, *Band 26 UE Spurious Emission on 850 MHz Lower Band (Band 27)*, Intel Corporation (Jan. 17-19, 2012) ("Intel Band 26/APAC700 Study"), available at http://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_AHs/R4_AH_Band-26/Docs/R4-B26ah-0035.zip.

⁵ See Sprint December 6 Letter, Attachment at 2.

⁶ See *supra* n.4.

interference would result in Sprint's open stadium example, as further illustrated in Attachment 1.⁷

Fifth, Sprint *itself* supported an OOB limit substantially higher than -40 dBm/MHz when that served its own interest. Specifically, Sprint's own Band 26 (extended 850 MHz) OOB limit to protect the adjacent public safety band is higher than -40 dBm/MHz, and Sprint previously supported all the studies made by the industry (including the Qualcomm Study and Intel Band 26/APAC700 Study) to justify a higher level—anywhere from -25 dBm/MHz to -27 dBm/MHz.

Sixth, Sprint's proposal does not increase the H Block's value and could indeed decrease it. If AWS-4 base station reception were permitted in 2000-2005 MHz under the Sprint proposal, an obstacle will be presented to 3GPP at the 2000 MHz boundary. H Block transmissions would cause AWS-4 base station receiver blocking and spurious emissions interference. Debating technical solutions without frequency separation would cause considerable delay to finalization of the future H Block 3GPP specifications. This uncertainty in the standards process could affect the H Block auction participation.

Seventh, contrary to Sprint's claim,⁸ an OOB limit of -40 dBm/MHz cannot be "easily incorporated" into the 3GPP standards within a three- to six-month period. Such a limit will, in fact, reopen the 3GPP process, because -40 dBm/MHz at a 5 MHz offset cannot be achieved through an external duplexer, even with new advancements in filter technology. An OOB limit of -40 dBm/MHz will require new A-MPR (Additional Maximum Power Reduction) simulations to be included in the specifications as part of meeting the more stringent level. This will require much longer than six months to be incorporated into the final standards, given Sprint's repeated statements of concern made at 3GPP regarding a -40 dBm/MHz level.⁹ On the other hand, DISH's proposed limit of -30 dBm/MHz can be satisfied with an external filter, thus avoiding any need for new simulation work and reopening of the 3GPP process.

Eighth, contrary to Sprint's allegation that DISH's proposal "would demands disparate treatment in terms of interference protection to AWS-4 from the H Block,"¹⁰ meeting the -49dBm/MHz OOB limit for the H Block operator for its base stations at 5 MHz away is a much more relaxed requirement than the AWS-4 operator meeting -30 dBm/MHz for its mobiles at the band edge with 0 MHz offset.

⁷ See Attachment 1 hereto. Additionally, Sprint's incorrect calculations for the distances at which the risk of interference from AWS-4 to H Block devices could begin to occur are inconsistent with 3GPP and overblown. In any event, no harmful interference would occur even at distance of 0 ft., as demonstrated in Attachment 1 hereto.

⁸ See Sprint December 6 Letter at 4.

⁹ See, e.g., Letter from Marc S. Martin, Counsel for Sprint, to Marlene H. Dortch, Secretary, FCC, WT Dkt. Nos. 12-70 and 04-356 and ET Dkt. No. 10-142, at 2 (Nov. 14, 2012) (commenting on DISH's contribution in 3GPP RAN4 #65, November 2012).

¹⁰ See Sprint December 6 Letter at 4.

Finally, Sprint offered no filter analysis to support its unsubstantiated claim that DISH's proposed OOB limit of -49 dBm/MHz at 2005 MHz for H Block base stations would increase network costs by hundreds of millions of dollars.¹¹ In fact, LTE base stations currently operate at levels close to this limit, and any additional modifications, to the extent required, will impose no significant cost increase. DISH has requested that vendors perform an analysis on base station OOB performance, specifically with respect to the OOB levels that a typical LTE base station should meet for a 10 MHz carrier with a requirement of -13 dBm/MHz (43+10*log(P) dB attenuation) at the band edge. The results showed that a typical base station (without any external filters or additional cost) meets a level of -18 dBm/MHz at band's edge, -29 dBm/MHz at 1 MHz offset, and -79 dBm/MHz at 10 MHz offset. In other words, these results demonstrate that a typical LTE base station (even with a 10 MHz carrier, where a 5 MHz carrier could have further reduced levels) is able to naturally meet an OOB limit of -49 dBm/MHz at a 5 MHz offset, and compliance with this limit would impose virtually zero incremental cost. Sprint also would have every opportunity to advocate for a different H Block OOB limit in the upcoming rulemaking proceeding.

