

BEFORE THE
Federal Communications Commission
WASHINGTON, D.C. 20554

In re the Matter of)	
)	
Hughes Network Systems, LLC)	File No. SES-MOD-_____
)	
Application to Modify Letter of Intent)	Call Sign S2834
To Access the U.S. Market from)	
The 97.1° W.L. Orbital Location)	

SPACE STATION MODIFICATION APPLICATION

Hughes Network Systems, LLC (“Hughes”), pursuant to Section 25.117 of the Commission’s Rules (47 C.F.R. § 25.117), hereby submits this application to modify its authorization to operate the JUPITER-97W satellite network at the 97.1° West longitude (“W.L.”) orbital location.¹ In this modification application, Hughes revises its technical proposal for the satellite to correspond to the design of the JUPITER-97W satellite that is under physical construction. In particular, Hughes provides additional information concerning its proposed gateway architecture, including the addition of the Local Multipoint Distribution Service (“LMDS”) frequencies; details of its tracking, telemetry and command (“TT&C”) operations; a revised power-flux density compliance showing; and an updated two-degree spacing and non-geostationary satellite network compatibility showing. This modification also proposes to update the ITU filing associated with the satellite.² With the exception of the

¹ See IBFS File Number SAT-LOI-20110809-00148.

² The original application (*see* footnote 1) indicated that the JUPITER-97W satellite would operate under the International Telecommunication Union (“ITU”) satellite orbital filing

updated information provided herein, Hughes certifies that its satellite design remains materially unchanged from its current Letter of Intent authorization.

I. GENERAL DESCRIPTION AND SERVICES TO BE PROVIDED

The Ka band capacity on JUPITER-97W will expand Hughes' capacity for broadband service by satellite in North America, including the United States. Following the successful launch of EchoStar XVII in 2011, Hughes has deployed over 1,000,000 broadband terminals throughout the United States and Canada and demand keeps increasing.³ This increasing demand and need for high-speed broadband service demonstrates that there is an ample market for additional capacity for the types of services that Hughes provides.⁴ These services include high-speed data transmission and high-speed broadband Internet access, which can be used to support internet and content-provider offerings such as high definition video programming, on-demand entertainment, digital music, interactive television, video conferencing and high capacity two-way communications. Areas of the United States, as well as Canada, Columbia, Costa Rica, Cuba,⁵ Mexico, Panama, and Venezuela that are currently underserved or unserved by terrestrial broadband technologies will benefit from the availability of this proposed new space segment capacity. Provision of broadband service to

designated as UKSAT-13, which was submitted to the ITU by the administration of the United Kingdom. This orbital filing expired on 6/1/2014.

³ Press Release, "Hughes Becomes First Satellite Internet Provider to Surpass One Million Active Users," Hughes Network Systems, LLC released on September 8, 2014.

⁴ Press release, "Hughes to Highlight Growth in High Throughput Satellite Technology at CSAT 2014 Conference," Hughes Network System, LLC released on September 8, 2014.

⁵ Under revised guidelines, issued in early 2010, U.S. satellite service providers may offer services to end users in Cuba. See FCC Public Notice, "Modification of Process to Accept Applications for Service to Cuba and Related Matters," 25 FCC Rcd 436, DA-112 (IB, released Jan. 21, 2010).

these areas will promote regional commerce while providing new job opportunities in the United States through the construction of the satellite, the development of applications and content for consumers, as well as the manufacturing of the gateway and user terminals. The additional high-speed capacity will improve communications links in rural and underserved areas, create new opportunities for economic development in the Western Hemisphere, and foster greater regional cooperation.

A. Space Segment

The JUPITER-97W satellite will operate at the 97.1° W.L. orbital location and will provide broadband service in several countries. The Ka band payload will incorporate state-of-the-art engineering to achieve enhanced flexibility of service offerings. It will consist of 139 User Beams covering portions of Canada, Columbia, Costa Rica, Cuba, Mexico, Panama, the United States and Venezuela. The satellite will also have 22 Gateway Beams that will be oriented towards Canada, Mexico and the United States. With this new satellite, Hughes will be bringing an additional 150 GBPS of capacity for broadband services to the Americas, essentially doubling Hughes available capacity for consumer broadband and greatly increasing available capacity overall.

B. Ground Segment

1. *Gateway Earth Stations ("GES")*: Up to 22 Gateway Earth Stations will be deployed in order to receive signals from users and to establish a terrestrial connection to the internet. These 22 stations will have antennas of at least 5.6 meters in diameter in order to provide sufficient robustness to interference and propagation effects.

