



Jeffrey H. Blum
Senior Vice President & Deputy General Counsel
Jeffrey.Blum@dish.com
(202) 293-0981

September 10, 2013

VIA ECFS

Chairwoman Mignon Clyburn
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: WT Dkt. No. 12-69, *Promoting Interoperability in the 700 MHz Commercial Spectrum*

Dear Chairwoman Clyburn:

You have called on both the government and industry to help “unleash[] spectrum for commercial use while also ensuring more efficient use of spectrum.”¹ The Commission has the ability to take immediate steps to do just that—promote mobile broadband deployment as well as the more efficient use of spectrum—in the Lower 700 MHz band, the H Block and the proposed AWS-3 bands (particularly the J Block), and allow full use of the 40 MHz of the AWS-4 band while protecting adjacent-band operators. DISH Network Corporation (“DISH”) is willing to work cooperatively with the Commission to help achieve those objectives and unlock additional spectrum for mobile broadband usage to the benefit of all Americans.

Specifically, the Commission is currently considering reforms to address underutilized spectrum and interoperability concerns in the Lower 700 MHz band.² In 2008, DISH paid nearly \$712 million at auction for 168 Lower 700 MHz E Block licenses, and was attracted to those licenses, primarily, by the ability to deliver high-power broadcast-type services at power levels of up to 50 kW effective radiated power (“ERP”). DISH has previously made filings opposing changes to these power limits.³

¹ Statement of Acting Chairwoman Mignon Clyburn on Presidential Memorandum Promoting Efficient User of Spectrum by Federal Agencies (June 14, 2013), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0614/DOC-321612A1.pdf.

² *See* *Promoting Interoperability in the 700 MHz Commercial Spectrum, Notice of Proposed Rulemaking*, WT Docket No. 12-69, 27 FCC Rcd 3521 (2012) (“*700 MHz Interoperability NPRM*”).

³ *See* Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at 1 (May 29, 2013); Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at 1-2 (Mar. 21, 2013).

Nonetheless, DISH shares the Commission's goals of promoting efficient spectrum use of the Lower 700 MHz band and, as part of an industry consensus on interoperability, DISH is willing to consent to a reduction in power if the Commission takes similar concrete steps to: (i) make corresponding changes to the E Block licensee obligations and rights to coincide with the dramatic change in operating characteristics; and (ii) unlock the more efficient use of spectrum in the AWS-4 band, the H Block, and the proposed AWS-3 bands.⁴ The contemplated reduction of the E Block maximum authorized power levels will fundamentally alter network design and deployment strategies, thus imposing substantial additional costs and stranding DISH's investment to date to commercialize its 700 MHz E Block licenses.

DISH, however, is willing to bear these additional burdens subject to certain conditions that would provide DISH with a measure of regulatory flexibility and certainty. This regulatory flexibility and certainty is critical to DISH's successful deployment of a terrestrial broadband network, which depends upon its ability to fully utilize both 700 MHz and AWS-4 spectrum and coexist with future adjacent operators in the H Block and portions of the proposed AWS-3 bands.

To support the Commission's ongoing reform efforts and objectives, DISH, subject to the conditions below, will consent to a reduction of the ERP of base stations for its Lower 700 MHz E Block licenses to 1,000 watts/MHz in urban areas and 2,000 watts/MHz in rural areas. DISH anticipates that the Commission will adopt a final order effectuating these changes no later than December 31, 2013. DISH currently plans to deploy an LTE network similar to what 700 MHz Lower A, B, C, and D block operators have deployed today, and to similarly enhance the network as the LTE technology evolves, which would make the above power levels consistent within the band. DISH is willing to consent to such a reduction in its power limits for the Lower 700 MHz E Block only if such a substantial change results in a concomitant modification of the applicable buildout requirements. Holding DISH to the buildout obligations in Section 27.14 of the FCC's rules would be clearly unfair, because transforming a high-power service into a low-power service requires effectively restarting deployment strategies and any applicable buildout clock.⁵ The Commission has already modified the construction deadline for certain lower A and B block licensees on its own motion, and should do so here for E Block licensees agreeing to reduced power operations.⁶ Consistent with the structure it has successfully used in the H Block

⁴ If AT&T declares its commitments null and void pursuant to the terms of the industry consensus on interoperability between AT&T and A Block licensees, then DISH reserves the right to challenge by appeal the reduction of its E Block power levels.

⁵ See DISH Network Corporation Comments, WT Docket No. 12-69, at 9 (June 1, 2012) (explaining the compelling basis for the Commission to waive the applicable buildout milestones).

⁶ See Public Notice, "Wireless Telecommunications Bureau Extends 700 MHz A Block Licensee Interim Construction Benchmark Deadline Until December 13, 2013," DA 13-210 (rel. Feb. 13, 2013); Public Notice, "Wireless Telecommunications Bureau Extends 700 MHz B Block Licensee Interim Construction Benchmark Deadline Until December 13, 2013," DA 13-680 (rel. Apr. 10, 2013).

and AWS-4 proceedings,⁷ the FCC should establish new interim and final build-out requirements for DISH's E Block licenses. Given the strong likelihood that DISH's E Block licenses will be deployed in conjunction with DISH's AWS-4 holdings, DISH would consent to a modified schedule closely aligned with the applicable AWS-4 buildout requirements:

E Block Interim Build-out Requirement: By March 7, 2017, a licensee shall provide reliable terrestrial signal coverage and offer terrestrial service to at least forty (40) percent of its total E Block population. A licensee's total E Block population shall be calculated by summing the population of each of its license areas in the E Block.

E Block Final Build-out Requirement: By March 7, 2021, a licensee shall provide reliable terrestrial signal coverage and offer terrestrial service to at least seventy (70) percent of the population in each of its E Block license areas.

Similarly, DISH should retain a limited right to operate at existing ERP limits pursuant to operator-to-operator agreements with other affected licensees or upon a demonstration to the Commission of no harmful interference to other relevant lower 700 MHz licensees.⁸ The need to reserve a limited opportunity for high-power operations is particularly important for rural America and the deployment of high-power services to underserved communities. This rural-focused flexibility – dependent upon actual licensee agreement or further FCC action – will provide DISH with the opportunity to better serve underserved communities without adversely affecting the Commission's objective to better utilize the Lower 700 MHz band.

