

KA258 SES-STA-20120620-00608 IB2012001544
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:
STA for Earth Station KA258 to Provide LEOP Services for the Intelsat 20 Satellite

I. Applicant

Name: Intelsat License LLC **Phone Number:** 202-944-7848
DBA Name: **Fax Number:** 202-944-7870
Street: c/o Intelsat Corporation **E-Mail:** susan.crandall@intelsat.com
3400 International Drive, N.W.
City: Washington **State:** DC
Country: USA **Zipcode:** 20008 -3006
Attention: Susan H. Crandall

The image shows a red circular stamp from the Federal Communications Commission (FCC) with the text "FEDERAL COMMUNICATIONS COMMISSION" and "GRANTED International Bureau". To the right of the stamp is a rectangular stamp with the text "Call Sign (or other identifier)", "From", and "Appr". Handwritten in blue ink are "KA258" under "Call Sign", "7-31-12" under "From", and "Susan H. Crandall" under "Appr". At the top of the stamp, "SES-STA-20120620-00608" is written in blue ink. There is also a handwritten "7-30-12" and "Toms Baker" near the "From" field.

Applicant: Intelsat License LLC
Call Sign: KA258
File No.: SES-STA-20120620-00608
Special Temporary Authority (STA)

Intelsat License LLC is granted STA to operate its earth station Call Sign KA258 in Hagerstown, MD, from July 31, 2012 to August 30, 2012, to provide launch and early orbit phase ("LEOP") services for the Intelsat 20 satellite on frequencies 14498.0 MHz and 13750.5 MHz earth-to-space (LHCP), and 12746.5 MHz, 12747.0 MHz, 12748.0 MHz, and 12748.5 MHz space-to-earth (LHCP). The In-Orbit testing location will be at 63.1° E.L. The maximum uplink EIRP transmitted during the LEOP operations will be 85 dBW, with an emission designator of 800KF2D under the following conditions:

- 1) 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.
- 2) Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC applications.
- 3) Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat License LLC's risk.
- 4) 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.



SES-STA-20120620-00608

| | | | |
|-----------------------|---------------|------------|---------|
| Call Sign | KA258 | Grant Date | 7-31-12 |
| (or other identifier) | | | |
| From | 7-31-12 | Term Date | 8-30-12 |
| Approved | Paul E. Blair | | |

| | |
|---|--|
| 2. Contact | |
| Name: Susan H. Crandall | Phone Number: 202-944-7848 |
| Company: Intelsat Corporation | Fax Number: 202-944-7870 |
| Street: 3400 International Drive, N.W. | E-Mail: susan.crandall@intelsat.com |
| City: Washington | State: DC |
| Country: USA | Zipcode: 20008 -3006 |
| 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 SESMFS201111501355 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 checked="" 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 54.0 N |

| | |
|--|--|
| 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.) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">Intelsat License LLC herein requests a grant of Special Temporary Authority for 30 days, from July 27, 2012 through August 25, 2012, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide launch and early orbit phase services for the Intelsat 20 satellite that is expected to be launched on July 27, 2012.</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 Susan H. Crandall | 15. Title of Person Signing Asst. General 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). | |

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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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.

June 20, 2012

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”)¹ for 30 days, from July 27, 2012 through August 25, 2012, to use its Hagerstown, Maryland Ku-band earth station -- call sign KA258² -- to provide launch and early orbit phase (“LEOP”) services for the Intelsat 20 satellite that is expected to be launched on July 27, 2012.³ The LEOP period is expected to last approximately six days.⁴

The Intelsat 20 LEOP operations will be performed in the following frequency bands: 14498.0 MHz and 13750.5 MHz in the uplink (LHCP), and 12746.5 MHz, 12747.0 MHz, 12748.0 MHz, and 12748.5 MHz in the downlink (LHCP). The maximum uplink EIRP transmitted

¹ Intelsat has filed its STA request, an FCC Form 159, a \$180.00 filing fee and this supporting letter electronically via the International Bureau’s Filing System (“IBFS”).

² Intelsat currently is operating earth station KA258 at Hagerstown under Special Temporary Authority pending grant of a permanent modification application for a change in the antenna’s location. *See Intelsat License LLC Request for Extension of Special Temporary Authority*, File No. SES-STA-20120522-00457 (filed May 22, 1012); *Intelsat License LLC Request for Extension of Special Temporary Authority*, File No. SES-STA-20120320-00284 (filed Mar. 20, 2012); *Intelsat License LLC Request for Extension of Special Temporary Authority*, File No. SES-STA-20120221-00186 (filed Feb. 21, 2012); *Policy Branch Information; Actions Taken*, Report No. SES-01421, File No. SES-STA-20120118-00067 (Feb. 1, 2012) (Public Notice).

³ The permanent orbital location for Intelsat 20 will be 68.5° E.L. *See Policy Branch Information; Satellite Space Applications Accepted for Filing*, Report No. SAT-00830, File No. SAT-LOA-20111024-00208 (Dec. 23, 2012) (Public Notice). The in-orbit testing location will be 63.1° E.L.

⁴ Intelsat is seeking authority through August 25, 2012 to accommodate a possible launch delay.

