

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

**APPLICANT INFORMATION** Enter a description of this application to identify it on the main menu:  
Request for 180-Day STA Using Hagerstown, Maryland Earth Station KA258 to Provide TT&C for Intelsat 16 On-Station at 76.2 W.L.

**1. Applicant**

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



File # SES-STA-20171016-01172  
Call Sign KA258 Grant Date 11-28-17  
(or other identifier)  
Term Dates 11-28-17 To: 5-27-18  
Approved: [Signature]

Application: Intelsat License, LLC  
File No.: SES-STA-20171016-01172  
Call Sign: KA258  
Special Temporary Authority



File # SES-STA-20171016-01172  
Call Sign KA258 Grant Date 11-28-17  
(or other identifier)  
Term Dates  
From: 11-28-17 To: 5-27-18  
Approved: Paul E. Glass

Intelsat License LLC is granted a special temporary authority for 180 days, November 28, 2017 to May 27, 2018, to operate its Hagerstown, MD earth station with Intelsat 16 (S2750) satellite to provide telemetry, tracking, and control ("TT&C") communications on frequencies 13.9975 GHz, 14.4995 GHz (Earth-to-space) and 12.19825 GHz, 12.19875 GHz (space-to-Earth) during Intelsat 16's drift from 58.1° W.L. to 76.2° W.L. orbital location and on-station at 76.2° W.L. subject to the following conditions:

1. All operations under this grant of STA shall be on an unprotected and noninterference basis and Intelsat is obliged to comply with the applicable laws, regulations, rules, and licensing procedures of that country.
2. 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 16 mission 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.
3. Intelsat will maintain full operational control with Intelsat 16 (S2750) at all times.
4. Intelsat will maintain Intelsat 16 (S2750) with an east-west longitudinal station-keeping tolerance of +/-0.05 degree at 76.2° W.L. orbital location.
5. In the event of any harmful interference as a result of operations under this grant of STA, Intelsat shall cease operations immediately upon notification of such interference and shall immediately inform the Commission, in writing, of such an event.
6. Intelsat must operate only the TT&C frequencies authorized for Intelsat 16 during the drift from 58.1° W.L. to 76.2° W.L. orbital location.
7. The operations of Intelsat 16 and associated earth stations must comport with the applicable uplink and downlink limits in 47 CFR §25.140(a)(3) of the Commission's rules, unless Intelsat coordinates any non-conforming operations with the operations of U.S.-licensed geostationary orbit space stations within 6 degrees of the 76.2° W.L. orbital location. Intelsat must also comport with the maximum power limits indicated in existing or future coordination agreements at 76.2° W.L. Non-conforming operations must also be coordinated with respect to those operations of non-U.S.-licensed space stations within 6 degrees of 76.2° W.L. involving approved communications with U.S.-licensed earth stations.
8. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat.

9. During drift operations, all transponders other than TT&C transponders will be turned off.

10. Pursuant to footnote US342 of the United States Table of Frequency Allocation, 47 CFR § 2.106, services operating in the 14.47-14.50 GHz band shall take all practicable steps to protect the radio astronomy service from harmful interference.

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

12. Intelsat's request for waiver of 47 CFR § 25.120(a), which requires an STA request to be received by the Commission at least 3 working days prior to the date of proposed operation, is GRANTED, due to the exigent circumstances that are reflected in this STA request and in accordance with emergency procedures put in place to provide communications in areas affected by Hurricane Maria.

13. All operations must be within the relevant requested operational parameters in IBFS File No. SAT-STA-20171016-00139 and SAT-STA-20171016-00140.

This grant 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.

9. State MD	10. Longitude (dd mm ss.s h) 77 45 33.0 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 requests a grant of Special Temporary Authority for 180 days, commencing upon grant, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide telemetry, tracking, and command services for Intelsat 16 (S2750) on-station at 76.2 W.L. Intelsat seeks this STA in order to assist a customer in responding	
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"; party to the application; for these purposes. Yes <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing Cynthia J. Grady	15. Title of Person Signing Regulatory Counsel, Intelsat Corporation
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).	