DISH's consent to a reduction in its E Block power levels is also contingent on Commission action to ensure better utilization of the AWS-4 band, Mobile-Satellite Service, H Block, and certain portions of the proposed AWS-3 spectrum. Specifically, prior to the reduction of the E Block power levels becoming effective by Commission order, action must be taken by the Commission to grant in its entirety DISH's waiver request to be able to elect to utilize the 2000-2020 MHz band for downlink operations and DISH's request for extension of the AWS-4 final buildout date by one year -- to March 7, 2021.⁹ In doing so, the Commission would allow full use of the 40 MHz of the AWS-4 band while protecting adjacent-band operators, increase the utility (and auction value) of the H and J Blocks, and provide up to 30 MHz of potentially contiguous downlink spectrum, harmonizing future AWS-4, H Block, and operations in portions of the proposed AWS-3 bands. It would also still permit the continued coexistence of satellite and terrestrial operations in the AWS-4 band.

⁷ See Service Rules for Advanced Wireless Services H Block, *Report and Order*, WT Docket No. 12-357, 28 FCC Rcd 9483, ¶ 195 (2013) ("*H Block Order*"); Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, *Report and Order and Order of Proposed Modification*, WT Docket Nos. 12-70, 04-356; ET Docket No. 10-142, 27 FCC Rcd 16102, ¶ 187 (2012).

⁸ See e.g., *H Block Order* ¶¶ 80, 208.

⁹ See DISH Network Corporation, Petition for Waiver of Sections 27.5(j) and 27.53(h)(2)(ii) and Request for Extension of Time (filed Sept. 9, 2013) (attached).

DISH is offering its voluntary power reduction commitment in the spirit of compromise to help the Commission deliver on its important public interest objective of unlocking additional spectrum for mobile broadband use. By considering these issues holistically, the Commission can take dramatic steps to achieve its objectives across spectrum bands.

Respectfully submitted,

/s/ Jeffrey H. Blum

Jeffrey H. Blum

cc: Commissioner Jessica Rosenworcel
Commissioner Ajit Pai

Attachment: DISH Network Corporation Petition for Waiver of Sections 27.5(j) and 27.53(h)(2)(ii) and Request for Extension of Time (filed Sept. 9, 2013)

ATTACHMENT

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

In the Matter of

DISH Network Corporation Petition for
Waiver of Sections 27.5(j) and
27.53(h)(2)(ii) and Request for Extension
of Time

File No. _____

**PETITION FOR WAIVER OF SECTIONS 27.5(j) AND 27.53(h)(2)(ii) AND REQUEST
FOR EXTENSION OF TIME**

Jeffrey H. Blum
Senior Vice President and
Deputy General Counsel
Mariam Sorond
Vice President, Technology Development
Alison A. Minea
Director and Senior Counsel
Hadass Kogan
Associate Corporate Counsel
DISH Network Corporation
1110 Vermont Avenue, NW, Suite 750
Washington, DC 20005
(202) 293-0981

September 9, 2013

Table of Contents

I. INTRODUCTION AND SUMMARY..... 2

II. THE REQUESTED WAIVER IS NARROW 5

III. THE REQUESTED FLEXIBILITY SATISFIES THE FCC’S WAIVER STANDARD 6

A. The Requested Waiver Is Consistent with FCC Waiver Precedent.....7

B. The Waiver Request Would Help Achieve the Primary Objectives of the AWS-4 Rulemaking By Maximizing Use of Spectrum for Mobile Broadband and Increasing Interference Protection and Efficiency9

1. Grant of the Waiver Request Will Enable More AWS-4 Spectrum to be Deployed to the Public Than Under the Current Rules 9

2. Grant of the Waiver Request Will Better Resolve Interference Concerns with Adjacent Licensees Compared to the Current Rules..... 10

C. In Addition to Serving and Promoting the Underlying Policy Objectives of the AWS-4 Rules, the Waiver Will Also Help Deliver on the Commission’s Policy Objective to Provide Additional Spectrum for Mobile Broadband14

IV. A ONE YEAR EXTENSION OF TIME TO MEET THE AWS-4 FINAL BUILD-OUT REQUIREMENT IS WARRANTED IN ORDER TO REALIZE THE PUBLIC INTEREST BENEFITS OF GRANTING DISH THE REQUESTED FLEXIBILITY..... 16

V. CONCLUSION 19

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

In the Matter of

DISH Network Corporation Petition for
Waiver of Sections 27.5(j) and
27.53(h)(2)(ii) and Request for Extension
of Time

File No. _____

**PETITION FOR WAIVER OF SECTIONS 27.5(j) AND 27.53(h)(2)(ii) AND REQUEST
FOR EXTENSION OF TIME**

Pursuant to Sections 1.3 and 1.925(b)(3)(i) of the Commission’s rules, DISH Network Corporation, on behalf of its wholly-owned subsidiaries, New DBSD Satellite Services G.P. and Gamma Acquisition (collectively, “DISH”), seeks a waiver of certain AWS-4 technical rules to provide greater flexibility to offer a robust terrestrial broadband service across all 40 MHz of the AWS-4 band, foster greater spectrum efficiency, and increase the utility and value of the H and J Blocks for auction. In addition, pursuant to Section 1.946(e) of the Commission’s rules, DISH requests a one-year extension of the final construction milestone for each of the AWS-4 licenses.