Ms. Marlene H. Dortch
June 20, 2012
Page 2

during the LEOP operations will be 85 dBW, with an emission designator of 800KF2D. The LEOP operations will be coordinated with all operators of satellites that use the same frequency bands and are in the LEOP path.

As such, there would be no risk of interference with respect to lawfully operating, co-frequency radiocommunication facilities. Nevertheless, 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.

The 24x7 contact information for the Intelsat 20 LEOP mission is as follows:

Ph.: (202) 944-7701 – East Coast Operations Center (primary)
(310) 525-5900 – West Coast Operations Center (back-up)

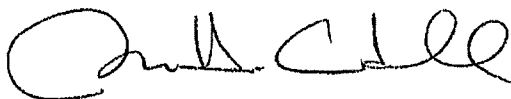
Request to speak with Bob Main.

In addition, Intelsat attaches Exhibit A, which addresses use of the 13750.5 MHz frequency band. The above information indicates 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 or government 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.

Grant of this STA request will allow Intelsat to help launch the Intelsat 20 satellite to the 68.5° E.L. location. This, in turn, will help ensure continuity of service at that location and thereby promotes the public interest.

Please direct any questions regarding this STA request to the undersigned at (202) 944-7848.

Respectfully submitted,



Susan H. Crandall
Assistant General Counsel
Intelsat Corporation

Cc: Paul Blais

**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 satellite earth station, which is being re-located from Clarksburg to Hagerstown, Maryland, is in compliance with FCC Report & Order 96-377. The potential interference from the earth station to U.S. Navy shipboard radiolocation operations (RADAR) and the 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' 54.0" N, 77° 45' 33.0" W
- Satellite Location for Earth Station: From 43.1° W to 58.0° W
INTELSAT 11
INTELSAT 1R
INTELSAT 9 and INTELSAT 16
- Frequency Band: 13.75-14.0 GHz for uplink
- Polarizations: Circular and Linear
- Emissions: 850KF9D
- Modulation: Digital
- Maximum Aggregate Uplink EIRP: 87.0 dBW for all Carriers
- Transmit Antenna Characteristics
 - Antenna Size: 14.2 meters in Diameter
 - Antenna Type/Model: TIW
 - Gain: 65.1 dBi
- RF power into Antenna Flange: 21.9 dBW
or -1.4 dBW/4 kHz (Maximum)

- Minimum Elevation Angles:
Hagerstown, Md.
 - 32.0° @ 132.7° Az. (Intelsat IS-11) at 43.1° W
 - 36.0° @ 140.5° Az. (Intelsat IS-1R) at 50.0° W
 - 39.8° @ 150.6° Az. (Intelsat IS- 9) at 58.0° W
 - 39.8° @ 150.6° Az. (Intelsat IS- 16) at 58.0° W
- Side Lobe Antenna Gain: 32 - 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 station 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 dated September 1996, 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)

Radiolocation operations (RADAR) may occur anywhere in the 13.4 - 14 GHz frequency band aboard ocean going U.S. Navy ships. The FCC Report & 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 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: 87.00 dBW
2. Carrier Bandwidth: 850 kHz
3. PD at antenna input: -1.4 dBW/4 kHz
4. Transmit Antenna Gain: 65.1 dBi
5. Antenna Gain Horizon: FCC Reference Pattern
6. Antenna Elevation Angles: 32.0°, 36.0°, and 39.8°

The proposed 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 off-axis antenna gains of 6.7 dBi towards the Atlantic Ocean.

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

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4 kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW-m}^2\text{)} \\ &= -1.4 \text{ dBW/4 kHz} + (6.7 \text{ dBi}) - 10 \cdot \log[4\pi \cdot (131000\text{m})^2] \\ &= -108.0 \text{ dBW/m}^2\text{/4 kHz} + \text{Additional Path Losses } (\sim 69.0 \text{ dB}) \end{aligned}$$

Our calculations show additional path loss of approximately 69.0 dB including absorption loss and earth diffraction loss for the actual path profiles from the proposed earth station to the nearest shoreline.

The calculated PFD including additional path losses to the closest shoreline location is $-177.0 \text{ dBW/m}^2\text{/4 kHz}$. This is 10.0 dB below the $-167 \text{ dBW/m}^2\text{/4 kHz}$ interference criteria of 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 Data Relay Satellite System (TDRSS)

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 dish will have an EIRP greater than 71 dBW/6 MHz in this band. The total EIRP for all carriers is 87.0 dBW, and the equivalent EIRP per 6 MHz segment remains at 87.0 dBW/6 MHz. Therefore, there will be interference to the TDRSS space-to-space link (Table 1).

In order to meet the 71 dBW/6 MHz interference criteria, the earth station would have to be limited to an RF power density 16.0 dB lower than the maximum of -1.4 dBW/4kHz or -17.4 dBW/4kHz for an EIRP of 71.0 dBW. If this operational condition cannot be met, then the Hagerstown, Maryland earth station may not be tuned to operate at the frequencies in the 13.772 to 13.778 GHz Band.

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 facility and the U.S. Navy and NASA systems 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 | 13.772-13.778 GHz (see Note 1) |

Note 1: In order to meet the 71 dBW/6 MHz interference criteria, the earth station would have to be limited to a maximum total EIRP of 71.0 dBW.

No interference to U.S. Navy RADAR operations from the Hagerstown, Maryland earth station will occur.