

E060384 SES-STA-20140922-00745 IB2014001879  
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 Special Temporary Authority Using Earth Station E060384

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 Corporation 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		

File # SES-STA-20140922-00745  
Call Sign 060884 Grant Date 10-17-14  
(or other identifier)  
Term Dates  
From 10/25/14 To 11/18/14  
Approved: Susan H. Crandall  
GRANTED  
International Bureau

Applicant: Intelsat License LLC  
Call Sign: E060384  
File No.: SES-STA-20140922-00745  
Special Temporary Authority (STA)



File # SES-STA-20140922-00745  
Call Sign E060384 Grant Date 10-17-14  
(or other identifier)  
Term Dates  
From 10-25-14 To 11-24-14  
Approver: [Signature]

Intelsat License LLC is granted STA to operate its earth station Call Sign E060384 in Nuevo, California for 30 days, to begin October 25, 2014 to provide telemetry, tracking and control (TT&C) functions during in-orbit testing (IOT) and drift of the U.S. licensed Intelsat 30 satellite. The TT&C operations during IOT will be under the following conditions:

1. Intelsat will perform the operations in the uplink frequencies (Earth-to-space): 13750.50 MHz and 14003.50 MHz (LHCP) and downlink frequencies (space-to-Earth): 11198.00 MHz, 11198.50 MHz, 11199.25 MHz, and 11199.75 MHz (RHCP) within coordinated emission and power limits. The maximum EIRP shall not exceed 85 DBW per NTIA manual US 356.
2. Intelsat will coordinate the proposed IOT operations at IOT location 132.0° W.L. with operators of co-frequency satellites within six degrees. 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.
3. The LEOP operations must be coordinated with all operators of satellites that use the same frequency bands and are in the LEOP path. All operators of satellites in that path 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 30 LEOP 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.
4. Operations, 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 transmissions(s) immediately upon notice of such interference.
5. In the event of any harmful interference under this grant of STA, Intelsat License LLC E060384 must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.
6. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC applications.
7. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat License LLC'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 immediately.

<b>2. Contact</b>	
<b>Name:</b> Susan H. Crandall	<b>Phone Number:</b> 703-559-7848
<b>Company:</b> Intelsat Corporation	<b>Fax Number:</b> 703-559-8539
<b>Street:</b> 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	<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 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. CityNuevo	
8. Latitude (dd mm ss.s h) 33 47 46.1 N	

9. State CA	10. Longitude (dd mm ss.s h) 117 5 15.1 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;"> <p>Intelsat License LLC herein requests a grant of Special Temporary Authority for 30 days, from October 25, 2014 through November 24, 2014, to use its Nuevo, California Ku-band earth station, call sign E060384, to provide telemetry, tracking and command services for the Intelsat 30 satellite at 132.0 W.L. while the satellite undergoes in-orbit testing, as</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 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, from October 25, 2014 through November 24, 2014, to use its Nuevo, California Ku-band earth station, call sign E060384, to provide telemetry, tracking and command services for the Intelsat 30 satellite at 132.0 W.L. while the satellite undergoes in-orbit testing, as well as during the satellite

**Exhibit A**  
**Intelsat License LLC**  
**Nuevo, California**  
**VERTEX/RSI 9 Meter Earth Station**  
**Call Sign: E060384**

**Compliance with FCC Report & Order (FCC 96-377) for the 13.75 - 14.0 GHz Band**  
**Analysis and Calculations**

**1. Background**

This Exhibit is presented to demonstrate the extent to which the Intelsat License LLC (“Intelsat”) satellite earth station in Nuevo, California is in compliance with 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:

**Table 1. Earth Station Characteristics**

- Coordinates (NAD83): 33° 47' 47.3" N, 117° 5' 15.0" W
- Satellite Location for Earth Station: IS-30 at 43.6° W to 190.5° W
- Frequency Band: 13.75-14.5 GHz for uplink
- Polarizations: Circular, Linear
- Emissions: 850KF2D
- Modulation: FM/PSK
- Maximum Aggregate Uplink EIRP: 88.8 dBW for all Carriers
- Transmit Antenna Characteristics
  - Antenna Size: 9 Meters in Diameter
  - Antenna Type/Model: VERTEX/RSI
  - Gain: 60.1 dBi
- RF power into Antenna Flange: 28.7 dBW or 5.4 dBW/4 kHz (Maximum)
- Minimum Elevation Angle: 5.0° @ 260.6° Az. at 43.6 °W  
Nuevo, CA 5.1° @ 99.4° Az. at 190.5° W.
- Side Lobe Antenna Gain: 29 - 25\*log( $\theta$ )

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, and consist of (1) Radiolocation and radio navigation, (2) Data Relay Satellites.