The requested waiver and extension of time would enable DISH to operate its AWS-4 uplink spectrum (2000-2020 MHz) either as downlink or as uplink, and provide DISH with the additional time necessary to update its network and device planning to accommodate the requested flexibility. If the requested relief is granted by the Commission, DISH commits that as soon as commercially practicable, but no later than 30 months after the grant of this petition, DISH will file an election with the Commission stating whether it will deploy the 2000-2020

MHz band for downlink or uplink use. In addition, to provide critical funds for FirstNet, DISH acknowledges that grant by the Commission of the relief requested herein shall be conditioned upon DISH, either directly or indirectly through an affiliated entity or designated entity, bidding at least a net clearing price equal to any aggregate nationwide reserve price established by the Commission in the upcoming H Block auction (not to exceed the equivalent of \$0.50 per MHz/POP).¹

I. INTRODUCTION AND SUMMARY

DISH seeks a waiver of certain AWS-4 technical rules to provide the flexibility to offer downlink terrestrial operations in the 2000-2020 MHz band, currently the designated uplink band. Specifically, DISH seeks a waiver of Sections 27.5(j) and 27.53(h)(2)(ii) of the Commission's rules to allow flexible use of the 2000-2020 MHz band for downlink service, either on an unpaired basis or paired with to-be-determined non-AWS-4 spectrum.² Grant of the requested flexibility will serve and promote the underlying objectives of the Commission's AWS-4 rules by enabling DISH to utilize all of the AWS-4 spectrum more robustly and by improving the extent to which the AWS-4 band coexists with future licensees in the adjacent H and J Blocks. Moreover, the requested flexibility would have no adverse operational impact on any other Commission licenses.

¹ See Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, AU Docket No. 13-178 (Sept. 9, 2013). If the Commission, however, does not grant the requested relief at least 30 days prior to the commencement of the H Block auction, then the bidding condition set forth above shall no longer apply.

² See 47 C.F.R. §§ 27.5(j), 27.53(h)(2)(ii). Additionally, to the extent required to permit downlink operations in the 2000-2020 MHz band, DISH seeks waiver of other technical AWS-4 rules, including Sections 27.50(d)(7) and 27.65, that impose technical requirements on AWS-4 uplink operations at 2000-2020 MHz, but would not on their face apply to DISH's proposed downlink terrestrial operations in the 2000-2020 MHz band. See 47 C.F.R. §§ 27.50(d)(7), 27.65(a).

In particular, because the *AWS-4 Order* adopted stringent out-of-band emissions (“OOBE”) and power limits that impaired the 2000-2020 MHz band for terrestrial uplink use,³ DISH has been working to assess technical solutions that would permit use of the full 40 MHz of AWS-4 spectrum for mobile broadband service, while maintaining its existing satellite rights and protecting future H Block operations. In the interim, the Commission has also provided greater clarity on future intended uses of adjacent spectrum with the release of H Block service rules and the proposed designation of the lower J Block as a stand-alone uplink band.⁴ Taking all of these factors into consideration, DISH believes that the grant of the requested flexibility provides the best path forward to permit an increase in spectrum efficiency and utilization and improve the attractiveness of adjacent spectrum bands, thereby benefitting all affected stakeholders and the public.

Granting DISH the requested flexibility will also enable DISH to pursue new strategic initiatives that will facilitate its entry into the wireless market, further enhancing competition and the public interest. Providing the requested flexibility will incentivize DISH to find suitable uplink spectrum with which AWS-4 can be paired, which in turn will provide DISH with a more robust spectrum portfolio, thereby increasing DISH’s chances of entering the wireless market as a new competitor. In that vein, the timing for Commission action on this request is critical, and good cause exists to give DISH the option, but not the requirement, to operate the 2000-2020

³ See Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, *Report and Order and Order of Proposed Modification*, WT Docket Nos. 12-70, 04-356; ET Docket No. 10-142, 27 FCC Rcd. 16102, ¶¶ 70-72 (2012) (“*AWS-4 Order*”).

⁴ See Service Rules for Advanced Wireless Services H Block, *Report and Order*, WT Docket No. 12-357, 28 FCC Rcd. 9483 (2013) (“*H Block Order*”); Amendment of the Commission’s Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands, *Notice of Proposed Rulemaking*, GN Docket No. 13-185, ¶ 35 (rel. July 23, 2013) (“*AWS-3 NPRM*”).

MHz band as downlink. DISH requests that the Commission act expeditiously to grant this flexibility, because DISH believes that such flexibility will allow it to be more successful in its efforts to find new uplink spectrum for pairing through, among other things, strategic partnerships or transactions. Granting DISH the requested flexibility now, and specifically, prior to the Commission's planned H Block auction, will also enable DISH to participate more meaningfully in the upcoming H Block auction because DISH will have the certainty to plan for potential acquisition and deployment of the H Block in combination with AWS-4.

This waiver request meets the Commission's waiver standard.⁵ The strong public interest benefits that will be achieved satisfy the good cause requirement. At the same time, grant of the requested waiver will serve and promote the underlying goals and objectives of the AWS-4 rules.⁶ In developing those rules, the Commission recognized the value of flexibility: its AWS-4 actions were intended to "remove regulatory barriers to mobile broadband use of this spectrum," "encourage innovation and investment in mobile broadband,"⁷ and "enabl[e] flexible terrestrial use of this band while ensuring compliance with" interference requirements.⁸ The requested waiver would achieve all of those goals and would also advance both the Commission's broader spectrum goals and the public interest by maximizing the amount of spectrum available for mobile broadband services – particularly downlink services – in the AWS-4 band, as well as the to-be-auctioned H and J Blocks. By reducing the risk of interference, grant of this waiver request provides a viable path for all 40 MHz of AWS-4 spectrum to be potentially utilized for

⁵ See *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972); *Northeast Cellular Telephone Co., L.P. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990); see also 47 C.F.R. §§ 1.3, 1.925(b)(3)(i).

⁶ *Id.*

⁷ *AWS-4 Order* ¶ 1.

⁸ *Id.* ¶ 162.

terrestrial broadband services. Increasing the amount of available broadband spectrum will provide improved speeds and capacity for consumers.

In order to realize the public interest benefits that will result from grant of the waiver, DISH also requests a one-year extension of the final construction milestone for the AWS-4 licenses. This would give DISH 8 years, rather than 7 years, to provide terrestrial signal coverage and offer terrestrial service to at least 70 percent of the population in each of the AWS-4 license areas. DISH is not at this time seeking waiver or relief from the applicable interim build-out milestone. The one-year extension is necessary for DISH to update its network and device planning to accommodate the requested flexibility. There is ample Commission precedent for giving licensees additional time to meet performance requirements, and the modest request of an additional year is necessary to realize the many public interest benefits associated with granting DISH the flexibility to use its AWS-4 uplink for downlink.