2. *User Earth Stations (“UES”)*: Hughes customers served by the new Ka band capacity will receive high-speed broadband services using UES that consist of a small-diameter antenna mounted on the outside of their premises and a small indoor modem.

3. *Telemetry, Tracking and Commanding Earth Station (“TT&C”)*: Hughes will install two TT&C stations in Cheyenne, WY and Gilbert AZ to control the satellite. In addition, four Radio Frequency Auto Tracking (“RFAT”) stations will be installed to maintain the correct pointing of the satellite towards Earth.

C. Spectrum Usage

The Hughes Ka band GES will operate using the frequencies detailed in the Table 1 below for uplink (Earth-to-space) and downlink (space-to-Earth) operations. The UES will operate using the frequencies detailed in the Table 2 below for uplink (Earth-to-space) and downlink (space-to-Earth) operations. The additional frequency band for which authority is sought via this modification application is highlighted in Table 1 below.

Table 1 - Gateway Beams		
Frequency Band (GHz)	Function	US Allocation
27.85-28.35	Gateway Uplink	LMDS Primary
28.35-28.6	Gateway Uplink	FSS GSO Primary
28.6-29.1	Gateway Uplink	NGSO FSS Primary
29.25-30.0	Gateway Uplink	FSS GSO Primary
18.3-18.8	Gateway Downlink	FSS GSO Primary
18.8-19.3	Gateway Downlink	NGSO FSS Primary
19.7-20.2	Gateway Downlink	FSS GSO Primary

Table 2 – User Beams		
Frequency Band (GHz)	Function	US Allocation
29.25-30.0	User Beam Uplink	FSS GSO Primary
18.3-18.8	User Beam Downlink	FSS GSO Primary
18.8-19.3	User Beam Downlink	NGSO FSS Primary
19.7-20.2	User Beam Downlink	FSS GSO Primary

This proposed modification to the JUPITER-97W authorization requests the inclusion of the frequency band 27.85-28.35 GHz, which was not part of the original application. This frequency band is allocated to the Local Multipoint Distribution Service (LMDS) on a primary basis and to the FSS on a secondary basis. Accordingly, in order to protect LMDS, Hughes proposes to limit its operation in this band in the United States to a total of seventeen GES which will transmit on a non-interference basis with respect to the LMDS. Hughes has ensured that a Prior Coordination Notice was sent to all potentially impacted LMDS licensees in proximity to the GES to ensure that they are aware of the proposed deployment. No LMDS licensee has provided comment indicating any concern relative to the proposed deployment.⁶

An analysis was also conducted demonstrating the interference levels that LMDS terminals may receive from nearby GES. The results of the study are attached to the

⁶ See Comsearch Report attached as Exhibit E to this application.

technical exhibit provided with this application as Exhibit E. These results show that the impact to the LMDS is limited to the immediate vicinity of the GES.

As this application for modification requests the use of an additional frequency band beyond those currently authorized, the Commission's Rules require that the application be considered as a major modification to the existing authority and placed in the space station processing queue pursuant to Section 25.158 of the Commission's Rules.⁷ Nonetheless, as there are presently no other applicants ahead of Hughes in the processing queue requesting authority to make use of the frequency band 27.85-28.35 GHz at the nominal 97° W.L. orbital location, the Commission can grant Hughes' request for access to the additional spectrum without delay.

D. Launch

The JUPITER-97W satellite will be authorized for launch by the administration of Papua New Guinea through its National Information and Communication Technology Authority ("NICTA"), which regulates the telecommunications sector. Papua New Guinea is in the process of accession to the United Nations Convention on Registration of Objects Launched into Outer Space and will comply fully with the orbital registration requirements of the UN Office for Outer Space Affairs before the launch of JUPITER-97W. Papua New Guinea has already ratified the Convention on International Liability for Damage Caused by Space Objects.⁸ NICTA has agreed with Hughes that it will assume liability for the Jupiter-97W satellite. Hughes has agreed to obtain third party liability insurance to compensate NICTA in the event of a claim relating to Jupiter-97W.