Summary of Coordination Issues:

- 1) Potential Impact to Government Radiolocation (Shipboard Radar)
- 2) Potential Impact to NASA Tracking and Data Relay Satellite Systems (“TDRSS”)

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

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 250 MHz 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 the Nuevo, California earth station is approximately 63 km southwest toward the Pacific Ocean. The calculation of the power spectral density at this distance is given by:

- |                              |                       |
|------------------------------|-----------------------|
| 1. Clear Sky EIRP:           | 88.8 dBW              |
| 2. Carrier Bandwidth:        | 850 kHz               |
| 3. PD at antenna input:      | 5.4 dBW/4kHz          |
| 4. Transmit Antenna Gain:    | 60.1 dBi              |
| 5. Antenna Gain Horizon:     | FCC Reference Pattern |
| 6. Antenna Elevation Angles: | 5°                    |

The earth station will radiate interference toward the ocean according to its off-axis side-lobe performance. A conservative analysis, using the FCC standard reference pattern, results in off-axis antenna gains of  $-10.0 \text{ dBi}$  towards the Pacific Ocean.

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



$$\begin{aligned}
\text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \\
&\quad \text{Spread Loss (dBW-m}^2\text{)} \\
&= 5.4 \text{ dBW/4kHz} + (-10.0) \text{ dBi} - 10 * \log[4\pi * (63204\text{m})^2] \\
&= -111.6 \text{ dBW/ m}^2\text{/4 kHz} - \text{Additional Path Losses (~63.4 dB)} \\
&= -175.0 \text{ dBW/ m}^2\text{/4 kHz}
\end{aligned}$$

Our calculations indicate additional path loss of approximately 63.4 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 -175.0 dBW/m<sup>2</sup>/4 kHz. This is 8 dB below the -167.0 dBW/m<sup>2</sup>/4 kHz interference criteria of the R&O 96-377. Therefore, there should be no interference to the U.S. Navy RADAR from the Nuevo, California 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 Nuevo, California 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 Nuevo, California.

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 less than 71 dBW/6 MHz in this band. The 9 meter earth station antenna will have an EIRP greater than 71 dBW/6 MHz in this band. The total EIRP for all carriers is 88.8 dBW, and the equivalent EIRP per 6 MHz segment remains at 88.8 dBW/6 MHz. Therefore, there will be potential interference to the TDRSS space-to-space link (Table 1).

### 4. Coordination Result Summary and Conclusions

The results of the analysis and calculations performed in this exhibit indicate that compatible operation between the earth station at the Nuevo, California facility and the U.S. Navy and NASA TDRSS space-to-earth link are possible. These analyses have been based on the assumption of 850 kHz bandwidth carriers. Operations in NASA TDRSS space-to-space link (13772.0 to 13778.0 MHz) will not be permitted.

**Table 1**  
**Excluded Frequency Range for Intelsat License LLC Earth Station**

System	Frequency Restriction
TDRSS	13.770-13.780 GHz (see Note 1)

**Note 1:** In order to meet the less than 71 dBW/6 MHz interference criteria, the earth station would have to be limited to a maximum total EIRP of 70.9 dBW.

No interference to U.S. Navy RADAR operations from the Nuevo, California site earth station will occur.

September 22, 2014

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  
Nuevo, California Earth Station E060384

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests a grant of Special Temporary Authority (“STA”)<sup>1</sup> for 30 days, from October 25, 2014 through November 24, 2014, to use its Nuevo, California Ku-band earth station—call sign E060384—to provide telemetry, tracking and control (“TT&C”) services for the Intelsat 30 satellite at 132.0° W.L. while the satellite undergoes in-orbit testing (“IOT”), as well as during the satellite’s drift to its permanent location of 95.05° W.L.<sup>2</sup> Intelsat 30 is expected to be launched on October 16, 2014.

