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

In the Matter of	)	
	)	
Gogo LLC	)	File Nos. SES-LIC-20120619-00574
	)	SES-AMD-20120731-00709
Application as Amended for Blanket License and	)	SES-AFS-20121008-00902
Request for Special Temporary Authority to	)	SES-STA-20121009-00907
Operate Technically Identical Ku-Band	)	Call Sign E120106
Transmit/Receive Earth Stations in the	)	
Aeronautical Mobile Satellite Service	)	

GOGO LLC RESPONSE TO COMMENTS

Gogo LLC ("Gogo") hereby responds to the comments filed by EchoStar Satellite Operating Corporation and DIRECTV Enterprises, LLC (together, the "DBS Operators")[1] regarding the above-captioned Gogo application as amended for a blanket license to operate 1000 technically identical Ku-band transmit/receive earth stations for the provision of Aeronautical Mobile Satellite Service ("AMSS") (the "Gogo AMSS Application") and Gogo's related request for AMSS special temporary authority for 30 terminals (the "Gogo STA Request").

The DBS Operators seek limited additional technical documentation and clarification regarding Gogo's use of downlink frequencies assigned to the Broadcast Satellite Service ("BSS") in the United States. Gogo provides information responsive to these requests

[1] Comments of EchoStar Satellite Operating Corporation and DIRECTV Enterprises, LLC, File Nos. SES-LIC-20120619-00574 *et al*., dated Nov. 16, 2012 (the "DBS Operator Comments"). EchoStar Satellite Operating Corporation also submitted individual comments on November 16. *See* Comments of EchoStar Satellite Operating Corporation, File Nos. SES-LIC-20120619-00574 *et al*., dated Nov. 16, 2012 (the "EchoStar Comments"). The substantive content of the two sets of comments is the same, with the only difference being the identification of the parties. Thus, in this response Gogo is addressing both the joint DBS Operator Comments and the separate EchoStar Comments.

herein to demonstrate that the Gogo AMSS operations will not impair access to BSS spectrum. Given this showing, Gogo requests expedited Commission grant of the Gogo AMSS Application and the Gogo STA Request.

I. BACKGROUND

Gogo, already the world's leading provider of in-flight connectivity using its existing terrestrial-based network, is seeking Commission authority to add a satellite component in order to expand the scope of its services beyond the limits of U.S. airspace. Gogo proposes to use Fixed-Satellite Service ("FSS") capacity to provide continuous service on domestic, international, and foreign flights operated by U.S. and foreign airlines.

Transmissions from the Gogo AMSS terminals will be in the conventional Ku-band uplink spectrum at 14.0-14.5 GHz. Due to differences in regional spectrum allocations and availability, the Gogo AMSS network will use downlink capacity in several parts of the Ku-band, including the 11.7-12.2 GHz conventional Ku-band and a number of extended Ku-band and international Ku-band segments, including 10.95-11.2 GHz, 11.45-11.7 GHz, and 12.25-12.75 GHz.

In International Telecommunication Union ("ITU") Region 2, which includes North and South America, Gogo's downlink spectrum use will conform to FSS spectrum allocations with one exception. Gogo proposes to use the Intelsat 19 spacecraft, which provides Pacific Ocean Region ("POR") coverage, for AMSS downlinks in the 12.25-12.75 GHz band within the satellite's footprint, including for service in the western U.S. and other operations within ITU Region 2.[2] This spectrum is allocated within ITU Region 2 for BSS and terrestrial

[2] *See Gogo LLC,* Call Sign E120106, File No. SES-AMD-20120731-00709, Amended Narrative at 12-14.

fixed services. Gogo requested a waiver of the U.S. Table of Allocations to permit its AMSS terminals to receive downlinks from Intelsat 19 in this band.[3]

Gogo also proposes to use portions of the 12.25-12.75 GHz band to receive downlinks from other satellites. For example, Gogo proposes to use Intelsat 22 capacity in the 12.25-12.5 GHz downlink band, and SES-4 capacity in the 12.5-12.75 GHz downlink band.[4]

In their comments, the DBS Operators emphasize the importance of ensuring that any non-conforming use of the U.S. BSS frequencies does not adversely impact existing or future BSS operations.[5] They request additional analysis to show that the orbital separation between Intelsat 19 and the nearest BSS location is sufficient to prevent harmful interference to BSS downlinks.[6] The DBS Operators state that they do not oppose grant of a waiver to Gogo under the specific circumstances here provided that the additional analysis demonstrates that harmful interference to BSS will not occur.[7] The DBS Operators also request clarification regarding the geographic scope of Gogo's planned use of 12 GHz downlink capacity on Intelsat 22 and SES-4.[8]