II. THE REQUESTED WAIVER IS NARROW

DISH requests a waiver of the identified AWS-4 technical rules to provide the flexibility to fully and efficiently utilize all 40 MHz of the AWS-4 spectrum to provide a terrestrial mobile broadband offering. Specifically, DISH requests that the Commission waive Sections 27.5(j) and 27.53(h)(2)(ii) of the Commission's rules to permit flexibility to implement terrestrial downlink operations in the now-designated terrestrial uplink band at 2000-2020 MHz, either on an unpaired basis or paired with to-be-determined non-AWS-4 spectrum. No waiver is necessary either for AWS-4 operations in the 2180-2200 MHz band (DISH will operate downlinks in that spectrum) or for 2 GHz MSS operations (DISH will operate uplinks and downlinks in the spectrum bands allocated to Earth-to-space and space-to-Earth MSS, respectively). In addition,

no waiver of the Commission's Frequency Table of Allocations is necessary as downlink operations would be in conformance with the existing allocations.⁹

Section 27.5(j) requires the pairing of the 2000-2010 MHz band with the 2180-2190 MHz band and the 2010-2020 MHz band with the 2190-2200 MHz band. This pairing requirement restricts DISH's ability to use the 2000-2020 MHz band on an unpaired basis or paired with non-AWS-4 spectrum. Additionally, Section 27.53(h)(2)(ii) imposes OOB limits for AWS-4 operations in the 2000-2020 MHz band. These limits, however, were intended to apply only to AWS-4 user terminal transmissions, not to base station transmissions, and are not necessary to protect adjacent-band base station downlink operations.¹⁰ Thus, the limits do not need to be strictly applied to base stations operating in the 2000-2020 MHz band.¹¹

III. THE REQUESTED FLEXIBILITY SATISFIES THE FCC'S WAIVER STANDARD

The Commission's waiver precedent supports the grant of flexibility in instances like this – to facilitate mobile broadband deployment where there is no increased risk of harmful interference *and* to decrease the risk of harmful interference. The requested relief also serves and promotes the underlying objectives of the *AWS-4 Order*.

⁹ See 47 C.F.R. § 2.106.

¹⁰ See *AWS-4 Order* ¶¶ 71-72.

¹¹ As noted above, other technical AWS-4 rules, including Sections 27.50(d)(7) and 27.65(a), impose technical requirements on uplink operations in the 2000-2020 MHz band, but would not on their face apply to downlink terrestrial operations in the 2000-2020 MHz band. See 47 C.F.R. §§ 27.50(d)(7), 27.65(a). For example, the current 7 dBm transmit power limit at 2000-2005 MHz will not be applicable because the limit was adopted to protect against AWS-4 uplink transmission interference to H Block user terminal receivers. This mobile-to-mobile interference scenario will not occur under DISH's downlink proposal. DISH nonetheless requests waiver of these rules, to the extent required.

A. The Requested Waiver Is Consistent with FCC Waiver Precedent

The Commission may waive its rules for “good cause” shown.¹² Good cause may be found when a waiver would not undermine the underlying purposes of the rule and otherwise would serve the public interest;¹³ or when requiring strict compliance with a rule would be “inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”¹⁴ Grant of this waiver request will serve and promote the underlying objectives of the Commission’s AWS-4 rules by enabling DISH to utilize the AWS-4 spectrum more robustly and by improving the extent to which the AWS-4 band coexists with future licensees in the adjacent H and J Blocks. Additionally, requiring strict compliance with technical rules restricting use of the 2000-2020 MHz band to terrestrial uplink operations would be unduly burdensome, especially in this instance where no harmful interference to adjacent operators will occur.

The FCC has granted waivers to allow licensees greater flexibility in the use of their spectrum, particularly when the rule’s underlying goal is to facilitate broadband deployment.¹⁵ Similarly, the Commission has looked favorably upon waivers that foster spectrum efficiency and thereby enhance communications capabilities generally.¹⁶ The FCC’s waiver precedent also

¹² 47 C.F.R. § 1.3. *See also* 47 C.F.R. § 1.925(b)(3)(i).

¹³ *See WAIT Radio*, 418 F.2d, at 1159; *Northeast Cellular Telephone Co., L.P.*, 897 F.2d, at 1166.

¹⁴ 47 C.F.R. § 1.925(b)(3)(ii).

¹⁵ *See, e.g.*, Omnipoint Request for Broadband Declaratory or Waiver Concerning PCS Emission Limits Rule Section 24.238, *Order*, 15 FCC Rcd. 13422 (2000) (granting broadband PCS licensees a waiver of OOBE limits where adjacent spectrum is separately licensed to the same entity or a cooperating entity); Globalstar Licensee, LLC, *Order and Authorization*, 23 FCC Rcd. 15975 (2008).

¹⁶ *See* State of Florida, *Order*, 26 FCC Rcd. 7730 (2011) (granting waiver Section 90.531(b)(1)(iii) in part because “the public interest will be served by grant of the waiver

demonstrates the agency’s interest in solving technical challenges that might otherwise stymie investment or innovation, and consequently impede robust competition that serves consumers.¹⁷ Allowing DISH the flexibility to use the 2000-2020 MHz band for downlink or uplink purposes would serve all the same objectives of spurring broadband deployment, making more efficient use of available spectrum, and opening the door more widely to innovation – all of which promote the public interest.

Affording spectrum licensees the maximum amount of flexibility – consistent with interference constraints – to determine the highest valued use of their spectrum has become a hallmark of Commission spectrum policy.¹⁸ This framework has allowed licensees to determine for themselves how to put spectrum to its best use, and that approach should be replicated here.

because the [proposed system], will provide greater spectrum efficiency - and hence enhanced communications capability....”). *See also* City of Mesa, Police Department, *Order*, 26 FCC Rcd. 8466 (2011); State of Colorado, *Order*, 27 FCC Rcd. 6051 (2012); State of New Jersey, *Order*, 28 FCC Rcd. 1358 (2013); State of Idaho, *Order*, 28 FCC Rcd. 3251 (2013).

