

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 LEOP Services for SES-12

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-20180207-00100
418518 **Call Sign** 315-18 **Grant Date**
(or other identifier)
Term Dates
From: 4-18-18 **To:** 10-15-18
Approved: [Signature]





File # SES-STA-20180207-00100
KA258
Call Sign KA258 Grant Date 3-15-18
(or other identifier)
From: 4-18-18 Term Dates To: 10-15-18
Approved: [Signature]

Applicant: Intelsat License LLC
Call Sign: KA258
File No.: SES-STA-20180207-00100
Special Temporary Authority (STA)

Intelsat License LLC is granted STA, for 180 days, to provide launch and early orbit phase (“LEOP”) services for the Netherlands licensed SES-12 satellite at the in-orbit testing location 81.5° E and permanent orbital location 95° E from Hagerstown, Maryland located at 39° 35’ 54.6” N, 077° 45’ 33.0” W. The services will be under the following conditions:

1. Intelsat will perform LEOP operations in the 13998 MHz, 13996.5 MHz, 13999.5 MHz, 14494.5 MHz, 144960 MHz, 14497.5 MHz, and 14499.0 MHz frequencies (CP) (Earth-to-space) and in the 11499.5 MHz and 11703.5 MHz frequencies (CP) (space-to-Earth) with the coordinated emission carrier 800KF7D, eirp, and eirp density levels.
2. Operations in the 13.75-14.00 GHz shall be comply with Footnote US356.
- 3.. Operations in the frequency range 14.47 to 14.5 GHz, should be coordinated with the National Science Foundation, Dr. Glen Langston, 703-292-4937, or glangston@nsf.gov
- 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 transmission(s) immediately upon notice of such interference.
- 5.. In the event of any harmful interference under this grant of STA, Intelsat License LLC KA258 must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.
- 6.. 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 the SES-12 satellite LEOP mission is as follows: Ph.: (703) 559-7701 at East Coast Operations Center (primary), (310) 525-5591 - West Coast Operations Center (back-up). Request to speak with Harry Burnham or Kevin Bell.
- 7.. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC applications.
- 8.. 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.

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:		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 54.6 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: Exhibit B
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 April 18, 2018, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide launch and early orbit phase services for the SES-12 satellite. SES-12 is expected to be launched on April 18, 2018. Intelsat expects the LEOP period to	
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 Susan H. Crandall	15. Title of Person Signing Assoc. 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).	

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12. Description

Intelsat License LLC herein requests a grant of Special Temporary Authority for 180 days, commencing April 18, 2018, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide launch and early orbit phase services for the SES-12 satellite. SES-12 is expected to be launched on April 18, 2018. Intelsat expects the LEOP period to last approximately 180 days.



INTELSAT

Envision. Connect. Transform.

February 7, 2018

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 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 180 days, commencing April 18, 2018, to use its Hagerstown, Maryland Ku-band earth station—call sign KA258—to provide launch and early orbit phase (“LEOP”) services for the SES-12 satellite. SES-12 is expected to be launched on April 18, 2018.² Intelsat expects the LEOP period to last approximately 180 days.³

The SES-12 LEOP operations will be performed at the following frequencies: 13998.0 MHz, 13996.5 MHz, 13999.5 MHz, 14494.5 MHz, 14496.0 MHz, 14497.5 MHz, and 14499.0 MHz (CP) in the uplink; and 11499.5 MHz and 11703.5 MHz (CP) in the downlink. The LEOP operations will be coordinated with all operators of satellites that use the same frequency bands and are in the LEOP path.⁴ 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 SES-12 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.

In further support of this request, Intelsat herewith attaches Exhibits A and B, which contain a coordination report and waiver requests. In the extremely unlikely event that harmful interference

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

² The in-orbit testing location for SES-12, which Intelsat understands is licensed by the Netherlands, will be 81.5° E.L. The final location of SES-12 will be 95.0° E.L.

³ Intelsat is seeking authority for 180 days to accommodate the longer orbit-raising time period required for an electric propulsion satellite.

⁴ Airbus, the manager of the SES-12 LEOP mission, will handle the coordination.

Ms. Marlene H. Dortch
February 7, 2018
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should occur due to transmissions to or from its earth station, Intelsat will take all reasonable steps to eliminate the interference.

Finally, Intelsat clarifies that during the SES-12 LEOP mission, Airbus will serve as the mission manager. Airbus will build and send the commands to the Intelsat antenna, which will process and execute the commands. Telemetry received by Intelsat will be forwarded to Airbus. Intelsat will perform the ranging sessions by sending a tone to the spacecraft periodically. Intelsat will remain in control of the baseband unit, RF equipment, and antenna.

Grant of this STA request will allow Intelsat to help launch the SES-12 satellite. This, in turn, will help provide additional capacity from the 95.0° E.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,

/s/ Susan H. Crandall
Susan H. Crandall
Associate General Counsel
Intelsat Corporation

cc: Paul Blais

Exhibit A

PETITION FOR WAIVER OF SECTIONS 25.137 AND 25.114

Pursuant to Section 25.137 of the Federal Communications Commission's ("Commission" or "FCC") rules, earth station applicants "requesting authority to communicate with a non-U.S. licensed space station" to serve the United States must demonstrate that U.S.-licensed satellite systems have effective competitive opportunities to provide analogue services in certain countries and must provide the same legal and technical information for the non-U.S.-licensed space station as required by Section 25.114 for U.S.-licensed space stations.¹ Intelsat License LLC ("Intelsat") herein seeks authority to provide launch and early orbit phase ("LEOP") services—not commercial services—to the United States, and thus believes that Section 25.137 does not apply.²

To the extent the Commission determines, however, that Intelsat's request for authority to provide LEOP services on a special temporary basis is a request to serve the United States with a non-U.S.-licensed satellite, Intelsat respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission's rules.³ 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.