⁷ See 47 CFR 25.117(d)(2)(iii)

⁸ See United Nations Office for Outer Space Affairs, Latest Depository Notifications. <http://www.oosa.unvienna.org/oosa/en/SpaceLaw/treatystatus/index.html>

E. Grant of this Modification Application Will Serve the Public Interest.

Hughes currently operates two high-throughput Ka band FSS satellites, SPACEWAY 3 (Call Sign S2663), which entered commercial service on April 3, 2008 at 94.95° W.L., and EchoStar XVII (Call Sign S2753), which began operations on October 1, 2012 at 107.1° W.L. The new JUPITER-97W satellite will offer significant additional capacity to meet the broadband needs of business and residential users in North America, delivering such high demand services as HD video programming, on-demand entertainment, digital music, interactive television, video conferencing and high capacity two-way communications.

The addition of JUPITER-97W will also allow Hughes to provide satellite broadband connectivity in new markets. With the advanced and flexible design of this satellite payload, Hughes will expand its footprint in the Americas, and provide broader coverage to a wider range of users that to date have not benefitted from access to satellite broadband.

In addition, the availability of this additional space segment capacity will promote creation of new information and communications technology jobs within the United States related to the construction of the satellite by SS Loral, the operation of the multiple gateway earth station facilities as well as for the manufacture of remote user terminals that are produced in the United States.

II. HUGHES SATISFIES THE COMMISSION'S CRITERIA UNDER DISCO II FOR ACCESS TO THE U.S. MARKET – 47 C.F.R. § 25.137(a)

The Commission's *DISCO II* framework applies to this application because the JUPITER-97W satellite is now to be licensed under authority of the government of Papua

New Guinea, and the services will be provided in a variety of countries.⁹ Papua New Guinea is a member of the World Trade Organization (“WTO”)¹⁰ which, as described below, establishes a rebuttable presumption that U.S. market entry is in the public interest. The *DISCO II* analysis includes consideration of several factors, such as the effect on competition in the United States, spectrum availability, eligibility requirements, technical requirements, national security, law enforcement, foreign policy and trade concerns.¹¹ Each of these factors supports grant of this application, as detailed below.

A. Positive Effect on Competition in the United States

In *DISCO II*, the Commission established a rebuttable presumption that market entry to provide services covered by the U.S. commitments under the WTO Basic Agreement on Telecommunications using a non-U.S. satellite authorized by a WTO Member Administration will further competition in the United States, whether such access is sought via a Letter of Intent or through an earth station application.¹² Papua New Guinea is a member of the WTO, and Hughes seeks to use the space segment capacity to be accessed via this modification to provide satellite services that are covered by the WTO Basic Agreement on Telecommunications. Accordingly, the presumption in favor of entry applies to this application.

⁹ *Amendment of the Commission’s Regulatory Policies to Allow Non-U.S. Licensed Satellites Providing Domestic and International Service in the United States*, Report and Order, 12 FCC Rcd 24094, 24107-17(¶¶ 30-49) (1997) (“*DISCO II*”).

¹⁰ Papua New Guinea has been a member of WTO since June 9, 1996. See http://www.wto.org/english/thewto_e/countries_e/papua_new_guinea_e.htm (visited 3/27/2014).

¹¹ See e.g., *Telesat Canada, Petition for Declaratory Ruling for Inclusion of Anik F2 on the Permitted Space Station List, Petition for Declaratory Ruling to Serve the U.S. Market Using Ka band Capacity on Anik F2*, Order, 17 FCC Rcd 25287, 25290 (¶ 6) (2002).

¹² *DISCO II* at 24112 (¶ 39); see also 47 C.F.R. § 25.137(a)(2).

Allowing Hughes to operate JUPITER-97W in the United States is consistent with the intent of the WTO Basic Agreement on Telecommunications to facilitate fair and open competition in satellite communications services, and provide equivalent opportunities to access facilities in the U.S. market for satellites licensed in countries that allow U.S.-licensed satellites to access their domestic markets. Grant of this application will enhance competition in the satellite services marketplace by permitting Hughes to introduce new satellite broadband services to additional areas, thereby stimulating lower rates, improved service quality, increased service options, and greater technological innovation. The Commission consistently has relied favorably on these same public interest benefits in granting similar requests.¹³

B. Spectrum Availability

This application proposes to access the Ka band capacity on JUPITER-97W at 97.1° W.L. for GES and UES operations using frequency bands designated for primary geostationary (“GSO”) FSS use, as well as those segments designated for primary non-geostationary (“NGSO”) FSS and LMDS use in the United States. Hughes has already been granted authority to access the NGSO band and use under this modification will be consistent with this authorization.