¹⁷ *See* Progeny LMS, LLC, *Order*, 26 FCC Rcd. 16878, 16885 ¶ 16 (2011) (absent a waiver, licensee would be “impede[d]” from “offer[ing] an innovative service that promotes the public interest and is competitive with other position location technologies”); LoJack Corp., *Declaratory Ruling and Order*, 26 FCC Rcd. 12991, 13000 ¶ 21 (2011) (“In the interest of promoting technological innovation, we believe that the requested waiver of SVRS duty cycles is warranted.”); Joint Request by Stratophone, LLC and SkyTel Spectrum, LLC for Waiver of Certain Air-to-Ground Radiotelephone Service Licensing Rules for General Aviation, *Order*, 25 FCC Rcd. 8581, 8588 ¶ 17 (2010) (“We believe that, rather than undermining the goal of competition, waiver of section 22.817 in this instance will promote competition and innovation, promising general aviation aircraft owners and passengers up-to-date and reasonably-priced alternatives to other air-ground services.”). *See also* Dell Inc. and LG Electronics USA, Inc., *Order*, 25 FCC Rcd. 9172, 9177 ¶ 11 (2010) (granting waiver, which “[s]everal commenters emphasize[d] that, ... [was] the best way to ensure rapid deployment and significant innovation”).

¹⁸ For over a decade, Commission actions have implemented the basic policy rationale articulated by the Commission’s Spectrum Policy Task Force in its 2002 report, “Flexibility enables spectrum users to make fundamental choices about how they will use spectrum ..., taking into account market factors such as consumer demand, availability of technology, and competition. By leaving these choices to the spectrum user, this approach tends to lead to

B. The Waiver Request Would Help Achieve the Primary Objectives of the AWS-4 Rulemaking By Maximizing Use of Spectrum for Mobile Broadband and Increasing Interference Protection and Efficiency

1. Grant of the Waiver Request Will Enable More AWS-4 Spectrum to be Deployed to the Public Than Under the Current Rules

As DISH has previously explained, the Commission’s *AWS-4 Order* established OOB and power limits for the AWS-4 uplink band that rendered the lower 5 MHz of the band (2000-2005 MHz) unusable for mobile broadband and left an additional 15 MHz (2005-2020 MHz) impaired.¹⁹ Specifically, the Commission adopted technical and interference rules to protect downlink operations in the immediately-adjacent upper portion of the H Block (1995-2000 MHz).²⁰ These rules rendered 5 MHz of the AWS-4 uplink band unusable for terrestrial mobile broadband. The rules also left 15 MHz of the AWS-4 uplink band impaired by setting strict OOB limits to protect H Block downlink operations. The AWS-4 emissions limit at the 2000 MHz edge is set at $70+10*\log(P)$ (*i.e.*, -40 dBm/MHz). AWS-4 user devices must implement additional maximum power reduction (“A-MPR”) specifications defined by 3GPP in order to meet the required emissions limits and to keep OOB and spurious emissions below the FCC

efficient and highly-valued spectrum uses.” Spectrum Policy Task Force, ET Docket No. 02-135, Report, p.16 (rel. Nov. 15, 2002), *available at* <http://transition.fcc.gov/sptf/reports.html>.

¹⁹ *AWS-4 Order* ¶¶ 79-93. *See also* DISH Network Corporation Comments, WT Docket No. 12-357, at 1-12 (Feb. 6, 2013); DISH Network Corporation Reply Comments, WT Docket No. 12-357, at 6-13 (March 7, 2013); Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 12-268 and 13-185; WT Docket No. 12-357 (August 6, 2013); Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 12-268 and 13-185; WT Docket Nos. 12-357 and 12-69 (August 2, 2013).

²⁰ *See AWS-4 Order* ¶ 179; ¶ 53; ¶ 66 at n.202 (“with data technologies ... higher speeds are needed on the downlink than on the uplink”); *id.* ¶ 68 (“Companies tend to use more downlink than uplink spectrum today”); *id.* ¶ 80 (“mobile broadband uses far more downlink than uplink”).

limits. Compliance with the A-MPR specifications will further impair the 2005-2020 MHz portion of the band if it is limited to uplink use, thus resulting in reduced capacity and coverage.

Exercise of the requested flexibility will relieve DISH of these strict requirements, and restore the entire 2000-2020 MHz band for mobile broadband use. The resulting spectrum efficiencies will improve future deployments in both AWS-4 and adjacent bands by providing, among other things, the opportunity to use this spectrum as an unpaired carrier or paired with non-AWS-4 spectrum. It will also advance the public interest goals of maximizing spectrum utilization.

2. Grant of the Waiver Request Will Better Resolve Interference Concerns with Adjacent Licensees Compared to the Current Rules

The *AWS-4 Order* established stand-alone terrestrial service rules and modified the DISH licenses to make more spectrum available for mobile use and minimize harmful interference.²¹ Granting this waiver to provide flexibility to permit AWS-4 downlink operations in the 2000-2020 MHz band will facilitate these public interest objectives to a greater extent than would be possible under the existing rules. As detailed below, AWS-4 downlink operations in the 2000-2020 MHz band would allow the full use of all 40 MHz of the AWS-4 band and permit harmonized operations with the adjacent H and J Blocks. Downlink use will also greatly improve and simplify the interference environment across the entire 1995-2025 MHz band.

The requested flexibility will further help the important Commission goals underlying the *AWS-4 Order*: it will provide greater protection for future adjacent H Block downlink operations (as well as PCS licensees) from harmful interference from AWS-4 uplink operations at 2000-2020 MHz. The flexibility to align the H Block downlink with a new AWS-4 downlink would

²¹ See *AWS-4 Order* ¶¶ 1, 18, 177.

significantly simplify the interference environment, permitting greater interference protection to future H Block users than the existing AWS-4 rules. In order to ensure that H Block operations are provided at least the same degree of protection, DISH would commit as part of the requested waiver and extension of time to operate any future downlink terrestrial fixed or base stations in the 2000-2020 MHz band consistent with the technical requirements applicable to other fixed/base stations in the AWS-4 band at 2180-2200 MHz and adjacent operational PCS/AWS bands, which have been found more than adequate to protect adjacent users.

