

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 Hagerstown, Maryland Earth Station KA258

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-20140922-00744
Call Sign KA258 Grant Date 10-6-14
(or other identifier)
Term Dates From 10-25-14 To 11-26-14
Approver: [Signature]

Applicant: Intelsat License LLC
Call Sign: KA258
File No.: SES-STA-20140922-00744
Special Temporary Authority (STA)

Intelsat License LLC is granted, under the following conditions, STA, for 30 days, to utilize its Hagerstown, Maryland earth station, Call Sign KA258, to conduct in-orbit testing (IOT) services of the Intelsat 30 satellite (S2887) at 132.0° W.L. orbital location from October 25, 2014 to November 24, 2014.

1. Uplink to Intelsat 30 satellite on the 10950-11200 MHz, 11450-11700 MHz and 11700-12200 MHz coordinated emission and power limits.
2. Downlink from Intelsat 30 satellite on the 13750-14000 MHz and 14000-14500 MHz.
3. The IOT operations must be coordinated with all operators of satellites that use the same frequency bands and are in the IOT 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 the Intelsat 30 satellite IOT mission is as follows: Ms. Susan H. Crandall at (703) 559-7848.
4. All operations shall be on an unprotected and non-harmful interference basis, Intelsat License LLC, KA258, 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.
5. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC 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.

 GRANTED International Bureau	File # SES-STA-20140922-00744	
	Call Sign KA258	Grant Date 10-6-14
	From 102514	Term Dates
		To 11-24-14
	Approver Paul E. Hines	

2. Contact			
Name:	Susan H. Crandall	Phone Number:	703-559-7848
Company:	Intelsat Corporation	Fax Number:	703-559-8539
Street:	7900 Tysons One Place	E-Mail:	susan.crandall@intelsat.com
City:	McLean	State:	VA
Country:	USA	Zipcode:	22102 -5972
Attention:	Susan H. Crandall	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			
8. Latitude (dd mm ss.s h) 39 35 54.0 N			
7. City Hagerstown			

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: 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 30 days, from October 25, 2014 through November 24, 2014, to utilize its Hagerstown, Maryland Ku-band antenna, KA258, to conduct in-orbit testing of the Ku-band payload of the Intelsat 30 satellite (Call Sign S2887) at 132.0 W.L. Intelsat 30 is currently scheduled to be	
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. <input checked="" type="radio"/> Yes <input type="radio"/> No	
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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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 utilize its Hagerstown, Maryland Ku-band antenna, KA258, to conduct in-orbit testing of the Ku-band payload of the Intelsat 30 satellite (Call Sign S2887) at 132.0 W.L. Intelsat 30 is currently scheduled to be launched on October 16, 2014.

**Exhibit A
Intelsat License LLC
Hagerstown, Maryland
TIW 14.2 Meter Earth Station
Call Sign: KA258**

**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 Hagerstown, Maryland 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): 39° 35’ 54.6’’ N, 77° 45’ 33.0’’ W
- Satellite Location for Earth Station: IS-30 at 132.0° W
- Frequency Band: 13.75-14.5 GHz for uplink
- Polarizations: Circular
- Emissions: 850KF2D
- Modulation: FM
- Maximum Aggregate Uplink EIRP: 88.0 dBW for all Carriers
- Transmit Antenna Characteristics
 - Antenna Size: 14.2 meter in Diameter
 - Antenna Type/Model: TIW
 - Gain: 65.1 dBi
- RF power into Antenna Flange: 22.9 dBW or -0.4 dBW/ 4 kHz (Maximum)
- Minimum Elevation Angle: 18.5° @ 114.7° Az, Hagerstown, MD
- Side Lobe Antenna Gain: 29 - 25*log(θ)

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 Navy Department and NASA systems. Potential interference from the earth station could impact with the 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 Data Relay Satellite Systems (TDRSS)

2. Potential Impact to Government Radiolocation (Shipboard Radar)

RADAR may occur anywhere in the 13.4 - 14 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 dBW/m²/4 kHz.

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

- | | |
|------------------------------|-----------------------|
| 1. Clear Sky EIRP: | 88.00 dBW |
| 2. Carrier Bandwidth: | 850 kHz |
| 3. PD at antenna input: | -0.4 dBW/4kHz |
| 4. Transmit Antenna Gain: | 65.1 dBi |
| 5. Antenna Gain Horizon: | FCC Reference Pattern |
| 6. Antenna Elevation Angles: | 18.5° |

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 dBi towards the Atlantic Ocean.

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

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \\ &\quad \text{Spread Loss (dBW-m}^2\text{)} \\ &= -0.4 \text{ dBW/4kHz} + (-10.0) \text{ dBi} - 10 \cdot \log[4\pi \cdot (131000\text{m})^2] \\ &= -123.7 \text{ dBW/ m}^2\text{/4 kHz} - \text{Additional Path Losses (}\sim\text{69.0 dB)} \\ &= -192.7 \text{ dBW/ m}^2\text{/4 kHz} \end{aligned}$$

Our calculations indicate additional path loss of approximately 69.0 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 -192.7 dBW/m²/4 kHz. This is 25.7 dB below the -167 dBW/m²/4 kHz interference criteria of the R&O 96-377. Therefore, there should be no interference to the US Navy RADAR from the Hagerstown 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 License LLC 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 License LLC 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 less than 71 dBW/6 MHz in this band. The 14.2 meter earth station antenna will have an EIRP greater than 71 dBW/6 MHz in this band. The total EIRP for all carriers is 88.0 dBW, and the equivalent EIRP per 6 MHz segment remains at 88.0 dBW/6 MHz. Therefore, there will be potential interference to the TDRSS space-to-space link (Table 1).