---

[3] *See id.* In support of this request, Gogo cited to Intelsat's pending request for a modification of the Intelsat 19 license to permit operations in the 12.25-12.75 GHz band in ITU Region 2 on a non-interference, non-protected basis. *Id.* at 13-14, *citing Intelsat License LLC,* Call Sign S2850, File No. SAT-MOD-20120628-00107 (the "Intelsat 19 Modification").

[4] *See Gogo LLC,* Call Sign E120106, File No. SES-AFS-20121008-00902 ("October Amendment"), at Annex 2.

[5] DBS Operator Comments at 3.

[6] *Id.* at 2.

[7] *Id.*

[8] *Id.* at 3-4.

II. GOGO'S USE OF DOWNLINK CAPACITY IN THE 12.25-12.75 GHz BAND WILL NOT HARM BSS OPERATIONS

Gogo's plan to use spectrum allocated in the U.S. to BSS for downlinks to AMSS terminals poses no threat to robust BSS operations today or in the future. As discussed in more detail below, Gogo's proposal to use Intelsat 19 downlink capacity on an unprotected, non-interference basis will not adversely affect BSS spectrum access. Furthermore, Gogo plans to use Intelsat 22 and SES-4 capacity in the 12.25-12.75 GHz band only outside of ITU Region 2.

Intelsat 19: In its application for waiver to permit use of Intelsat 19 for downlink operations in the 12.25-12.75 GHz band in ITU Region 2, Intelsat explained that those operations would not harm BSS networks.[9] Intelsat noted that there is significant orbital separation between Intelsat 19 at 166° E.L. and the nearest ITU Region 2 BSS plan assignment at 175.2° W.L., and even greater orbital separation to the nearest operational BSS satellite serving ITU Region 2, which is at 129° W.L.[10]

The DBS Operators request a technical showing to support Intelsat's claims that this orbital separation is sufficient to protect BSS networks from harmful interference. Attachment A hereto contains an analysis supplied by Intelsat in response to this request. Intelsat's calculations demonstrate that the maximum EIRP density of the Intelsat 19 digital carriers that will be used by Gogo is well below the level that would trigger coordination under the ITU Radio Regulations.

Furthermore, the Intelsat analysis is borne out by experience. Since August, Intelsat 19 has been providing commercial services in the 12.25-12.75 GHz downlink band in ITU Region 2 pursuant to Commission special temporary authority ("STA") pending action on

[9] Intelsat 19 Modification, Narrative at 4.

[10] *Id.*

the Intelsat 19 Modification.[11] No party opposed either this STA request or the Intelsat 19 Modification. Furthermore, Intelsat 8, the satellite Intelsat 19 replaced at 166° E.L., was also authorized to provide FSS in the 12.25-12.75 GHz downlink frequency band in ITU Region 2 pursuant to a waiver of the Table of Allocations.[12] Intelsat advises that there have been no reports of harmful interference to BSS networks resulting from these operations on Intelsat 19 and its predecessor, which date back to 2006.

As noted above, Gogo is only seeking to receive signals from Intelsat 19 in the 12.25-12.75 GHz band, and therefore the Gogo operations themselves will result in no interference to BSS networks. Moreover, Gogo does not seek protection from any interference to its AMSS downlinks that may result from BSS operations. Finally, the waiver of the Table of Allocations sought by Gogo for downlinks in the 12.25-12.75 GHz band is geographically limited, including only the portion of ITU Region 2 that is visible from Intelsat 19.

Thus, the Gogo request for waiver to use the 12.25-12.75 GHz band for downlinks in ITU Region 2 is narrowly-tailored, is supported by both technical analysis and actual experience, and is consistent with past Commission precedent. The DBS Operators expressly state that if Gogo demonstrates that its proposed operations pose no threat of harmful interference to BSS, the operators "have no objection to Gogo's operations in the 12.25-12.75

---

[11] *See Intelsat License LLC,* Call Sign S2850, File No. SAT-STA-20120613-00097, grant-stamped Aug. 10, 2012 (the "Intelsat 19 STA"), Attachment to Grant at 1 (authorizing Intelsat to use Intelsat 19 in the 12.25-12.75 GHz downlink band to provide FSS to Intelsat's Napa, California earth station and in the visible portion of ITU Region 2). The Intelsat 19 STA was extended for an additional 60-day period in File No. SAT-STA-20121003-00177, grant-stamped Oct. 11, 2012.

