

E140121 SES-STA-20160503-00391 IB2016001022
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:
Request for STA Using Earth Station E140121 to Provide TT&C and IOT for Intelsat 31

1. Applicant

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



File # SES-STA-20160503-00391
E140121 Grant Date 6-2-16
Call Sign (or other identifier)
Term Dates From: 6-6-16 To: 7-6-16
Approved: [Signature]

Applicant: Intelsat License, LLC
File No: SES-STA-20160503-00391
Call Sign: E140121
Special Temporary Authority



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E140121
Call Sign E140121 Grant Date 6-2-16
(or other identifier)
Term Dates
From: 6-6-16 To: 7-6-16
Approved: Paul E. Blais

Intelsat License, LLC is granted a grant of special temporary authority, under the following conditions, for 30 days, commencing June 6, 2016, to use its Hagerstown, Maryland Ku-band earth station-call sign E140121- to provide telemetry, tracking, and command ("TT&C"), services to Intelsat 31 satellite, during in-orbit testing ("IOT") at 132.0° W.L; and during the drift of Intelsat 31 to and at its final location of 95.05° W.L. Intelsat 31 satellite is expected to be launched no earlier than May 28, 2016.

1. Uplink (Earth-to-space) frequencies will be on 13998.50 MHz and 14006.00 MHz (LHCP, H) within the coordinated emission and power limits. The maximum EIRP shall not exceed 85 dBW per NTIA manual US 356.
2. Downlink (space-to-Earth) frequencies will be on 11194.25 MHz, 11195.50 MHz, 11196.25 MHz and 11196.75 MHz (RHCP, V).
3. During the drift from 132.0° W.L. to the satellite's permanent orbital location 95.05° W.L., Intelsat will coordinate with operators of co-frequency satellites in the drift path.
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 the Intelsat 31 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.
5. All operations under this grant of STA shall be on an unprotected and non-harmful interference basis. Intelsat's, E140121, shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating radio communication system.
6. In the event of any harmful interference under this grant of STA, Intelsat License LLC, E140121, must cease operations immediately upon notification of such interference and must inform the Commission, in writing, immediately of such an event.
7. Operations in the 13.75-14.0 GHz band may only exceed 85 dBW/carrier if an emergency situation exists and the applicant must notify FCCOperationCenter@fcc.gov of the situation with a copy to paul.blais@fcc.gov.
8. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC applications.
9. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat License LLC's risk.
10. 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.

2. Contact			
Name:	Cynthia J. Grady	Phone Number:	703-559-6949
Company:	Intelsat Corporation	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?			
<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 CGX – Fixed Satellite Transmit/Receive Earth Station			
5. Type Request			
<input type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other			
6. Requested Use Prior Date			
7. City/Hagerstown		8. Latitude (dd mm ss.s h) 39 35 53.1 N	

9. State MD	10. Longitude (dd mm ss.s h) 77 45 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.) <div style="border: 1px solid black; padding: 5px;"> Intelsat License LLC herein requests a grant of Special Temporary Authority for 30 days, commencing June 6, 2016, to use its Hagerstown, Maryland Ku-band earth station, call sign E140121, to provide telemetry, tracking, and command services to Intelsat 31 during in-orbit testing at 132.0 W.L; and during the drift of Intelsat 31 to and at its final </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. <div style="text-align: right;"> Yes <input checked="" type="radio"/> No <input type="radio"/> </div>	
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).	

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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

Intelsat License LLC herein requests a grant of Special Temporary Authority for 30 days, commencing June 6, 2016, to use its Hagerstown, Maryland Ku-band earth station, call sign E140121, to provide telemetry, tracking, and command services to Intelsat 31 during in-orbit testing at 132.0 W.L.; and during the drift of Intelsat 31 to and at its final location of 95.05 W.L. Intelsat 31 is expected to be launched on May 28, 2016.