In addition, through this modification application, Hughes seeks access in the uplink direction to the 27.85-28.35 GHz band that is designated in the United States for primary use by the LMDS – an application in the fixed service.¹⁴ As discussed, Hughes’s operation of these additional Ka band links in the United States will be on a secondary, non-harmful

¹³ See, e.g., *Digital Broadband Applications Corp.*, 18 FCC Rcd 9455 (2003); *Pegasus Development Corp.*, 19 FCC Rcd 6080 (2004).

¹⁴ See also discussion of Spectrum Utilization in Section IV.H., below.

interference basis to LMDS. As outlined herein, Hughes proposes to operate seventeen GES terminals in locations set at sufficient distance from the urban centers where LMDS operations typically occur. These terminals will avoid causing harmful interference to LMDS systems by minimizing energy transmitted toward the horizon, with additional shielding used if required, as outlined in the Technical Annex.¹⁵ Hughes does not claim protection from any harmful interference that may be caused by LMDS systems. Accordingly, Hughes' proposed limited use of the LMDS spectrum for secondary U.S. GSO FSS uplink operations is fully consistent with Commission policy.¹⁶

As is shown in the Technical Annex to this application, Hughes's proposal is fully compliant with the Commission's two-degree spacing requirements, will not cause harmful interference to any other authorized user of the spectrum, and is compatible with future Ka band assignments pursuant to the FCC's Rules. Therefore, this request is fully consistent with the procedures set forth by the Commission in the *Space Station Licensing Reform Order* regarding processing of GSO-like services.¹⁷

¹⁵ See Technical Annex, Section A.9 at 13-24.

¹⁶ See *Amendment of Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, To Reallocate the 29.5-30.0 GHz Frequency Band, To Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, Third Report and Order, 12 FCC Rcd 22310, 22327 (¶ 42) (1997) and Third Notice of Proposed Rulemaking, 11 FCC Rcd 53, 71(¶ 47) (1995) (designating the band 27.5–28.35 GHz for LMDS on a primary basis, and stating that GSO FSS operations in the band will be permitted on a non-interference basis for the purpose of providing limited gateway-type services). See also 47 C.F.R. § 25.202(a)(1).

¹⁷ See *Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 10760, 10806 (¶113) (2003).

C. No National Security, Law Enforcement, or Public Safety Concerns

Grant of this application is also consistent with U.S. national security, law enforcement and public safety considerations. Hughes, a U.S. company, will only employ the proposed U.S. gateways to provide end user service to customers in the United States.¹⁸ Hughes will be responsible for all aspects of the design, construction and operation of the JUPITER-97W satellite, and will have authority over the U.S. earth station network in order to ensure prompt compliance with any national security or law enforcement requirements.

III. REGULATORY COMPLIANCE MATTERS

A. Legal Qualifications – 47 C.F.R. § 25.137(a)

Hughes' legal qualifications are set forth in this narrative and in the attached FCC Form 312 (including all associated exhibits). Separately, this application and its associated attachments include all of the information required for space station applicants in Section 25.114 of the Commission's rules, except as noted below.¹⁹

B. Technical Qualifications – 47 C.F.R. § 25.137(b)

A complete Technical Annex and Schedule S for the Ka band payload are provided as part of this application. Hughes' plan for mitigation of orbital debris was included in its initial application. There have been no substantive changes in this plan; however, the Technical Annex included with this modification application includes a restatement of the

¹⁸ All UES located in the U.S. will connect exclusively to a GES located in the U.S. Some UES in Central and South America will also be connected to GES located in the U.S.

¹⁹ See 47 C.F.R. § 25.114. Detailed information concerning Hughes' ownership and its officers and directors is provided in Exhibit D to the Form 312 associated with this application.

plan, as provided for under Section 25.114(d)(14) of the Commission's Rules, with some additional detail and explanation.²⁰

With respect to the additional spectrum in the 27.85-28.35 GHz band that Hughes seeks to use on a secondary basis, operations on JUPITER-97W will be restricted to reception of transmissions from the GES. As mentioned previously, a quantitative demonstration of the capability to operate on a secondary, non-harmful interference basis with the LMDS is provided in Section A.10 of the attachment to this document titled, "Technical Information to Supplement Schedule S".

