

Intelsat License LLC

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:  
Special Temporary Authority to Operate a 1.0 meter Ku-band Antenna (No. 2)

1. Applicant

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

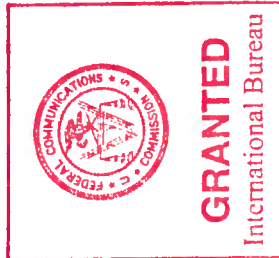
60 days "With conditions"

File # SES-STA-20190308-00314

Call Sign N/A Grant Date 03/20/2019  
(or other identifier)

Term Dates  
From: 03/20/2019 To: 05/19/2019

Approved: [Signature]



<b>2. Contact</b>	
<b>Name:</b> Cynthia Grady	<b>Phone Number:</b> (703) 559-6949
<b>Company:</b> Intelsat US LLC	<b>Fax Number:</b> (703) 559-8539
<b>Street:</b> 7900 Tysons One Place	<b>E-Mail:</b> cynthia.grady@intelsat.com
<b>City:</b> McLean	<b>State:</b> VA
<b>Country:</b> USA	<b>Zipcode:</b> 22102 -5972
<b>Attention:</b>	<b>Relationship:</b> 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?	
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).	
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee	
<input type="radio"/> Other (please explain):	
4b. Fee Classification CGB - Mobile Satellite Earth Stations	
5. Type Request	
<input checked="" type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input type="radio"/> Other	
6. Requested Use Prior Date	
03/20/2019	
7. City	
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: Letter to Ms. Dortch      Attachment 2: Radiation Hazard Rep      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.) <div style="border: 1px solid black; padding: 5px;"> <p>Intelsat herein requests a grant of Special Temporary Authority for 60 days, beginning March 20, 2019, to allow Intelsat to utilize a transportable 1.0 meter Ku-band antenna in the contiguous-lower 48 states to communicate with Intelsat satellites in order to provide customer demonstrations.</p> </div>	
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 Cynthia 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-  
File No.: SES-STA-20190308-00314  
Call Sign: N/A  
Special Temporary Authority



File # SES-STA-20190308-00314 <sup>With Conditions</sup>  
Call Sign N/A Grant Date 03/20/2019  
(or other identifier)  
Term Dates  
From: 03/20/2019 To: 05/19/2019  
Approved: [Signature]

Intelsat License LLC- is granted a special temporary authority for 60 days, beginning March 20, 2019, to utilize a 1.0m Ku-band antenna to communicate with PERMITTED-LIST satellites to demonstrate system at the frequency bands 14 – 14.5 GHz (Earth-to-space) and 11.7 – 12.2 GHz (space-to-Earth) under the following conditions:

1. Operations will not exceed the operational power levels and parameters requested and coordinated.
2. In the event of any harmful interference under this grant of special temporary authority, Intelsat must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.
3. 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 Intelsat satellite is 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.
4. Transmitters(s) must be turned off during antenna maintenance to ensure compliance with the FCC-specified safety guidelines for human exposure to radiofrequency radiation in the region between the antenna feed and the reflector. Appropriate measure must also be taken to restrict access to other regions in which the earth station's power flux density levels exceed the specified guidelines.
5. Any action taken, or expense incurred as a result of operations pursuant to this special temporary authority is solely at Intelsat's risk.
6. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat applications.

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.



March 8, 2019

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

**Re: Request for Special Temporary Authority to Operate a 1 meter Ku-band Antenna**

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests a grant of Special Temporary Authority (“STA”)<sup>1</sup> for 60 days, beginning March 20, 2018, to allow Intelsat to utilize a transportable 1 meter Ku-band antenna in the contiguous-lower 48 states to communicate with Intelsat satellites in order to provide customer demonstrations.<sup>2</sup> Intelsat intends to file an application seeking permanent authority for this antenna.

The proposed communication services will be performed in the following frequency bands: 14.0-14.5 GHz (Earth-to-space), and 11.7-12.2 GHz (space-to-Earth). The proposed operations will be consistent with Intelsat’s coordination agreements. The 24x7 contact information for the proposed 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.**

In support of this request, Intelsat is attaching a radiation hazard report as Exhibit A.

Grant of this STA request services the public interest by enabling Intelsat to provide customer demonstrations for a new service.

<sup>1</sup> Intelsat has filed its STA request, an FCC Form 159, a \$210.00 filing fee, and this supporting letter electronically via the International Bureau’s Filing System (“IBFS”).

<sup>2</sup> Intelsat is simultaneously filing an identical request for the use of a second, identical antenna.