To fulfill the objective of increasing interference protection, DISH would commit as part of the requested waiver and extension of time to operate terrestrial fixed or base stations in the 2000-2020 MHz band, subject to the following power and emission limits:

- (1) the power of each fixed or base station transmitting in the 2000-2020 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, shall be limited to:
 - (a) an equivalent isotropically radiated power (“EIRP”) of 3280 watts when transmitting with an emission bandwidth of 1 MHz or less;
 - (b) an EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz;
- (2) the power of each fixed or base station transmitting in the 2000-2020 MHz band in all other areas shall be limited to:
 - (a) an EIRP of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;
 - (b) an EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz;
- (3) on any frequency outside the 2000-2020 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB; and
- (4) the measurement procedure specified in Section 27.53(h)(3) of the FCC’s rules for emissions from AWS-4 base stations operating in the 2180-2200 MHz band

also will apply to emissions from AWS-4 base stations operating in the 2000-2020 MHz band.

While using the 2000-2020 MHz band for downlink operations may introduce certain MSS/AWS-4 interference issues,²² DISH, through its control of both MSS and AWS-4 networks and implementation of interference mitigation techniques, can provide MSS in conjunction with its planned terrestrial deployment as envisioned by the *AWS-4 Order*. The parallel use of the band for terrestrial downlinks and satellite uplinks would be difficult or impossible with different operators. This confirms the Commission's conclusion in the *AWS-4 Order* that technological difficulties render spectrum sharing by separate MSS/AWS-4 operators impractical.²³ The resulting decision of the Commission to combine satellite and terrestrial operations in one licensee makes it possible for DISH to increase the efficiency of the band's terrestrial use and still permit coexistence of satellite and terrestrial operations. This is also consistent with the flexibility given by the *AWS-4 Order* to DISH to maximize the use of the 2 GHz band for both satellite and terrestrial services.²⁴

²² Reverse-mode terrestrial use of the 2000-2020 MHz band has been contemplated by the Commission and others for more than a decade. For example, in March 2001, ICO submitted a detailed technical report demonstrating the feasibility of 2 GHz spectrum sharing by MSS and terrestrial networks operated by the same operator. The technical report found that potential interference for reverse-mode terrestrial operations can be mitigated. See Letter from Lawrence H. Williams *et al.*, New ICO Global Communications, to Michael K. Powell, Chairman, FCC, IB Dkt. No. 99-81, App. B: Intra-System and Inter-System Spectrum Sharing of MSS Networks Including Ancillary Terrestrial Component (ATC), pp. 4-5 (Mar. 8, 2001). Additionally, in adopting the ATC rules, the FCC explicitly evaluated reverse-mode terrestrial operations in the 2 GHz band. See 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, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd. 1962, ¶ 108 (2003) (“*ATC Order*”).

²³ See *AWS-4 Order* ¶ 163.

²⁴ Because the prior ATC rights for the 2 GHz band were co-directional with MSS operations, the Commission sensibly provided for co-directional AWS-4 and MSS operations to help facilitate continued use of existing MSS satellites and minimize the possibility of harmful interference between MSS and AWS-4 networks. See *ATC Order* ¶ 108; *AWS-4 Order* ¶ 39.

Specifically, DISH has determined that more flexible use of AWS-4 spectrum may allow it to best optimize its 2 GHz satellite and terrestrial services.²⁵ The Commission has long maintained the right of licensees to put spectrum to its best and highest use as long as no interference is caused. With the requested flexibility, DISH will be able to offer a satellite service that can co-exist with a downlink terrestrial deployment in the 2000-2020 MHz band. With the requested flexibility, DISH will be able to use the AWS-4 spectrum to provide terrestrial-based Long-Term Evolution (“LTE”) service as a primary service to its customers and augment the terrestrial coverage with MSS, and dual-mode MSS/LTE devices will be able to operate in MSS-mode when LTE coverage is unavailable. The MSS network will be able to be

The Commission noted that its finding was supported by comments in the record endorsing a co-directional band plan, and did not address or reach any conclusions on the merits of an alternative reverse-mode band plan. *Id.* In fact, DISH supported a co-directional AWS-4 band plan, but that support was largely premised on FCC adoption of OOB and power limits that were less stringent than those ultimately adopted. *See* DISH Network Corporation Comments, WT Docket. Nos. 12-70 *et al.*, pp. 27-28, 31-32 (May 17, 2012).

²⁵ The FCC consistently has found that MSS and terrestrial sharing of the 2 GHz band, for both forward-mode or reverse-mode operations, raises inter-system interference concerns. *See AWS-4 Order* ¶ 181; *ATC Order* ¶ 108. The FCC also consistently has found that “separately controlled MSS and terrestrial operations ... in the same band would be impractical because the parties would not be able to overcome the technical hurdles to reach a workable sharing arrangement.” *AWS-4 Order* ¶ 181 (citing *ATC Order* ¶ 49). Indeed, the FCC has observed that “[s]ame-band satellite and terrestrial operations have created technical problems in other bands” and “the problems grow more complex where, as here, both the proposed satellite service and the proposed terrestrial service are planned as *mobile* services with widespread deployments.” *ATC Order* ¶ 54 (emphasis in original). Moreover, the record developed in the AWS-4 proceeding just last year demonstrates that harmful interference would occur if different operators control the MSS and AWS-4 networks. *See AWS-4 Order* ¶ 181. These interference issues are even *greater* with reverse-mode terrestrial operations in the 2000-2020 MHz band. *See ATC Order* ¶ 108. Only DISH is in a position to implement a unified reverse-mode solution.

used dynamically to augment terrestrial LTE services and adapt to LTE network demands, ensuring that co-existence issues are manageable.²⁶

C. In Addition to Serving and Promoting the Underlying Policy Objectives of the AWS-4 Rules, the Waiver Will Also Help Deliver on the Commission’s Policy Objective to Provide Additional Spectrum for Mobile Broadband

The Commission’s action in the *AWS-4 Order* was intended to “increase the Nation’s supply of spectrum for mobile broadband by adopting flexible use rules.”²⁷ As discussed above, grant of this waiver will provide the flexibility needed to allow full use of 40 MHz of the AWS-4 band while protecting adjacent-band operators. Grant of this waiver will have the added public interest benefits of potentially (1) increasing the utility and value of H and J Blocks, and (2) providing up to 30 MHz of contiguous downlink spectrum, thereby achieving substantial economic benefits from harmonized PCS/AWS operations.