C. Posting of Performance Bond

Following grant of the underlying space station authorization, Hughes posted a performance bond of \$3,000,000 pursuant to Section 25.165 of the Commission's Rules.²¹ Hughes subsequently submitted documentation to the Commission demonstrating its timely compliance the first and second milestones.²² These have been reviewed and accepted as proof of satisfaction of the conditions on Hughes' license with a consequential reduction of the bond to \$1,500,000.²³

²⁰ See Technical Annex, Section A.10 at 24-27. See also 47 C.F.R. § 25.114(d)(14) & § 25.283.

²¹ See 47 C.F.R. § 25.165.

²² See Hughes' Demonstration of Compliance with First Satellite Implementation Milestone, File No. SAT-LOI- 20110809-00148, filed July 18, 2013; Hughes' Demonstration Of Compliance With Second Satellite Implementation Milestone – Critical Design Review, SAT-LOI- 20110809-00148, filed July 24, 2014; and Letter from Jennifer A. Manner, Vice President, Regulatory Affairs, Hughes, to Lynne Montgomery, Attorney Advisor, International Bureau, FCC, File No. SAT-LOI-20110809-00148, dated September 11, 2014.

²³ See FCC Public Notice, "Policy Branch Information, Actions Taken," Report No. SAT-01044, DA No. 14-1443, at 2 (Sat. Div., released October 3, 2014) (announcing the determination that Hughes had met the first two milestones for the satellite to be located at 97.1° W.L. and permitting Hughes to reduce its bond to \$1,500,000).

D. Reporting Requirements

Hughes will comply with all FCC reporting requirements that apply to Ka band GSO FSS satellites.²⁴

E. Compliance with FCC Technical Regulations

Hughes's proposal is compliant with the Commission's two-degree spacing requirements both for the bands covered by Section 25.138 of the Commission's Rules and for the bands where LMDS and NGSO FSS are primary, which are not so covered.²⁵ Planned operations will not cause harmful interference to any other authorized user of the spectrum. Except with regard to those requirements for which waivers are requested (*see* Section V, below), Hughes's network will comply fully with the applicable requirements of Part 25 of the Commission's Rules, including power flux-density requirements,²⁶ full frequency re-use requirements,²⁷ and all operational requirements. Specific showings as to the applicable elements are contained in this application and the included exhibits and attachments hereto.

G. Spectrum Utilization

Hughes seeks to expand its authority to make use of spectrum in the 27.85-28.35 GHz band to support its gateway uplink operations on a secondary basis to the LMDS in the United States. As explained above, Hughes's use of spectrum in this band is consistent with the Commission's intended use of the secondary U.S. allocation for FSS in this band. The

²⁴ *See, e.g.*, 47 C.F.R. § 25.145(f).

²⁵ *See* Technical Annex, Section A.7 at 5-7.

²⁶ *See* Technical Annex, Section A.6 at 3-4.

²⁷ *See* Technical Annex, Section A.11 at 27-28.

Commission has previously authorized secondary gateway operations in these frequencies, and has recognized that such operations may coexist with primary LMDS operations.

IV. WAIVER REQUESTS

Hughes requests the following waivers of the applicable Commission Rules with which its Ka band space segment may not be fully compliant.

A. Section 25.210(i)(1) – Cross-Polarization Isolation

Section 25.210(i)(1) of the Commission’s Rules provides that FSS space station antennas must be designed to provide cross-polarization isolation (“XPI”) such that the ratio of the on axis co-polar gain to the cross-polar gain of the antenna will be at least 30 dB within its primary coverage area. As shown in the attached Technical Annex, Hughes’ Ka band package on the JUPITER-97W satellite is expected to have a cross-polarization shortfall for all user beams in both transmit and receive cases.²⁸ Accordingly, Hughes requests a waiver of this requirement. This disparity with the FCC requirement will have no material adverse impact on the operation of adjacent satellite networks. The only situation where the XPI performance of a satellite antenna could impact the interference between satellite networks, or between satellite and terrestrial systems, is when the associated earth station (or terrestrial terminal) has its antenna pointed directly at the interfering or interfered-with satellite. Only then is the polarization purity of the earth station high enough for the XPI of the satellite antenna to be a material factor on the interference level. In all interference situations where the satellite is located at any angle away from the boresight of the earth station/terrestrial terminal – which will account for all interference interaction between the

²⁸ See Technical Annex, Section A.11 at 27-28. The XPI will meet the 30 dB requirement on gateway beams. The XPI may be as low as 21.5 dB for the user beams.