Ms. Marlene Dortch  
March 8, 2019  
Page 2

Please direct any questions regarding this STA request to the undersigned at (703) 559-6949.

Respectfully submitted,

*/s/ Cynthia J. Grady*

Cynthia J. Grady  
Senior Counsel  
Intelsat US LLC

cc: Paul Blais

# Radiation Hazard Report

## Analysis of Non-Ionizing Radiation for a 1 m Earth Station

This analysis provides the calculated non-ionizing radiation levels for a 1-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/cm<sup>2</sup> 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/cm<sup>2</sup> 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	1	m
Frequency	F	Input	14000	MHz
Transmit Power	P	Input	25	W
Antenna Gain (dBi)	G <sub>es</sub>	Input	41.7	dBi

Table 2. Calculated Values and Constants

Parameter	Symbol	Formula	Value	Units
Antenna Surface Area	A <sub>surface</sub>	$\pi D^2/4$	0.79	m <sup>2</sup>
Wavelength	$\lambda$	$300/F$	0.021429	m
Antenna Gain (factor)	G	$10^{G_{es}/10}$	14791.08	n/a
Pi	$\pi$	Constant	3.1415927	n/a
Antenna Efficiency	$\eta$	$G\lambda^2 / (\pi^2 D^2)$	0.69	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:

$$\begin{aligned} S_{\text{surface}} &= 4P/A_{\text{surface}} && (1) \\ &= 127.324 \text{ W/m}^2 \\ &= 12.732 \text{ mW/cm}^2 \end{aligned}$$

### 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:

$$\begin{aligned} R_{\text{nf}} &= D^2 / (4\lambda) && (2) \\ &= 11.67 \text{ m} \end{aligned}$$

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

Near Field Density:

$$\begin{aligned} S_{\text{nf}} &= 16.0 \eta P / (\pi D^2) && (3) \\ &= 8.762 \text{ mW/cm}^2 \end{aligned}$$

### 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:

$$\begin{aligned} S_t &= S_{\text{nf}} R_{\text{nf}} / R_t && (4) \\ &= 8.762 \text{ mW/cm}^2 \end{aligned}$$

#### 4. Far Field Distance Calculation

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

Distance to Far Field Region:

$$\begin{aligned} R_{ff} &= 0.6 D^2 / \lambda \\ &= 28.000 \text{ m} \end{aligned} \quad (5)$$

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

On-axis Power Density in the Far Field:

$$\begin{aligned} S_{ff} &= G P / (4 \pi R_{ff}^2) \\ &= 3.753 \text{ mW/cm}^2 \end{aligned} \quad (6)$$

#### 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:

$$\begin{aligned} S_g &= P / A_{\text{surface}} \\ &= 3.183 \text{ mW/cm}^2 \end{aligned} \quad (7)$$

## 7. Summary of Calculations

Table 3. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm <sup>2</sup> )	Hazard Assessment
1. Main Reflector	$S_{\text{surface}}$	12.732	Potential Hazard
2. Near Field ( $R_{\text{nf}} = 11.67 \text{ m}$ )	$S_{\text{nf}}$	8.762	Potential Hazard
3. Transition Region ( $R_{\text{nf}} < R_t < R_{\text{ff}}$ )	$S_t$	8.762	Potential Hazard
4. Far Field ( $R_{\text{ff}} = 28 \text{ m}$ )	$S_{\text{ff}}$	3.753	Potential Hazard
5. Between Main Reflector and Ground	$S_g$	3.183	Potential Hazard

Table 4. Summary of Expected Radiation levels for Controlled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm <sup>2</sup> )	Hazard Assessment
1. Main Reflector	$S_{\text{surface}}$	12.732	Potential Hazard
2. Near Field ( $R_{\text{nf}} = 11.67 \text{ m}$ )	$S_{\text{nf}}$	8.762	Potential Hazard
3. Transition Region ( $R_{\text{nf}} < R_t < R_{\text{ff}}$ )	$S_t$	8.762	Potential Hazard
4. Far Field ( $R_{\text{ff}} = 28 \text{ m}$ )	$S_{\text{ff}}$	3.753	Satisfies FCC MPE
5. Between Main Reflector and Ground	$S_g$	3.183	Satisfies FCC MPE

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 Nationwide (transportable).

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  $5.0 \text{ mW/cm}^2$  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](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."*

**ANNEX 1**  
**(MPE Levels)**

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

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

b) Limits for Occupational/Controlled Exposure (MPE)

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