4. Coordination Issue 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 Hagerstown, Maryland 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 systems 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 Hagerstown, Maryland site earth station will occur.

September 22, 2014

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

Re: Request for Special Temporary Authority to Utilize Hagerstown, Maryland Ku-band Antenna KA258 to In-orbit Test the Intelsat 30 Satellite

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests a grant of Special Temporary Authority (“STA”)¹ for 30 days, from October 25, 2014 through November 24, 2014, to utilize its Hagerstown, Maryland Ku-band antenna, KA258, to conduct in-orbit testing (“IOT”) of the Ku-band payload of the Intelsat 30 satellite (Call Sign S2887)² at 132.0° W.L. in the following frequencies:

10950-11200 MHz, 11450-11700 MHz, and 11700-12200 MHz (downlink)
13750-14000 MHz and 14000-14500 MHz (uplink)

Intelsat 30 is currently scheduled to be launched on October 16, 2014.

In support of its request, Intelsat 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. 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 notes that the maximum power level to be used in the Intelsat 30 IOT will be 22.9 dBW. There are no co-frequency satellites within six degrees of 132.0° W.L.

In addition, in order to conduct IOT in the 10950-11200 MHz and 11450-11700 MHz bands, 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.”³ Intelsat seeks

¹ Intelsat has filed this STA request, an FCC Form 159, and \$195.00 filing fee electronically via the International Bureau's Filing System.

² 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).

³ See 47 C.F.R. § 2.106 fn. NG52.

waiver to permit the Hagerstown, Maryland earth station KA258 to communicate with the Intelsat 30 satellite at 132.0° W.L. for the limited purpose of IOT.

The Commission may grant a waiver for good cause shown.⁴ The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.⁵ 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.⁶ Waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest. As shown below, good cause exists here to grant a waiver allowing the KA258 to provide IOT services to the Intelsat 30 satellite using the 10950-11200 MHz and 11450–11700 MHz band frequencies. Additionally, IOT will be conducted for only a short duration.

Good cause exists to waive the international only requirements for the 10950-11200 MHz and 11450–11700 MHz frequency bands. The purpose of NG52 is to limit the number of the FSS service earth stations with which the co-primary fixed service would need to coordinate.⁷ Intelsat will provide services in the 10950-11200 MHz and 11450-11700 MHz frequency bands only on a non-interference/non-protected basis, and therefore will not need to coordinate with fixed service stations.

Moreover, grant of this waiver is consistent with the Commission's precedent. A waiver of the Table of Allocations is generally granted "when there is little potential interference into any service authorized under the Table of Frequency allocations and when the nonconforming operator accepts any interference from authorized services."⁸ The International Bureau has found that waiving the international only requirement would not undermine the purpose of the rules if the party seeking a waiver will be utilizing earth stations that are receive-only in these bands and thus "not capable of causing interference into FS stations" operating in the bands.⁹ KA258 will not transmit in the 10950-11200 MHz and 11450-11700 MHz frequency bands and Intelsat agrees to accept any level of interference into those earth stations from fixed service stations in the band. Accordingly, the earth stations operating in these bands pose no interference concerns with respect to co-frequency fixed service stations.

The IOT of Intelsat 30's Ku-band payload at 132.0° W.L. is a critical step in ensuring that the payload will be fully operational and thereby promotes the public interest.

⁴ 47 C.F.R. §1.3.

⁵ *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("Northeast Cellular").

⁶ *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

⁷ See *Satellite Services*, 26 RR 2d 1257, 1263-65 (1973). See also *EchoStar KuX Corporation Application for Authority to Construct, Launch and Operate a Geostationary Satellite Using the Extended Ku-band Frequencies in the Fixed-Satellite Service at the 83° W.L. Orbital Location*, Order and Authorization, DA 04-3162, 9 (Int'l Bur., Sept. 30, 2004) ("EchoStar 83° Waiver").

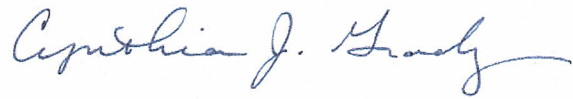
⁸ See *The Boeing Company*, Order and Authorization, 16 FCC Rcd 22645, 22651 (Int'l Bur. & OET 2001); *Application of Fugro-Chance, Inc. for Blanket Authority to Construct and Operate a Private Network of Receive-Only Mobile Earth Stations*, Order and Authorization, 10 FCC Rcd 2860 (Int'l Bur. 1995) (authorizing MSS in the C-band); see also *Application of Motorola Satellite Communications, Inc. for Modification of License*, Order and Authorization, 11 FCC Rcd 13952-13956 (Int'l Bur. 1996) (authorizing service to fixed terminals in bands allocated the mobile satellite service).

⁹ EchoStar 83° Waiver, ¶ 13.

Ms. Marlene H. Dortch
September 22, 2014
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For the reasons set forth herein, Intelsat respectfully requests that the Commission grant this request.

Sincerely,

A handwritten signature in blue ink that reads "Cynthia J. Grady". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Cynthia J. Grady
Regulatory Counsel
Intelsat Corporation

cc: Paul Blais