In this case, good cause exists for a waiver of both Section 25.137 and Section 25.114 of the FCC's rules. With respect to Section 25.114, Intelsat seeks authority only to provide LEOP services for the SES-12 satellite. The information sought by Section 25.114 is not relevant to LEOP services. Moreover, Intelsat does not have—and would not easily be able to obtain—such information because Intelsat is not the operator of the SES-12 satellite, nor is Intelsat in contractual privity with that operator. Rather, an affiliate of Intelsat has a contract with Airbus, the manufacturer of the SES-12 satellite, to conduct LEOP services.

¹ 47 C.F.R. § 25.137.

² See *EchoStar Satellite Operating Company Application for Special Temporary Authority Related to Moving the EchoStar 6 Satellite from the 77° W.L. Orbital Location to the 96.2° W.L. Orbital Location, and to Operate at the 96.2° W.L. Orbital Location*, Order and Authorization, 28 FCC Rcd. 4229 (2013) (noting that operating TT&C earth stations in the United States with a foreign-licensed satellite does not constitute "DBS service").

³ 47 C.F.R. §§ 25.137 and 25.114.

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*, 419 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

The information required under Section 25.114 of the FCC's rules is not necessary to determine potential harmful interference. The Schedule S information for this satellite would pertain to the operation of the SES-12 satellite at its final orbital location. However, the present application for LEOP services involves communications *prior* to the satellite attaining its final location in the geostationary orbit. In other words, during the LEOP mission, the earth station will not be communicating with a satellite located in the geostationary orbit. Rather, it will be transmitting to a satellite traveling on its "transfer orbit" or "LEOP path," which starts immediately following its separation from a launch vehicle, and ends when the satellite reaches its geostationary orbital location. Moreover, as with any STA, Intelsat will perform the LEOP services on a non-interference basis.

Because it is not relevant to the service for which Intelsat seeks authorization, and because obtaining the information would be a hardship, Intelsat seeks a waiver of all the information required by Section 25.114 of the Commission's rules. Intelsat has provided in this STA request the required technical information that is relevant to the LEOP services for which Intelsat seeks authorization.

Good cause also exists to waive Section 25.137 of the agency's rules. Section 25.137 is designed to ensure that "U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services" in other countries.⁷ Here, there is no service being provided by the satellite; it is simply being placed in its orbital location after separating from the launch vehicle. Thus, the purpose of Section 25.137 would not be served by applying these rules to LEOP services. For example, Section 25.137(d)(4) requires earth station applicants requesting authority to operate with a non-U.S.-licensed space station that is not in orbit and operating to post a bond.⁸ The underlying purpose of Section 25.137(d)(4)—to provide parity between U.S.-licensed and non-U.S.-licensed commercial satellite systems in discouraging orbital location warehousing—would not be served by requiring Intelsat to post a bond to provide approximately 180 days of LEOP services to the SES-12 satellite.

It is Intelsat's understanding that SES-12 is licensed by the Netherlands, which is a WTO-member country. Thus, the purpose of Section 25.137—to ensure that U.S. satellite operators enjoy "effective competitive opportunities" to serve certain foreign markets—will not be undermined by grant of this waiver request.

Finally, Intelsat notes that it expects to operate with the SES-12 satellite using its U.S. earth station for a period of approximately 180 days. Requiring Intelsat to obtain copious technical and legal information from an unrelated party, where there is no risk of harmful interference and the operations will cease after approximately 180 days, would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is plainly appropriate.

⁷ 47 C.F.R. § 25.137(a).

⁸ *See* 47 C.F.R. §25.137(d)(4).

**Intelsat License LLC
Hagerstown, Maryland**

TIW 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" W
Satellite Arc Range for Earth Station:	SES-12 at 6°W to 149°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	800KF7D
Modulation:	FM/BPSK/NRZ-L
Maximum Aggregate Uplink EIRP:	88dBW 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:	22.9 dBW or -0.1 dBW/4kHz
Minimum Elevation Angle:	5.29° @ 101.86° Azimuth 5.69° @ 257.78° 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: | 800 kHz |
| 3. PD at antenna input: | -0.1 dBW/4kHz |
| 4. Transmit Antenna Gain: | 65.1 dBi |
| 5. Antenna Gain to Horizon: | 10.9 dBi |
| 6. Antenna Elevation Angles: | 5.3° @ 101.9° azimuth
5.7° @ 257.8° 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 10.9 towards the nearest shoreline.

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

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW/m}^2\text{)} \\ &= -0.1\text{dBW/4kHz} + 10.9\text{dBi} - (10 \cdot \log[4 \cdot \pi \cdot [131\text{km}]^2]) \\ &= -102.5 \text{ dBW/m/4kHz} - \text{Additional Path Losses (69 dB)} \end{aligned}$$

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 $-171.5 \text{ dBW/m}^2/4 \text{ kHz}$. This is 4.5dB 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.