## **12. Description**

Intelsat License LLC herein requests a grant of Special Temporary Authority for 180 days, commencing upon grant, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide telemetry, tracking, and command services for Intelsat 16 (S2750) on-station at 76.2 W.I. Intelsat seeks this STA in order to assist a customer in responding to the damage caused by Hurricane Maria to the communications networks in Puerto Rico.



**INTELSAT**

Envision. Connect. Transform.

October 16, 2017

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

Re: Request for Special Temporary Authority  
Hagerstown, Maryland Earth Station KA258

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests a grant of Special Temporary Authority (“STA”)<sup>1</sup> for 180 days, commencing upon grant, to use its Hagerstown, Maryland Ku-band earth station—call sign KA258—to provide telemetry, tracking, and command (“TT&C”) services for Intelsat 16 (S2750) on-station at 76.2° W.L.<sup>2</sup> Intelsat seeks this STA in order to assist a customer in responding to the damage caused by Hurricane Maria to the communications networks in Puerto Rico.

TT&C operations will be performed in the following frequencies: 12198.25 MHz, 12198.75 MHz, 13997.5 MHz, and 14499.5 MHz. Intelsat is concurrently filing a 30-day STA request for TT&C services during the drift of Intelsat 16 to, and for TT&C services at, 76.2° W.L. The proposed TT&C operations at 76.2° W.L. will be consistent with Intelsat’s coordination agreements for the nominal 76.2° W.L. orbital location. In the unlikely event that harmful interference occurs, Intelsat will take all necessary steps to eliminate the interference.

In further support of this request, Intelsat herewith attaches Exhibit A, which contains technical information that demonstrates that the operation of the earth station will be compatible with its electromagnetic environment and will not cause harmful interference into any lawfully operating terrestrial facility or into Federal systems operating in the 13.75-14.00 GHz band. In the extremely unlikely event that harmful interference should occur due to transmissions to or from its earth station, Intelsat will take all reasonable steps to eliminate the interference.

Grant of this STA request will allow Intelsat to assist a customer in providing critical communication services in Puerto Rico. Accordingly, grant of this STA request is in the public interest.

---

<sup>1</sup> Intelsat has filed its STA request, an FCC Form 159, a \$200.00 filing fee, and this supporting letter electronically via the International Bureau’s Filing System (“IBFS”).

<sup>2</sup> See *Intelsat License LLC Requests for 30-Day and 180-Day STAs to Drift and Operate Intelsat 16 at 76.2 W.L., Call Sign S2750*, File Nos. SAT-STA-20171016-00139 and SAT-STA-20171016-00140 (filed Oct. 16, 2017).

Ms. Marlene H. Dortch  
October 16, 2017  
Page 2

For the reasons set forth herein, Intelsat respectfully requests that the Commission grant this STA request. Please direct any questions regarding this request to the undersigned at (703) 559-6949.

Respectfully submitted,

*/s/ Cynthia J. Grady*

Cynthia J. Grady  
Regulatory Counsel  
Intelsat Corporation

cc: Paul Blais

**Intelsat License LLC  
Hagerstown, Maryland**

**TIW 14.2m 14.2 Meter Earth Station**

**1. Background**

This Exhibit is presented to demonstrate the extent to which the Intelsat License LLC ("Intelsat") satellite earth station in Hagerstown, Maryland is in compliance with the Federal Communications Commission ("FCC") Report and Order 96-377. The potential interference from the earth station to U.S. Navy shipboard radiolocation operations ("RADAR") and the National Aeronautics and Space Administration ("NASA") space research activities in the 13.75-14.0 GHz band is addressed in this exhibit. The parameters for the earth station are:

Coordinates (NAD83):	39° 35' 54.6" N, 77° 45' 33.0" W
Satellite Arc Range for Earth Station:	IS-16 at 58°W to 76°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	1M00F7D
Modulation:	FM/PCM/PSK
Maximum Aggregate Uplink EIRP:	88dBW for all Carriers
<b>Transmit Antenna Characteristics</b>	
Antenna Size:	14.2 Meters in Diameter
Antenna Type/Model:	TIW 14.2m
Gain:	65.1 dBi
RF Power into Antenna Flange:	22.9 dBW or -1.1 dBW/4kHz
Minimum Elevation Angle:	39.81° @ 150.6° Azimuth 44.13° @ 177.24° Azimuth
Side Lobe Antenna Gain	FCC Reference Pattern

Because the above uplink spectrum is shared with the Federal Government, coordination in this band requires resolution data pertaining to potential interference between the earth stations and both U.S. Navy Department and NASA systems. Potential interference from the earth station could impact the U.S. Navy and/or NASA systems in two areas. These areas are noted in GCC Report and Order 96-377 dated September 1996, and consist of (1) Radiolocation and Radio Navigation, (2) Data Relay Satellites.