* * * * *

In sum, unlike Sprint, DISH has provided valid, technically justified data, which have been published and supported by the industry and regulatory bodies. The Commission should reject OOB limits that have no technical justification and that merely perpetuate legacy protection levels that are unnecessary and create spectrum inefficiencies. DISH's technical proposal offers a reasonable compromise solution where DISH would effectively sacrifice the terrestrial use of 5 MHz of its uplink spectrum to address the Commission's desire to ensure flexibility in the future use of the H Block, while also addressing DISH's desire to be able to use its remaining 15 MHz of uplink spectrum to the maximum extent possible and as quickly as possible.

Respectfully submitted,

/s/ Jeffrey H. Blum

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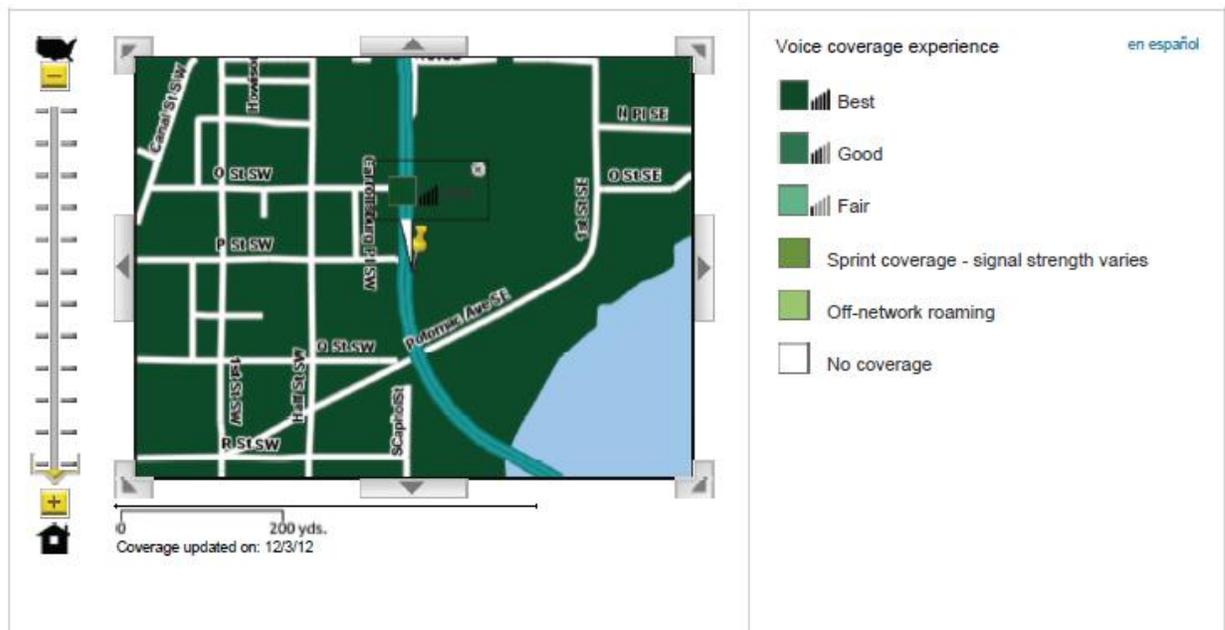
¹¹ See *id.*

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ATTACHMENT 1

The Sprint December 6 Letter claimed to depict potential radii of interference between AWS-4 and H Block devices at Nationals Park in Washington, DC. Sprint's claims in no way reflect reality. The alarmist radii drawn by Sprint assume that worst-case coverage conditions would be experienced in an open-air venue frequented by thousands of people. Further, Sprint exaggerated the potential for interference from AWS-4 devices in depicting unrealistic radii under worst-case signal conditions.

