Approved by OMB
3060–0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATIONEnter a description of this application to identify it on the main menu:
Request for 30–day Grant of Special Temporary Authority to Operate a New 23 cm Ku–band Antenna

1. Applicant

Name:	Intelsat License LLC	**Phone Number:**	703–559–7848
DBA Name:		**Fax Number:**	703–559–8539
Street:	c/o Intelsat US LLC 7900 Tysons One Place	**E–Mail:**	susan.crandall@intelsat.com
City:	McLean	**State:**	VA
Country:	USA	**Zipcode:**	22102 –5972
Attention:	Susan H. Crandall		

GRANTED
International Bureau

File # SES-STA-20191126-01592
Call Sign ______ Grant Date 12-6-19
(or other identifier)
Term Dates
From: 12-6-19 To: 1-5-20
Approved: Paul E Blais

2. Contact

Name:	Cynthia J. Grady	**Phone Number:**	703–559–6949
Company:	c/o Intelsat US LLC	**Fax Number:**	703–559–8539
Street:	7900 Tysons One Place	E–Mail:	cynthia.grady@intelsat.com
City:	McLean	**State:**	VA
Country:	USA	**Zipcode:**	22102 –5972
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 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	
7. CityHagerstown	8. Latitude (dd mm ss.s h) 39 35 53.1 N

9. State MD	10. Longitude (dd mm ss.s h) 77 48 22.3 W

11. Please supply any need attachments.

Attachment 1: STA Request   Attachment 2: Exhibit A   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.)

Intelsat License LLC herein request Special Temporary Authority for 30 days, commencing December 6, 2019, to temporarily operate a new 23 cm Ku-band aeronautical terminal with Galaxy 16 (Call Sign S2687) in order to test the antenna.

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 ○ No

14. Name of Person Signing Cynthia J. Grady	15. Title of Person Signing Senior Counsel, Intelsat US LLC

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.

Applicant: Intelsat License LLC
Call Sign: N/A
File No.: SES-STA-20191126-01592
Special Temporary Authority ("STA")

GRANTED
International Bureau

File # SES-STA-20191126-01592
Call Sign — Grant Date 12-6-19
(or other identifier)
Term Dates
From: 12-6-19 To: 1-5-20
Approved: Paul E Blais

Intelsat License LLC ("Intelsat") is granted special temporary authorization for 30 days, beginning December 06, 2019 to use a .23m Ku-band antenna located in Melbourne, Florida and Intelsat's Hagerstown, Maryland teleport location to communicate with Galaxy 16 (S2687) to test antenna performance in the 14000-14500 MHz (Earth-to-space) and 11700-12180 MHz (space-to-Earth) frequency bands under the following conditions:

1. EIRP may not exceed 42 dBW/Carrier.

2. All operations shall be on an unprotected and non-harmful interference basis, Intelsat, shall not cause harmful interference to, and shall not claim protection from, interference caused to it by any other lawfully operating station and it shall cease transmission(s) immediately upon notice of such interference and must inform the Commission, in writing, immediately of such an event.

3. The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CPR 1.1307(b) and 1.1310 wherever such exposures might occur. 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. Compliance can be accomplished in most cases by appropriate restrictions, such as fencing. 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 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.

4. All operators of satellites will be provided with an emergency phone number where the licensee can be reached in the event that harmful interference occurs, Currently the 24x7 contact information for this testing mission is as follows: Ph.: (703) 559-7701- East Coast Operations Center (primary); (310) 525-5591 – West Coast Operations Center (back-up). Requests to speak with Harry Burnham or Kevin Bell.

5. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future Intelsat applications.

6. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat's risk.

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 upon release.

INTELSAT
Envision. Connect. Transform.

November 26, 2019

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Request for Special Temporary Authority to Operate a New 23 cm Ku-band Antenna

Dear Ms. Dortch:

Intelsat License LLC ("Intelsat") herein requests Special Temporary Authority ("STA")[1] for 30 days, commencing December 6, 2019, to temporarily operate a new 23 cm Ku-band antenna with Galaxy 16 (Call Sign S2687)[2] in order to test the antenna. The antenna will be located in Melbourne, Florida and at Intelsat's Hagerstown, Maryland teleport. The proposed testing is expected to take approximately 30 days.

The test will be performed in the following frequency bands: 14000-145000 MHz in the uplink; and 11700-12180 MHz in the downlink. The 23 cm antenna has a transmit gain of 30.4 dB at 14125 MHz and a receive gain of 28.9 dB at 11850 MHz. The total EIRP for all carriers will be 42 dBW.

The 24x7 contact information for the requested operations is as follows:

Ph.: (703) 559-7701 – East Coast Operations Center (primary)
(310) 525-5591 – West Coast Operations Center (back-up)

Request to speak with Harry Burnham or Kevin Bell.

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[1] Intelsat has filed this STA request, an FCC Form 159, and a $210.00 filing fee electronically via the International Bureau's Filing System.

[2] *See Policy Branch Information; Actions Taken*, Report No. SAT-00345, File No. SAT-RPL-20051118-00233 (Mar. 3, 2006) (Public Notice).

In further support of this request, Intelsat attaches Exhibit A, a Radiation Hazard Report. In the extremely unlikely event that harmful interference should occur due to transmissions to or from its antenna, Intelsat will take all reasonable steps to eliminate the interference.

The proposed temporary operation of this new antenna will help provide new services to customers in the future. Accordingly, grant of this STA request is in the public interest.

