


Approved by OMB
3060-0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
STA for Galaxy 17 March 2016

1. Applicant

Name:	Gogo LLC	Phone Number:	202-870-7220
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City:	Washington	State:	DC
Country:	USA	Zipcode:	20015
Attention:	Mr William J Gordon		



GRANTED
International Bureau

File # SES-STA-20160310-00195
 E120106
 Call Sign E120106 Grant Date 3-17-16
 (or other identifier)
 Term Dates 3-17-16 to: 5-17-16
 Approved: [Signature]

Applicant: Gogo LLC
Call Sign: E120106
File No.: SES-STA-20160310-00195
Special Temporary Authority



File # SES-STA-20160310-00195
E 120106
Call Sign E120106 Grant Date 3-17-16
(or other identifier)
Term Dates
From: 3-18-16 To: 5-17-16
Approved: Paul E. Blaes

Gogo LLC (Gogo) is granted special temporary authority for a period of 60 days, beginning March 18, 2016, to operate up to 200 earth station aboard aircraft (ESAA) terminals (0.24 meter AeroSat model HR6400 and 0.74 meter ThinKom model 2Ku) to communicate with Galaxy 17 (Call Sign S2715), a U.S.-licensed spacecraft located at 91° W.L. Operations are authorized using the 14.0-14.5 GHz (Earth-to-space) and 11.7-12.2 GHz (space-to-Earth) frequency bands. Operations must be in accordance with the technical specifications contained in Gogo's application, including those incorporated by reference from its pending application, IBFS File No. SES-MFS-20151022-00735, and are subject the following conditions:

1. Operations are on an unprotected and non-harmful interference basis. Gogo must cease operations immediately upon notification of such interference and must immediately inform the Commission, in writing, of such an event.
2. Operation pursuant to this authorization must be in compliance with the terms of Gogo's coordination agreements with the National Science Foundation and the National Aeronautics and Space Administration pertaining to operation of ESAA in the Ku-Band.
3. Operations for the AeroSat model HR6400 antennas will not exceed the maximum input power into the antenna flange of 35.48 W.
4. Operation pursuant to this authorization outside the United States in the 14.0-14.5 GHz band must be in compliance with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz band.
5. When operating in international airspace within line-of-sight of the territory of a foreign administration where Fixed Service networks have a primary allocation in the 14.0-14.5 GHz band, an ESAA must not operate in a manner that would produce predicted ground-level power flux density (pfd) in such territory in excess of the following values unless the foreign administration has imposed other conditions for protecting its FS stations: $-132 + 0.5 \times \text{THETA}$ dB(W/(m² MHz)) for $\text{THETA} \leq 40^\circ$; -112 dB(W/(m² MHz)) for $40^\circ < \text{THETA} \leq 90^\circ$. Where: THETA is the angle of arrival of the radio-frequency wave in degrees above the horizontal, and the aforementioned limits relate to the pfd and angles of arrival that would be obtained under free space propagation conditions.
6. Operation pursuant to this authorization must conform to the terms of coordination agreements between the operator or Galaxy 17 and operators of other Ku-band geostationary satellites within six angular degrees of Galaxy 17. In the event that another GSO Fixed-Satellite Service (FSS) space station commences operation in the 14.0-14.5 GHz band at a location within six degrees of this space station, ESAA operating pursuant to this temporary authority shall cease transmitting to that space station unless and until such operation has been coordinated with the new space station's operator or Gogo demonstrates that such operation will not cause harmful interference to the new co-frequency space station.

7. Gogo must operate in accordance with the off-axis EIRP spectral densities supplied to Intelsat in obtaining the satellite operator certification for Galaxy 17, attached as exhibits to Gogo's pending application, IBFS File No. SES-MFS-20151022-00735. Gogo shall automatically cease emissions within 100 milliseconds if the ESAA transmitter exceeds the off-axis EIRP spectral-densities supplied to the target satellite operator and transmission shall not resume until Gogo conforms to the off-axis EIRP spectral densities supplied to the target satellite operator.