JUPITER-97W network and other GSO networks or terrestrial systems – the poor XPI of the earth station/terrestrial terminal will dominate the interference calculation. Therefore the shortfall in XPI for the JUPITER-97W satellite antenna will have no impact on the interference to or from other networks and systems. Further, Hughes will claim no more protection from interference from other licensed spectrum users operating in accordance with the Commission's rules than if its antennas were in compliance with Section 25.210(i) of the FCC's Rules. Grant of this waiver is therefore consistent with long-established precedent.²⁹ Moreover, the Commission has recently proposed to eliminate this cross-polarization isolation requirement in favor of allowing individual operators to make appropriate arrangements through the coordination process.³⁰ Under these circumstances, waiver of the rule will serve the public interest by affording Hughes that same treatment as other similarly situated licensees with no adverse impact on other service providers, and will be consistent with the Commission's recent proposal to eliminate this requirement.

B. Schedule S Flexibility

Section 25.114(c)(4)(vii) of the FCC's Rules now provides that geostationary FSS applicants "with large numbers of identical fixed spot beams" may, in lieu of the more extensive requirements of Section 25.114(c)(4)(vi), "provide the predicted antenna gain contours for one transmit and receive antenna beam, together with ... [a] map of the isolines

²⁹ See, e.g., *EchoStar Satellite Operating Corporation*, 21 FCC Rcd 14780, 14782-83 (¶¶ 7-8) (2006) (waiving the cross-polarization isolation requirement because it was adopted "in an environment where satellites were predominantly using analog transmissions," "performance of the downlink satellite antenna has only a second-order effect on the interference into the neighboring system," and for systems using digital transmission, non-compliance "should have only a negligible increase in interference to adjacent satellites").

³⁰ See *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, FCC 14-142, at 52-53 (¶ 181) (released Sept. 30, 2014).

formed by combining all of the spot beams into one or more composite beams.”³¹ Given the complexity of the Jupiter 97W satellite, consisting of a total of 159 beams, certain simplifications have been made in the preparation of the Schedule S pursuant to this rule. Rather than providing individual GXT files for each beam, a single representative isoline gain contour is provided for both the uplink and downlink which depicts the coverage area.

Consistent with the composite nature of the antenna contours being provided, Hughes is submitting in Table S7 of Schedule S sample antenna beam characteristics for the representative beams, rather than repeating beam information for each individual beam. The beam information provided in Table S7 reflects the maximum EIRP for the identical transmit beams, and the maximum G/T and minimum saturation flux density for the identical receive beams. This information, coupled with the composite isoline diagram showing the maximum gain across the coverage area, provides Commission staff with the data necessary to analyze compatibility with adjacent satellites while minimizing Schedule S filing burdens, which is consistent with the streamlined approach adopted in the Commission’s 2013 Part 25 Reform Order.³² Accordingly, to the extent required, Hughes respectfully requests a waiver of the general requirements to provide individualized beam information under Sections 25.114(c)(4)(i), (ii) and (v) of the Commission’s Rules, allowing it to provide the composite antenna beam characteristics in Table S7 in the same manner that Section 25.114(c)(4)(vii) explicitly allows submission of composite antenna gain contours.

³¹ Section 25.114(c)(4)(vii)(C).

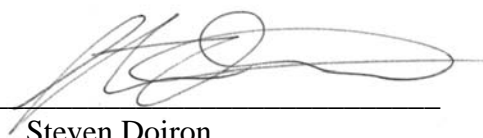
³² *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, 28 FCC Rcd 12403 (2013).

ENGINEERING CERTIFICATION

I, Steven Doiron, hereby declare, under penalty of perjury, that the following statements are true and correct to the best of my information and belief:

- (i) I am the technically qualified person responsible for the engineering information contained in the foregoing Application,
- (ii) I am familiar with Part 25 of the Commission's Rules, and
- (iii) I have either prepared or reviewed the engineering information contained in the foregoing Application and found it to be complete and accurate.

By: _____



Steven Doiron
Senior Director, Regulatory Affairs
Hughes Network Systems, LLC

Dated: December 10, 2014

LIST OF ATTACHMENTS AND EXHIBITS TO APPLICATION

Attachment – Technical Information to Supplement Schedule S (including Link Budgets)

Exhibits to FCC Form 312 and Schedule S

Exhibit A – Response to Question 24 (Frequency Bands Requested)

Exhibit B – Response to Question 35 (Requests for Waiver)

Exhibit C – Response to Question 36 (Qualifications)

Exhibit D – Response to Question 40 (Ownership)

Exhibit E – Comsearch Report regarding the band 27.85-28.35 GHz