May 3, 2016

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 E140121

Dear Ms. Dortch:

Intelsat License LLC ("Intelsat") herein requests a grant of Special Temporary Authority ("STA")¹ for 30 days, commencing June 6, 2016, to use its Hagerstown, Maryland Ku-band earth station—call sign E140121—to provide telemetry, tracking, and command ("TT&C") services to Intelsat 31 during in-orbit testing ("IOT") at 132.0° W.L.; and during the drift of Intelsat 31 to and at its final location of 95.05° W.L.² Intelsat 31 is expected to be launched on May 28, 2016. The IOT and drift are expected to last approximately three and two weeks, respectively.

The proposed operations will be performed using the following frequencies: 13998.50 MHz and 14006.00 MHz in the uplink (LHCP, H); and 11194.25 MHz, 11195.50 MHz, 11196.25 MHz, and 11196.75 MHz in the downlink (RHCP, V). The proposed operations will be coordinated with all operators of satellites that use the same frequency bands and are in the drift path or are potentially affected by these operations at the IOT location.³ The proposed TT&C operations at 95.05° W.L. will be consistent with Intelsat's coordination agreements for the nominal 95° W.L. location. All operators of potentially affected satellites will be provided with an emergency phone number where the licensee can be reached in the event that harmful interference occurs.

The 24x7 contact information for the Intelsat 31 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.

¹ Intelsat has filed its STA request, an FCC Form 159, a \$195.00 filing fee, and this supporting letter electronically via the International Bureau's Filing System ("IBFS").

² See *Policy Branch Information; Actions Taken*, Report No. SAT-01052, File No. SAT-LOA-20140410-00038 (November 7, 2014) (Public Notice). At 95.05° W.L., Intelsat 31 will be co-located with Intelsat 30 (S2887) and Galaxy 3C (S2381).

³ Intelsat will handle the coordination.

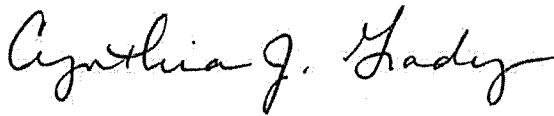
Ms. Marlene H. Dortch
May 3, 2016
Page 2

In further support of this request, Intelsat hereby 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 help test, drift, and safely station-keep the Intelsat 31 satellite. This, in turn, will help ensure continuity of service at the 95.05° W.L. orbital location and thereby promotes the public interest.

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

Respectfully submitted,

A handwritten signature in cursive script, reading "Cynthia J. Grady".

Cynthia J. Grady
Regulatory Counsel
Intelsat Corporation

cc: Paul Blais

**Intelsat Licences LLC
Hagerstown, Maryland**

Viasat 13.5 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' 53.1" N, 77° 45' 22.3" W
Satellite Location for Earth Station:	IS-31 at 149°W to 6°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	900KFXD
Modulation:	FM/PCM/PSK
Maximum Aggregate Uplink EIRP:	88dBW for all Carriers
Transmit Antenna Characteristics	
Antenna Size:	13.5 Meters in Diameter
Antenna Type/Model:	Viasat
Gain:	64.5 dBi
RF Power into Antenna Flange:	25.5 dBW or 2 dBW/4kHz
Minimum Elevation Angle:	5.57° @ 257.89° Azimuth 5.42° @ 101.97° 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 FCC 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

1. Clear Sky EIRP: 88 dBW
2. Carrier Bandwidth: 900 kHz
3. PD at antenna input: 2 dBW/4kHz
4. Transmit Antenna Gain: 64.5 dBi
5. Antenna Gain to Horizon: 10.4 dBi
6. Antenna Elevation Angles: 5.6° @ 257.9° azimuth
5.4° @ 102° 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 10.4 towards the Pacific Ocean.

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

PFD = Antenna Feed Power density (dBW/4kHz) + Antenna Off-Axis Gain (dBi) - Spread Loss (dBW/m^2)

$$= 2\text{dBW/4kHz} + 10.4\text{dBi} - 10*\log[4*(131\text{km})^2]$$

$$= -101 \text{ dBW/m/4kHz} - \text{Additional Path Losses (69 dB)}$$

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 $-170\text{dBW/ m}^2/4 \text{ kHz}$. This is 3dB 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 13.5 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.