Upon launch and subject to receipt of FCC approval, Intelsat 30 will be located temporarily at 132.0° W.L. for IOT.<sup>3</sup> The satellite’s permanent location will ultimately be 95.05° W.L.<sup>4</sup> The Intelsat 30 TT&C operations will be performed in the following frequencies: 13750.5 MHz and 14003.50 MHz (LHCP) in the uplink and 11198.0 MHz, 11198.5 MHz, 11199.25 MHz, and 11199.75 MHz (RHCP) in the downlink.

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. To Intelsat’s knowledge, there are no co-frequency satellites within plus/minus six degrees of 132.0° W.L. 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 hereby attaches Exhibit A, which contains technical information that demonstrates that the operation of the earth station will be compatible with its

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<sup>1</sup> 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”).

<sup>2</sup> See *Policy Branch Information; Actions Taken*, Report No. SAT-01036, File Nos. SAT-LOA-20121025-00187 and SAT-AMD-20121221-00220 (Aug. 15, 2014) (Public Notice).

<sup>3</sup> See *Intelsat License LLC Request for Special Temporary Authority to Conduct In-Orbit Testing of the Intelsat 30 Satellite*, File No. SAT-STA-20140919-00102 (filed Sept. 19, 2014).

<sup>4</sup> See *Policy Branch Information; Actions Taken*, Report No. SAT-01036, File Nos. SAT-LOA-20121025-00187 and SAT-AMD-20121221-00220 (Aug. 15, 2014) (Public Notice).

electromagnetic environment and will not cause harmful interference into any lawfully operating terrestrial facility. 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. Intelsat also notes that for purposes of the Intelsat 30 mission, it is seeking to operate in the frequencies listed in this request at power levels not to exceed 28.7 dBW.

In addition, out of an abundance of caution, in order to perform TT&C during IOT on the 11198.0 MHz, 11198.5 MHz, 11199.25 MHz, and 11199.75 MHz frequencies, this application for STA requests a waiver of the footnote NG52 to the U.S. Table of Frequency Allocations, which limits the use of the 10700-11700 MHz frequency band to “international systems.”<sup>5</sup> Intelsat seeks waiver to permit the Nuevo, California earth station E060384 to communicate with the Intelsat 30 satellite at 132.0° W.L. for the limited purposes of IOT and drift to Intelsat’s permanent location at 95.05° W.L.

The Commission may grant a waiver for good cause shown.<sup>6</sup> The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.<sup>7</sup> In granting a waiver, the Commission may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.<sup>8</sup> Waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

Good cause exists here to grant a waiver allowing E060384 to provide TT&C during IOT of the Intelsat 30 satellite using frequencies in the 10950-11200 MHz band. IOT and the drift of the satellite will only be for a short duration. In addition, as explained above, 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. To Intelsat’s knowledge, there are no co-frequency satellites within plus/minus six degrees of 132.0° W.L.

The provision of TT&C services to the Intelsat 30 satellite at 132.0° W.L., during drift, and at 95.05° W.L. is a critical step in ensuring that the satellite will be fully operational at 95.05° W.L. This, in turn, will ensure continuity of service to customers at the 95.05° W.L. location, and thereby promotes the public interest.

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<sup>5</sup> See 47 C.F.R. § 2.106 fn. NG52.

<sup>6</sup> 47 C.F.R. §1.3.

<sup>7</sup> *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) (“*Northeast Cellular*”).

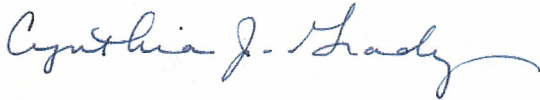
<sup>8</sup> *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

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Ms. Marlene H. Dortch  
September 19, 2014  
Page 3

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". The signature is written in dark ink and is positioned above the typed name and title.

Cynthia J. Grady  
Regulatory Counsel  
Intelsat Corporation

Cc: Paul Blais