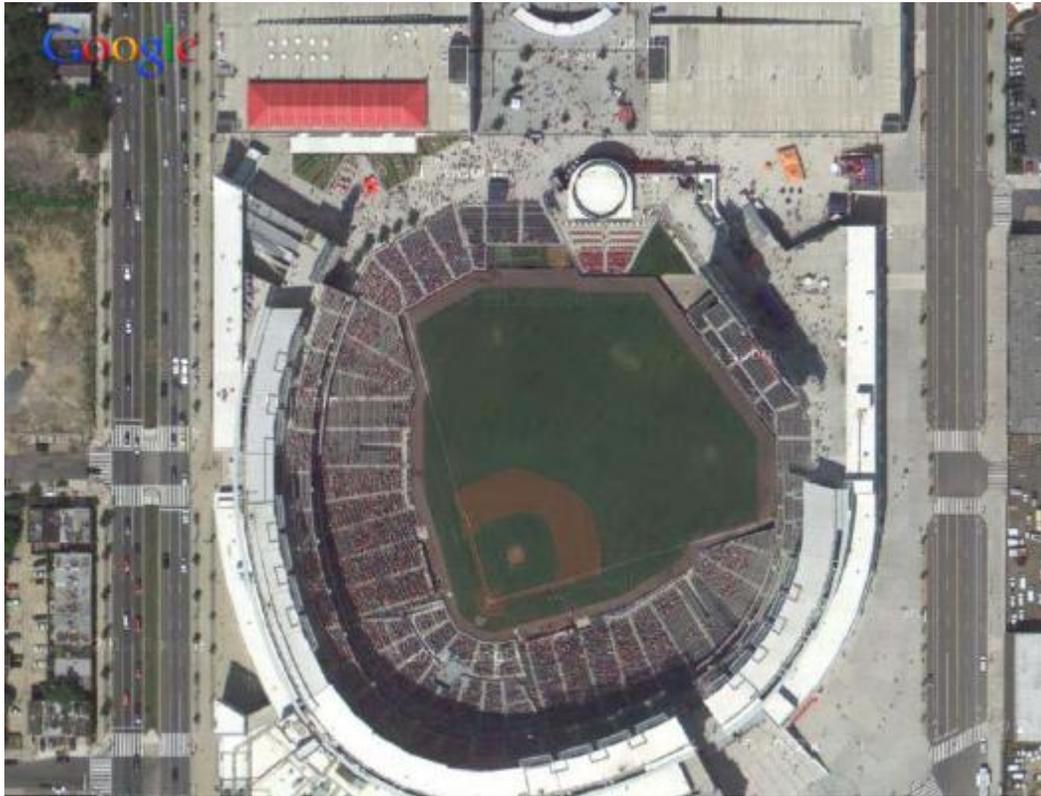
Wireless operators seek to provide excellent coverage in large venues such as baseball parks where potentially a large number of customers will use their devices. Sprint's own coverage map illustrates this concept – as shown in the figure below copied from the Sprint web site as of December 7, 2012, Sprint qualifies their coverage at Nationals Park as “Best”.



When a device is operating in signal conditions which are considered “Best”, the device is receiving a strong downlink signal, and would transmit at low power back to the serving base station. Devices transmit at full power only when necessary, in weak signal conditions. Transmit power control extends the battery life of the device and reduces co-channel interference to other users. Devices serving on the AWS-4 system, which would similarly be built to provide strong coverage at major venues such as Nationals Park, would transmit at considerably reduced power within the ballpark.

The combination of the strong H Block desired signal (“Best”) with transmit power control on the part of the AWS-4 device would guarantee interference-free operation for the devices of both systems. Thus, Sprint's inaccurate portrayal of the conditions at Nationals Park is simply

misleading and alarmist. H Block and AWS-4 devices would successfully coexist throughout Nationals Park, as illustrated below.



Realistic View of Nationals Park – No Interference

Outdoor signals from today's wireless networks are invariably strong. The on-street signal level throughout a city must be strong enough to penetrate buildings and serve customers indoors. Generally, the areas where a weak H Block signal may be encountered would be deep inside of a building, in a stairwell, or in an elevator; all locations with a notably low density of wireless devices.

An engineering-based approach to the question of H Block and AWS-4 device coexistence reveals the extremely low probability of interference from the reduced emissions requested by DISH.

Notably, a laundry list of conditions must be met in order for the potential for interference to exist. First, the H Block device must be receiving a very weak downlink signal to be potentially susceptible to interference. Second, the AWS-4 device must be in a weak coverage area and transmitting at high power back to its base station. Third, the H Block reception and AWS-4 transmission must occur at the same instant of time, an unusual circumstance given the low activity factor of LTE devices. Fourth and most importantly, the two devices must be used in very close proximity in order for the weak AWS-4 emissions to arrive at the H Block receiver with enough energy to begin causing interference.

3GPP equipment manufacturers modeled the probability of these disparate events occurring simultaneously, as discussed in a separate DISH letter concurrently filed today.¹² All studies concluded that emissions levels higher than that requested by DISH could be supported with minimal risk of interference. The few locations within a network where coverage is low enough to potentially encounter interference are also rarely frequented by a sufficient density of devices such that interference might occur. In those few tenths of a percent of instances where the right radio conditions exist to potentially cause interference, the devices' activity factors and the retransmission capabilities of the LTE technology will successfully preserve the customer's data session. Additionally, rare instances of interference could also be addressed by carrier aggregation, where the device would revert to using other spectrum bands controlled by the same operator. Thus, the emissions level requested by DISH of -30 dBm/MHz is more than sufficient to protect future H Block device reception.

¹² See Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, WT Dkt. Nos. 12-70 and 04-356 and ET Dkt. No. 10-142 (Dec. 7, 2012).