8. Gogo must take all necessary measures to ensure that the operation authorized does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at [ww.fcc.gov/oet/rfsafety](http://www.fcc.gov/oet/rfsafety)) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers. The licensee shall ensure installation of terminals on aircraft by qualified installers who have an understanding of the antenna's radiation environment and the measures best suited to maximize protection of the general public and persons operating the aircraft and equipment. A terminal exhibiting radiation exposure levels exceeding 1.0 mW/cm² in accessible areas, such as at the exterior surface of the radome, shall have a label attached to the surface of the terminal warning about the radiation hazard and shall include thereon a diagram showing the regions around the terminal where the radiation levels could exceed 1.0 mW/cm².

9. Gogo must maintain a U.S. point of contact available 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized herein. Gogo must submit a letter to be included in its license file with the name and telephone number of the point of contact prior to commencing operation.

10. ESAA authorized herein must employ a tracking algorithm that is resistant to capturing and tracking adjacent satellite signals, and each station must be capable of inhibiting its own transmission in the event it detects unintended satellite tracking.

11. ESAA authorized herein must be monitored and controlled by a ground-based network control and monitoring center. Such stations must be able to receive "enable transmission" and "disable transmission" commands from the network control center and must cease transmission immediately after receiving a "parameter change" command until receiving an "enable transmission" command from the network control center. The network control center must monitor operation of each ESAA to determine if it is malfunctioning, and each aircraft earth station must self-monitor and automatically cease transmission on detecting an operational fault that could cause harmful interference to a fixed satellite service network.

12. Stations authorized herein must not be used to provide air traffic control communications.

13. For each ESAA transmitter Gogo shall maintain records of the following data for each operating ESAA, a record of the aircraft location (i.e., latitude/longitude/altitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a

period of not less than one year. Records shall be recorded at time intervals no greater than one (1) minute while the ESAA is transmitting. The ESAA operator shall make this data available, in the form of a comma delimited electronic spreadsheet, within 24 hours of a request from the Commission, NTIA, or a frequency coordinator for purposes of resolving harmful interference events. A description of the units (*i.e.*, degrees, minutes, MHz . . .) in which the records values are recorded will be supplied along with the records.

14. Antenna elevation for all operations must be at least 5 degrees above the geographic horizon while the aircraft is on the ground.

15. Gogo shall comply with any pertinent limits established by the International Telecommunication Union to protect other services allocated internationally.

16. In connection with the provision of service in any particular country, Gogo is obliged to comply with the applicable laws, regulations, rules, and licensing procedures of that country.

17. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending application, IBFS File No. SES-MFS-20151022-00735.

18. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at Gogo's risk.

19. This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately. Petitions for reconsideration under Section 1.106 or applications for review under Sections 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within thirty days of the date of the public notice indicating that this action was taken.

2. Contact

Name: Karis Hastings **Phone Number:** 202-599-0975
Company: SatCom Law LLC **Fax Number:**
Street: 1317 F Street, N.W. **E-Mail:** karis@satcomlaw.com
Suite 400
City: Washington **State:** DC
Country: USA **Zipcode:** 20004 -
Attention: **Relationship:** Legal Counsel

(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)

3. Reference File Number SESMFS2015102200735 or Submission ID

4a. Is a fee submitted with this application?

If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).

Governmental Entity Noncommercial educational licensee

Other (please explain):

4b. Fee Classification CGB - Mobile Satellite Earth Stations

5. Type Request

Use Prior to Grant Change Station Location Other

6. Requested Use Prior Date
03/18/2016

7. CityMobile
8. Latitude
(dd mm ss.s h) 0 0 0.0

9. State	10. Longitude (dd mm ss.s h) 0 0 0.0
11. Please supply any need attachments. Attachment 1: STA Narrative Attachment 2: Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) Gogo LLC (Gogo) respectfully requests special temporary authority to allow up to 200 ESAA terminals to communicate with the Galaxy 17 satellite for coverage of North America, including the U.S. STA is sought pending action on Gogo's modification application, File No. SES-MFS-20151022-00735, which includes a request to add Galaxy 17 as an authorized	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes. Yes <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing William J. Gordon	15. Title of Person Signing Vice President, Regulatory Affairs
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

12. Description

Gogo LLC (Gogo) respectfully requests special temporary authority to allow up to 200 ESAA terminals to communicate with the Galaxy 17 satellite for coverage of North America, including the U.S. STA is sought pending action on Gogo's modification application, File No. SES-MFS-20151022-00735, which includes a request to add Galaxy 17 as an authorized point of communication under Gogo's existing ESAA license, call sign E120106. See attached narrative.