Summary of Coordination Issues:

- a.) Potential Impact to Government Radiolocation (Shipboard Radar)
- b.) Potential Impact to NASA Tracking and Data Relay Satellite Systems ("TDRSS")



## 2. Potential Impact to Government Radiolocation (Shipboard Radar)

Radiolocation operations ("RADAR") may occur anywhere in the 13.4-14.0 GHz frequency band aboard ocean-going U.S. Navy ships. FCC order 96-377 allocates the top 250MHz of this 600 MHz band to the Fixed Satellite Service ("FSS") on a co-primary basis with the radiolocation operations and provides for an interference protection level of  $-167 \text{ dBW/m}^2/4\text{kHz}$ .

The closest distance to the shoreline from Hagerstown, Maryland earth station is approximately 131 km. The calculation of the power spectral density at this distance is given by:

- |                              |  |
|------------------------------|--|
| 1. Clear Sky EIRP:           | 88 dBW   |
| 2. Carrier Bandwidth:        | 1000 kHz   |
| 3. PD at antenna input:      | -1.1 dBW/4kHz                                    |
| 4. Transmit Antenna Gain:    | 65.1 dBi   |
| 5. Antenna Gain to Horizon:  | -11 dBi  |
| 6. Antenna Elevation Angles: | 39.8° @ 150.6° azimuth<br>44.1° @ 177.2° azimuth |

The earth station will radiate interference toward the ocean according to its off-axis side-lobe performance. A conservative analysis, using FCC standard reference pattern, results in an off-axis antenna gain of -11 towards the nearest shoreline.

The signal density at the shoreline, through free space is:

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW/m}^2\text{)} \\ &= -1.1\text{dBW/4kHz} + -11\text{dBi} - (10*\log[4*\text{PI}*[131\text{km}]^2]) \\ &= -125.4 \text{ dBW/m/4kHz} - \text{Additional Path Losses (69 dB)} \end{aligned}$$

Our calculation indicate additional path loss of approximately 69 dB including absorption loss and earth diffraction loss for the actual path profiles from the earth station to the nearest shoreline.

The calculated PFD, including additional path losses to the closest shoreline, is  $-194.4 \text{ dBW/m}^2/4 \text{ kHz}$ . This is 27.4dB below the  $-167.0 \text{ dBW/m}^2/4 \text{ kHz}$  interference criteria of the R&O 96-377. Therefore, there should be no interference to the U.S. Navy RADAR from the Hagerstown, Maryland earth station due to the distance and the terrain blockage between the site and the shore.

## 3. Potential Impact to NASA's Tracking and Data Relay Satellite System

The geographic location of the Intelsat earth station in Hagerstown, Maryland is outside the 390 km radius coordination contour surrounding NASA's White Sands, New Mexico ground station complex. Therefore the TDRSS space-to-earth link will not be impacted by the Intelsat earth station in Hagerstown, Maryland.

The TDRSS space-to-space link in the 13.772 to 13.778 GHz band is assumed to be protected if an earth station produces an EIRP of less than 71 dBW/6MHz in this band. The 14.2 meter earth station antenna will not transmit in this band. Therefore, there will be no potential interference to the TDRSS space-to-space link.

#### **4. Coordination Result Summary and Conclusions**

The results of the analysis and calculation performed in this exhibit indicate that compatible operation between the earth station at the Hagerstown, Maryland facility and U.S. Navy and NASA TDRSS space-to-earth and space-to-space links are possible. No interference to U.S. Navy RADAR or NASA TDRSS operations from the Hagerstown, Maryland site earth station should occur.