H Block. Granting DISH the flexibility to deploy the 2000-2020 MHz band for downlink use will increase the value of, and interest in, the H Block for auction. If it chooses to deploy the 2000-2020 MHz band for terrestrial downlink operations, DISH would commit as part of the requested waiver and extension of time to accept a less restrictive OOB limit on H Block emissions above 2000 MHz pursuant to either operator-to-operator agreements or further regulatory relief, as contemplated in the *H Block Order*.²⁸ Grant of the requested waiver and extension of time thus provides a path to increase protection and utility of the 1995-2000 MHz band. In addition, granting the flexibility DISH requests could spur substantial economic

²⁶ DISH’s flexibility request applies only to the AWS-4 uplink band and will have no negative impact on MSS downlink operations, which will continue to be harmonized with terrestrial downlink operations at 2180-2020 MHz.

²⁷ *AWS-4 Order* ¶ 1.

²⁸ See *H Block Order* ¶ 208.

benefits from harmonized PCS/AWS operations and will enhance the viability and value of the H Block at auction. Granting this flexibility in advance of the H Block auction could also meaningfully increase participation in that auction. Moreover, to provide critical funds for FirstNet, DISH acknowledges that grant by the Commission of the relief requested herein shall be conditioned upon DISH, either directly or indirectly through an affiliated entity or designated entity, bidding at least a net clearing price equal to any aggregate nationwide reserve price established by the Commission in the upcoming H Block auction (not to exceed the equivalent of \$0.50 per MHz/POP).²⁹ In fact, DISH's expanded interest in the H Block that would result from grant of this petition necessitates swift action on the part of the Commission. In order for DISH to plan for potential acquisition and deployment of the H Block in conjunction with AWS-4, DISH needs certainty that the requested flexibility will be granted. For this reason, if the Commission does not grant the requested relief at least 30 days prior to the commencement of the H Block auction, the bidding condition set forth above shall no longer apply.

J Block. The *AWS-3 NPRM* proposed that the lower J Block (2020-2025 MHz) be auctioned as a 5 MHz uplink band.³⁰ The lower J Block is adjacent to the existing AWS-4 uplink band as well as Federal government and BAS users above 2025 MHz. The J Block proposal will subject the new J Block service to significant interference from the adjacent Federal government and BAS users, rendering it effectively unusable.³¹ But, if the 2000-2020

²⁹ See Letter from Jeffrey H. Blum, DISH Network Corporation, to Marlene H. Dortch, Secretary, FCC, AU Docket No. 13-178 (Sept. 9, 2013).

³⁰ See *AWS-3 NPRM* ¶ 35.

³¹ DISH has previously explained that uplink operations in the 2020-2025 MHz band would be vulnerable to significant interference from Federal government and BAS users because base stations in the lower J Block will not be able to effectively filter out higher powered emissions from above 2025 MHz without an adequate frequency separation between the 2020-2025 and 2025-2110 MHz bands. See Letter from Jeffrey H. Blum, DISH Network Corporation, to

MHz band can be used for downlink operations, consistent with this request, the lower J Block could also be auctioned for downlink operations. The proposed J Block downlink arrangement will be analogous to the existing AWS-1 downlink and the BAS arrangement, which has a successful co-existence track record. A stand-alone J Block downlink band is likely to be more attractive to bidders and can also be more easily harmonized with adjacent PCS, H Block, and AWS-4 downlink operations.

Economic Benefits from Harmonized PCS/AWS Operations. The requested flexibility may permit AWS-4 operations in the 2000-2020 MHz band to be harmonized and co-directional with operations in the PCS band, and H and J Blocks, thus providing up to 30 MHz of contiguous downlink spectrum. This will foster a better co-existence scenario, simplify chipset operations, and accelerate the commercial deployment for all three bands. This holds the promise of lowering the cost and complexity of future deployments, and spurring new interest from equipment vendors in supporting these multiple bands in a single device, reducing equipment complexity and cost.

IV. A ONE YEAR EXTENSION OF TIME TO MEET THE AWS-4 FINAL BUILD-OUT REQUIREMENT IS WARRANTED IN ORDER TO REALIZE THE PUBLIC INTEREST BENEFITS OF GRANTING DISH THE REQUESTED FLEXIBILITY

In order to realize the public interest benefits that will result from grant of the requested waiver, DISH further requests pursuant to Section 1.946(e) of the Commission's rules a one-year

Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 12-70 and 04-356; ET Docket No. 10-142, Attachment: S Band Interference from 2025-2110 MHz (Sept. 17, 2012) ("September 2012 Interference Study"). A 5 MHz guard band is essential to protect an adjacent uplink operation from high power BAS and government transmitter above 2025 MHz. *Id.* at 16. To achieve the necessary frequency separation, the J Block would be effectively rendered a guard band.

extension or waiver of the final construction milestone for the AWS-4 licenses.³² This would give DISH 8 years, rather than 7 years, to provide terrestrial signal coverage and offer terrestrial service to at least 70 percent of the population in each of the AWS-4 license areas. DISH is not at this time seeking waiver or relief from the applicable interim build-out milestone.

Grant of the requested extension of time will serve and promote the public interest objectives behind the performance requirements established for AWS-4. Section 27.14(q) of the Commission's rules requires an AWS-4 licensee to provide terrestrial signal coverage and offer terrestrial service within 4 years from the date of the license to at least 40 percent of the total population in its aggregate licensed service areas (the "AWS-4 Interim Buildout Requirement"), and to provide terrestrial signal coverage and offer terrestrial service within 7 years from the date of the license to at least to at least 70 percent of the population in each of its license areas (the "AWS-4 Final Buildout Requirement").