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

Gogo LLC (“Gogo”), which holds a license to operate an earth station aboard aircraft (“ESAA”) network,¹ hereby requests special temporary authority (“STA”) for a period of 60 days commencing as soon as possible but no later than March 18, 2016, to permit up to 200 ESAA terminals² to communicate with the U.S.-licensed Galaxy 17 satellite located at 91° W.L. Grant of the requested STA will serve the public interest by allowing Gogo to respond to urgent customer demand for additional capacity on flights in U.S. airspace. Gogo seeks STA pending Commission action on Gogo’s application to modify its ESAA license, which includes a request to add Galaxy 17 as an authorized point of communications.³

Background: Gogo is currently authorized to operate two types of Ku-band terminals with specified satellites for ESAA service in U.S. airspace, foreign airspace, and the airspace over international waters. Gogo’s license was issued based on its demonstration that its proposed network would enhance competition in the provision of in-flight broadband service to air travelers and airline crew members. Gogo also showed that its planned operations were fully consistent with technical standards designed to ensure protection of other authorized communications networks. In order to enhance and expand its ESAA operations, Gogo is seeking to modify the Gogo ESAA License to add ten new satellites as points of communication for the Gogo network and to update certain technical parameters.

STA Request: Pending action on the Gogo Modification Application, Gogo seeks STA to commence communications with Galaxy 17. The Gogo Modification Application contains complete technical information regarding Gogo’s proposed operations with Galaxy 17, and Gogo incorporates that information by reference herein. As described in the modification, Gogo seeks to communicate with Galaxy 17 in conventional Ku-band spectrum, 14-14.5 GHz uplink and 11.7-12.2 GHz downlink.⁴ Gogo proposes to use Galaxy 17 for service to North America, including for flights originating and/or terminating in the U.S.⁵ Gogo requires access to this capacity to ensure that it has sufficient bandwidth to meet near-term customer demand for in-flight connectivity.

¹ See *Gogo LLC*, Call Sign E120106, File No. SES-MFS-20140801-00625, granted Dec. 22, 2014 (the “Gogo ESAA License”).

² Gogo is licensed for two ESAA terminals, the 0.24 meter AeroSat model HR6400 and the 0.74 meter ThinKom model 2Ku, and requests authority for both models, up to a combined total of 200 terminals.

³ See *Gogo LLC*, Call Sign E120106, File No. SES-MFS-20151022-00735 (the “Gogo Modification Application”).

⁴ See Gogo Modification Application, Annex 2.

⁵ *Id.*

Gogo emphasizes that the scope of this STA request is narrower than that of the pending Gogo Modification Application. Here, Gogo is only seeking authority to add Galaxy 17 as an authorized point of communication for a limited number of ESAA terminals. Gogo is otherwise prepared to operate consistently with the terms and conditions set forth in the existing Gogo ESAA License. In addition, Gogo is willing to operate pursuant to the STA on an unprotected, non-harmful interference basis.

Grant of the requested STA is consistent with Commission policy and will not adversely affect other authorized operations. Gogo has submitted letters confirming that its proposed ESAA operations have been coordinated with operators of the satellites within six degrees on either side of Galaxy 17.⁶ Gogo's operations with Galaxy 17 will also conform to the terms of its agreements with the National Science Foundation and the National Aeronautics and Space Administration, as required by the Gogo ESAA License.⁷ In addition, Gogo will comply with power flux density limits to protect terrestrial services outside the U.S.

Grant of the proposed STA will allow Gogo to respond to urgent customer demand for increased capacity on important air transport routes over the U.S. and the remainder of North America, promoting competition in the provision of aeronautical services and expanding the availability of in-flight broadband to air travelers and crew members.

Gogo understands that any Commission grant of this STA will be without prejudice to the ultimate determination the Commission will make regarding the Gogo Modification Application. In addition, Gogo acknowledges that any action taken pursuant to a grant of the requested STA will be at Gogo's own risk.

⁶ Gogo Modification Application, Annex 4.

⁷ *Id.*, Narrative at 9. *See also* Gogo ESAA License at 7, condition 90057.