Sincerely,

/s/ Cynthia J. Grady

Cynthia J. Grady
Senior Counsel
Intelsat US LLC

cc: Paul Blais
Anthony Asongwed

Exhibit A

Radiation Hazard Report

Analysis of Non-Ionizing Radiation for a 0.23 m Earth Station

This analysis provides the calculated non-ionizing radiation levels for a 0.23-meter earth station system.

The methods and calculations performed in this analysis are based on the FCC Office of Engineering and Technology Bulletin, No.65, October 1985 as revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326 (Summarized in Annex 1). There are separate exposure limits applicable to the General Population/Uncontrolled Environment and the Occupational/Controlled Environment. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment for the frequency band of this antenna, is 1 mW/cm2 for a 30 minute or lower time period as shown in Annex 1 (a). The MPE limit for persons in an Occupational/Controlled environment for the frequency band of this antenna is 5 mW/cm2 for a 6 minute time or lower period as shown in Annex 1 (b). The purpose of this analysis described is to determine the power flux density levels of the earth station at the main reflector surface, the near-field, transition region, far-field, between the sub-reflector or feed and, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

The parameters of the antenna that is the subject of this analysis are shown in Table 1.
Intermediate calculated values and constants are provided in Table 2.

Table 1. Input Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	0.23	m
Frequency	F	Input	14125	MHz
Transmit Power	P	Input	25	W
Antenna Gain (dBi)	G_{es}	Input	30.4	dBi

Table 2. Calculated Values and Constants

Parameter	Symbol	Formula	Value	Units
Antenna Surface Area	$A_{surface}$	$\pi D^2/4$	0.04	m^2
Wavelength	λ	300/F	0.021239	m
Antenna Gain (factor)	G	$10^{Ges/10}$	1096.48	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2 D^2)$	0.95	n/a

1. Antenna Main Reflector Surface

The power density in the main reflector is determined from the Power level and the area of the main reflector aperture. This is determined from the following equation:

Power Density at the Main Reflector Surface:

$$S_{surface} = 4P/A_{surface} \quad (1)$$

$$= 2406.880 \quad W/m^2$$

$$= 240.688 \quad mW/cm^2$$

2. Near Field Calculation

Power Flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance. The distance to the end of the Near Field is determined from the following equation:

Extent of the Near Field:

$$R_{nf} = D^2 / (4\lambda) \quad (2)$$

$$= 0.62 \quad m$$

The maximum power density in the Near Field is determined from the following equation:

Near Field Density:

$$S_{nf} = 16.0\, \eta\, P / (\pi D^2) \quad (3)$$

$$= 228.016 \quad mW/cm^2$$

3. Transition Region Calculation

The Transition Region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t is determined from the following equation:

Transition Region Power Density:

$$S_t = S_{nf} R_{nf} / R_t \quad (4)$$

$$= 228.016 \quad mW/cm^2$$

4. Far Field Distance Calculation

The distance to the Far Field Region is calculated using the following equation:

Distance to Far Field Region:

$$R_{ff} = 0.6\, D^2 / \lambda \qquad (5)$$

$$= 1.494 \text{ m}$$

The maximum main beam power density in the far field is determined from the following equation:

On-axis Power Density in the Far Field:

$$S_{ff} = G\, P / (4\, \pi\, R_{ff}^2) \qquad (6)$$

$$= 97.675 \text{ mW/cm}^2$$

5. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground is determined from the following equation:

Power Density between Reflector and Ground:

$$S_g = P / A_{surface} \qquad (7)$$

$$= 60.172 \text{ mW/cm}^2$$

7. Summary of Calculations

Table 3. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	240.688	Potential Hazard
2. Near Field (R_{nf} = 0.62 m)	S_{nf}	228.016	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	228.016	Potential Hazard
4. Far Field (R_{ff} = 1.49 m)	S_{ff}	97.675	Potential Hazard
5. Between Main Reflector and Ground	S_g	60.172	Potential Hazard

Table 4. Summary of Expected Radiation levels for Controlled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	240.688	Potential Hazard
2. Near Field (R_{nf} = 0.62 m)	S_{nf}	228.016	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	228.016	Potential Hazard
4. Far Field (R_{ff} = 1.49 m)	S_{ff}	97.675	Potential Hazard
5. Between Main Reflector and Ground	S_g	60.172	Potential Hazard

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusion

Based upon the above analysis, it is concluded that harmful levels of radiation may exist in those regions noted for the Uncontrolled (Table 3) Environment and the Controlled Environment (Table 4).

The antenna will be located in Hagerstown, MD.
The antenna is in a facility with secured access in and around the proposed antenna. The earth station will be marked with the standard radiation hazard warnings, as well as the area in the vicinity of the earth station to inform those in the general population, who might be working or otherwise present in or near the direct path of the main beam.

The applicant will ensure that the main beam of the antenna will be pointed at least one diameter away from any building, or other obstacles in those area that exceed the MPE levels. Since one diameter removed from the center of the main beam the levels are down by at least 20 dB, or by a factor of 100, these potential hazards do not exist for either the public, or for earth station personnel.

Finally, the earth station's operating personnel will not have access to areas that exceed the MPE levels, while the earth station is in operation. The transmitter will be turned off during those periods of maintenance, so that the MPE standard of 5.0 mW/cm^2 will be complied with for those regions in close proximity to the main reflector, which could be occupied by operating personnel.

"The licensee shall take all necessary measures to ensure that the antenna 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 wherever such exposures might occur. 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. Compliance can be accomplished in most cases by appropriate restrictions such as fencing. 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 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."

ANNEX 1

(MPE Levels)

a) Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	1

b) Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	5