Granting DISH an additional year to meet the AWS-4 Final Buildout Requirement is warranted in this instance because additional time is necessary in order to reap the public interest benefits associated with DISH's request for flexibility to be able to use the AWS-4 uplink spectrum at 2000-2020 MHz for downlink operations.

The potential conversion of the 2000-2020 MHz spectrum to downlink use presents a number of technical challenges. Among other things, DISH will need to initiate work for a new standard from the 3rd Generation Partnership Project ("3GPP") and will need to restart work to design devices and base stations, and make substantial changes to its network planning. DISH believes that these and other challenges can be overcome, and the additional work completed, if the AWS-4 Final Buildout Requirement is extended by one year.

³² 47 C.F.R. § 1.946(e).

The FCC has repeatedly declared its readiness to grant, and has granted, requests of extension of milestones as necessary to permit changes serving the public interest. The extensions granted for 800 MHz licensees to allow reconfirmation of the 800 MHz band and for WCS licensees to allow mobile broadband deployment are two examples. Specifically, in the *2004 800 MHz Relocation Order*, the Commission recognized that extension of construction milestones was necessary because the reconfiguration of the 800 MHz band would force some incumbents to “face construction deadlines prior to their being scheduled for relocation.”³³ In the *2012 WCS Order*, the Commission recognized that an extension of the WCS construction milestones was in the public interest “in light of the revisions we are making to the technical rules” and the likelihood that “licensees will not have sufficient opportunity in the time period remaining to develop or adapt equipment, and deploy facilities pursuant to the revised technical requirements.”³⁴

The FCC has granted waivers to allow licensees greater flexibility in the use of their spectrum, particularly when the rule’s underlying goal is to facilitate broadband deployment.³⁵ Similarly, the Commission has looked favorably upon waivers that foster spectrum efficiency

³³ Improving Public Safety Communications in the 800 MHz Band, WT Docket No. 02-55, ET Docket No. 00-258, ET Docket No. 95-18, *Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd. 14969 ¶ 205 (2004).

³⁴ Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, *Order on Reconsideration*, 25 FCC Rcd. 13652, 13700 ¶ 121 (2012).

³⁵ See, e.g., Omnipoint Request for Broadband Declaratory or Waiver Concerning PCS Emission Limits Rule Section 24.238, *Order*, 15 FCC Rcd. 13422 (2000) (granting broadband PCS licensees a waiver of OOB limits where adjacent spectrum is separately licensed to the same entity or a cooperating entity); Globalstar Licensee, LLC, *Order and Authorization*, 23 FCC Rcd. 15975 (2008).

and thereby enhance communications capabilities generally.³⁶ The FCC’s waiver precedent also demonstrates the agency’s interest in solving technical challenges that might otherwise stymie investment or innovation, and consequently impede robust competition that serves consumers.³⁷ Allowing DISH additional time to build out its AWS-4 licenses in order to update its network and device planning to accommodate the requested flexibility would serve all the same objectives of spurring broadband deployment, making more efficient use of available spectrum, and encouraging innovation – all of which promote the public interest.

V. CONCLUSION

For the foregoing reasons, DISH respectfully requests that the Commission grant the requested flexibility for AWS-4 operations in the 2000-2020 MHz band and the extension of the AWS-4 Final Buildout Requirement by one year. Allowing DISH to use the 2000-2020 MHz

³⁶ See State of Florida, *Order*, 26 FCC Rcd. 7730 (2011) (granting waiver Section 90.531(b)(1)(iii) in part because “the public interest will be served by grant of the waiver because the [proposed system], will provide greater spectrum efficiency - and hence enhanced communications capability...”). See also City of Mesa, Police Department, *Order*, 26 FCC Rcd. 8466 (2011); State of Colorado, *Order*, 27 FCC Rcd. 6051 (2012); State of New Jersey, *Order*, 28 FCC Rcd. 1358 (2013); State of Idaho, *Order*, 28 FCC Rcd. 3251 (2013).

³⁷ See Progeny LMS, LLC, *Order*, 26 FCC Rcd. 16878, 16885 ¶ 16 (2011) (absent a waiver, licensee would be “impede[d]” from “offer[ing] an innovative service that promotes the public interest and is competitive with other position location technologies”); LoJack Corp., *Declaratory Ruling and Order*, 26 FCC Rcd. 12991, 13000 ¶ 21 (2011) (“In the interest of promoting technological innovation, we believe that the requested waiver of SVRS duty cycles is warranted.”); Joint Request by Stratophone, LLC and SkyTel Spectrum, LLC for Waiver of Certain Air-to-Ground Radiotelephone Service Licensing Rules for General Aviation, *Order*, 25 FCC Rcd. 8581, 8588 ¶ 17 (2010) (“We believe that, rather than undermining the goal of competition, waiver of section 22.817 in this instance will promote competition and innovation, promising general aviation aircraft owners and passengers up-to-date and reasonably-priced alternatives to other air-ground services.”). See also Dell Inc. and LG Electronics USA, Inc., *Order*, 25 FCC Rcd. 9172, 9177 ¶ 11 (2010) (granting waiver, which “[s]everal commenters emphasize[d] that, ... [was] the best way to ensure rapid deployment and significant innovation”).

spectrum flexibly for downlink or uplink purposes in the AWS-4 band would, among other things, serve the public interest by spurring broadband deployment, making more efficient use of available spectrum, and increasing the utility and value of H and J Blocks for auction. And, granting the one-year extension of the AWS-4 Final Buildout Requirement will give DISH the time necessary to update its network and device planning to accommodate the requested downlink flexibility.

Respectfully submitted,

/s/

Jeffrey H. Blum
Senior Vice President and
Deputy General Counsel
Mariam Sorond
Vice President, Technology Development
Alison A. Minea
Director and Senior Counsel
Hadass Kogan
Associate Corporate Counsel
DISH Network Corporation
1110 Vermont Avenue, NW, Suite 750
Washington, DC 20005
(202) 293-0981

September 9, 2013