[12] *See* Intelsat 19 Modification, Narrative at 5-6 & n.17, *citing PanAmSat License Corp.,* Order and Authorization, DA 06-6, File Nos. SAT-MOD-19980928-00078, SAT-AMD-19990222-00024, SAT-AMD-20020326-00055, SAT-STA-20020705-00097, and SAT-AMD-20051116-00220, 21 FCC Rcd 36 (Sat. Div. 2006) at ¶ 1.

GHz band with the Intelsat 19 satellite . . . over ITU Region 2 on a non-interference, non-protected basis" under the specific circumstances outlined in the Gogo AMSS Application and the Intelsat 19 Modification.[13] Because the Gogo request for waiver meets this description, the Commission should authorize Gogo's proposed use of Intelsat 19 capacity in the 12.25-12.75 GHz downlink band in ITU Region 2.[14]

Intelsat 22 and SES-4: The DBS Operators seek clarification regarding the geographic scope of Gogo's proposed operations using the Intelsat 22 spacecraft in the 12.25-12.5 GHz band and using the SES-4 spacecraft in the 12.5-12.75 GHz band.[15] Gogo does not seek to use the identified spectrum on either of these satellites for service in ITU Region 2.

The Ku-band beam on Intelsat 22 at 72.1° E.L. that will be used by Gogo has no coverage of ITU Region 2.[16] As Gogo explained in its October Amendment, SES-4 uses the 12.5-12.75 GHz downlink band only on beams whose coverage is limited to ITU Region 1.[17] Gogo accordingly is seeking a waiver of the Table of Allocations to permit use of the 12.25-

[13] DBS Operator Comments at 1-2.

[14] The DBS Operators also request that the Commission make clear that any waiver granted for Gogo should be limited to the facts presented here and should not be used to justify more expansive use of the BSS band. *See id.* at 3. Gogo has no objection to these proposed limitations on the scope of the waiver sought by Gogo.

[15] *Id.* at 3-4.

[16] *See Intelsat License LLC,* Call Sign S2846, File No. SAT-LOA-20110929-00193, Engineering Statement at 48-49, grant-stamped March 15, 2012.

[17] October Amendment, Narrative at 7 & n.20 ("the 12.5-12.75 GHz frequencies on SES-4 . . . are used only in ITU Region 1").

12.5 GHz and 12.5-12.75 GHz bands for AMSS only in Regions 1 and 3 and would not object to grant of its waiver being limited to those regions.[18]

III. CONCLUSION

Gogo demonstrates herein that its proposed AMSS operations will not result in harmful interference to U.S. BSS networks or constrain future use of BSS spectrum. In light of this showing and given the absence of any opposition, Gogo respectfully requests that the Commission expeditiously grant the Gogo AMSS Application to allow introduction of new AMSS competition.

Respectfully submitted,

GOGO LLC

By: */s/ William J. Gordon*_____

William J Gordon
VP, Regulatory Affairs
Gogo LLC
1250 N Arlington Heights Road
Itasca, IL 60143
Tel: (202) 870-7220

Of Counsel
Karis A. Hastings
SatCom Law LLC
1317 F Street, N.W., Suite 400
Washington, D.C. 20004
Tel: (202) 599-0975

Michele C. Farquhar
Trey Hanbury
Hogan Lovells US LLP
555 13th Street, N.W.
Washington, D.C. 20004
Tel: (202) 637-5600

Dated: November 27, 2012

[18] The DBS Operator Comments request that any waiver be limited to "ITU Regions 1 and 2." DBS Operator Comments at 4. Gogo assumes this is a typographical error and that the reference was intended to be to ITU Regions 1 and 3.

Attachment A: Additional Interference Analysis for Intelsat 19

The 12.2– 12.7 GHz band is allocated for use by BSS stations serving ITU Region 2, *i.e.*, North and South America. In the most current ITU database, the most westerly located Appendix 30 assignment is a U.S. assignment at 175.2° W.L. Pursuant to Annex 7 of Appendix 30 of the ITU Radio Regulations, no BSS satellite serving ITU Region 2 may be located further west than that 175.2° W.L. assignment.

Under Annex 4 of Appendix 30, an FSS space station operating in ITU Region 1 (*i.e.*, Europe, including Russia, and Africa) or in ITU Region 3 (Asia and Australia) will trigger coordination with an ITU Region 2 BSS satellite network if the power flux density over any portion of the service area exceeds the values listed in the table below.

-147 dBW/m^2/27MHz	$0^o \leq \theta < 0.23^o$
-135.7+[(17.74)Log(θ)] dBW/m^2/27MHz	$0.23^o \leq \theta < 1.8^o$
-134+[0.89 θ^2] dBW/m^2/27MHz	$1.8^o \leq \theta < 5^o$
-129.2+[(25)Log(θ)] dBW/m^2/27MHz	$5^o \leq \theta < 10.57^o$
-103.6 dBW/m^2/27MHz	$10.57^o \leq \theta$
"θ" is the minimum geocentric separation in degrees between the wanted and interfering space station, taking into account the respective East-West station-keeping accuracies.	

The minimum geocentric separation between Intelsat 19 (166° E.L.) and the ITU Region 2 BSS assignment at 175.2° W.L., taking into account a +/- 0.5 degree East-West stationkeeping tolerance for Intelsat 19 and a +/- 0.1 degree East-West stationkeeping tolerance for the BSS cluster, is:

[180-166] + [180-175.2] - [0.05 + 0.1] = 18.65 degrees

With this orbital separation, the downlink EIRP density of an Intelsat 19 carrier would trigger coordination if it exceeds:

-103.6 + 162.1 - [10Log(27000000 Hz)] = -15.8 dBW/Hz.

None of the digital carriers to be used by Gogo exceeds this downlink EIRP density. As described in the Intelsat 19 license application,[1] four Intelsat 19 downlink beams in the 12.2-12.7 GHz band cover a portion of ITU Region 2. The table below identifies the EIRP characteristics of the digital carriers in each beam.

Beam Name	**Maximum EIRP**	**Maximum EIRP Density**
North West Pacific	51.1 dBW	-23.7 dBW/Hz
North East Pacific	48.5 dBW	-26.3 dBW/Hz
South West Pacific	48.6 dBW	-26.2 dBW/Hz
Australia	52.4 dBW	-22.4 dBW/Hz

In no case does the maximum EIRP density of the Intelsat 19 digital carriers exceed the value of -15.8 dBW/Hz that would trigger coordination according to the ITU Radio Regulations. Therefore, Intelsat 19's (and Gogo's) digital carriers do not affect any Region 2 BSS Plan assignments.

[1] *See Intelsat License LLC*, Call Sign S2850, File No. SAT-RPL-20111222-00245, Engineering Statement at Exhibits 5.12-5.18, grant-stamped May 25, 2012.

Engineering Declaration

DECLARATION OF Jose Albuquerque

I, Jose Albuquerque, hereby certify under penalty of perjury that I am the technically qualified person responsible for preparation of the information regarding the Intelsat 19 spacecraft contained in the foregoing Attachment A; that I am familiar with the technical requirements of Part 25; and that I either prepared or reviewed Attachment A and that it is complete and accurate to the best of my knowledge, information and belief.

_/s/ Jose Albuquerque_____
Senior Director, Spectrum Strategy
Intelsat

Dated: November 27, 2012

CERTIFICATE OF SERVICE

I hereby certify that on this 27th day of November, 2012, a copy of the foregoing "Gogo LLC Response to Comments" was served on the following parties by first class mail:

/s/
Cecelia Burnett

Alison Minea
Corporate Counsel
EchoStar Satellite Operating Corporation
1110 Vermont Avenue, N.W., Suite 750
Washington, D.C. 20005

Pantelis Michalopoulos
Stephanie A. Roy
Andrew W. Guhr
Steptoe & Johnson LLP
1330 Connecticut Avenue, N.W.
Washington, D.C. 20036
Counsel for EchoStar Satellite Operating Corporation

Stacy Fuller
Vice President, Regulatory Affairs
DIRECTV, LLC
901 F Street, N.W., Suite 600
Washington, D.C. 20004

William M. Wiltshire
Wiltshire & Grannis LLP
1200 18th Street, N.W.
Washington, D.C. 20036
Counsel for DIRECTV Enterprises, LLC