

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 Hagerstown, Maryland Earth Station KA258 for AMOS-6 LEOP Services

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		



GRANTED
International Bureau

File # SES-STA-20160715-00663
KA258
Call Sign KA258 Grant Date 8-5-16
(or other identifier)
Term Dates
From: 8-19-16 To: 9-18-16
Approved: [Signature]

Application: Intelsat License LLC
File No.: SES-STA-20160715-00663
Call Sign: KA258
Special Temporary Authority

Intelsat License LLC is granted a Special Temporary Authority ("STA"), under the following conditions, for 30 days, beginning August 19, 2016, to operate its Ku-band earth station, call sign KA258, in Hagerstown, Maryland, to provide launch and early orbit phase ("LEOP") services for the AMOS-6 satellite at permanent orbital location 4° W.L., licensed by Israel. The launch is expected to be on August 19, 2016.

1. Uplink (Earth-to-space) frequencies will be on 13750 MHz, 13914.0625 MHz, 14417.750 MHz and 14500 MHz (LC) within the coordinated emission, antenna size/ID 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 11198.50 MHz and 11698.80 MHz (LC).
3. 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 AMOS-6 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. All operations under this grant of STA shall be on an unprotected and non-harmful interference basis. Intelsat's, KA258, shall not cause harmful interference to or claim protection from any other lawfully operating radio communication system.
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. 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.
8. 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.



File # SES-STA-20160715-00663
Call Sign KA258 Grant Date 8-5-16
(or other identifier)
Term Dates
From: 8-19-16 To: 9-18-16
Approved: Paul E. Hines

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?			
☒ If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).			
☐ Governmental Entity ☐ Noncommercial educational licensee			
☐ Other (please explain):			
4b. Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station			
5. Type Request			
☐ Use Prior to Grant ☐ Change Station Location ☒ 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: KA258 AMOS-6 STA Attachment 2: 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, commencing August 19, 2016, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide launch and early orbit phase services for the AMOS-6 satellite. AMOS-6 is expected to be launched on August 19, 2016. 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"; for these purposes. Yes ☒ 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, commencing August 19, 2016, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide launch and early orbit phase services for the AMOS-6 satellite. AMOS-6 is expected to be launched on August 19, 2016. Intelsat expects the LEOP period to last approximately fifteen days.

July 15, 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 KA258

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests a grant of Special Temporary Authority (“STA”)¹ for 30 days, commencing August 19, 2016, to use its Hagerstown, Maryland Ku-band earth station—call sign KA258—to provide launch and early orbit phase (“LEOP”) services for the AMOS-6 satellite. AMOS-6 is expected to be launched on August 19, 2016.² Intelsat expects the LEOP period to last approximately fifteen days.³

The AMOS-6 LEOP operations will be performed in the following frequency bands: 13750.0 MHz, 13914.0625 MHz, 14417.750 MHz, and 14500.0 MHz in the uplink (CP), and 11198.5 MHz and 11698.8 MHz in the downlink (CP). 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 AMOS-6 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 hereby attaches Exhibits A, B, and C, which contain a 13.75 - 14.0 GHz analysis and waiver requests.

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 The permanent orbital location and in-orbit testing location for AMOS-6, which Intelsat understands is licensed by Israel, will be at 4° W.L.

³ Intelsat is seeking 30 days to accommodate a possible launch delay.

⁴ Israel Aerospace Industries, the manager of the AMOS-6 LEOP mission, will handle the coordination.

Ms. Marlene H. Dortch
July 15, 2016
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Finally, Intelsat clarifies that during the AMOS-6 LEOP mission, Israel Aerospace Industries will serve as the mission manager. Israel Aerospace Industries 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 Israel Aerospace Industries. 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 AMOS-6 satellite. This, in turn, will help provide broadband Internet services to Sub-Saharan Africa from the 4° 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,

/s/ Cynthia J. Grady

Cynthia J. Grady
Regulatory Counsel
Intelsat Corporation

cc: Paul Blais

**Intelsat Licences 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' 33.0" W
Satellite Location for Earth Station:	AMOS-6 at 149.9°W to 5.62°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	850KFXD
Modulation:	FM/BPSK
Maximum Aggregate Uplink EIRP:	88dBW for all Carriers
Transmit Antenna Characteristics	
Antenna Size:	14.2 Meters in Diameter
Antenna Type/Model:	TIW
Gain:	65.4 dBi
RF Power into Antenna Flange:	22.6 dBW or -0.7 dBW/4kHz
Minimum Elevation Angle:	5° @ 258.4° Azimuth 5° @ 101.6° 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 131 km southwest toward the Pacific Ocean. The calculation of the power spectral density at this distance is given by:

- | | |
|------------------------------|--|
| 1. Clear Sky EIRP: | 88 dBW |
| 2. Carrier Bandwidth: | 850 kHz |
| 3. PD at antenna input: | -0.7 dBW/4kHz |
| 4. Transmit Antenna Gain: | 65.4 dBi |
| 5. Antenna Gain to Horizon: | 11.5 dBi |
| 6. Antenna Elevation Angles: | 5° @ 258.4° azimuth
5° @ 101.6° 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 11.5 towards the Pacific Ocean.

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

$$\begin{aligned}\text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW/m}^2\text{)} \\ &= -0.7\text{dBW/4kHz} + 11.5\text{dBi} - 10*\log[4*(131\text{km})^2] \\ &= -102.5 \text{ dBW/m/4kHz} - \text{Additional Path Losses (69 dB)}\end{aligned}$$

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 131 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.

Exhibit B

Request for Waiver of Footnote NG52 of Section 25.202(a)(1) of the U.S. Table of Allocations

To the extent necessary, Intelsat 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.”¹ Intelsat seeks waiver to permit the Hagerstown, Maryland earth station KA258 to communicate with the AMOS-6 satellite during its launch and early orbit phase (“LEOP”) mission.

The Commission may grant a waiver for good cause shown.² The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.³ 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.⁴ 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 KA258 to provide telemetry, tracking, and control (“TT&C”) services to the AMOS-6 satellite using frequencies in the 10700-11700 MHz band.

Good cause exists to waive the international only requirements for the 10700-11700 MHz frequency band. 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.⁵ The requested 10700-11700 MHz frequency band is used only for downlink and therefore will not cause harmful interference to, and will not need to coordinate with, fixed service stations.

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.”⁶ The International Bureau has found that

¹ See 47 C.F.R. § 2.106 fn. NG52.

² 47 C.F.R. §1.3.

³ *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) (“*Northeast Cellular*”).

⁴ *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

⁵ 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*”).

⁶ 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).

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.⁷ KA258 will not transmit in the 10700-11700 MHz frequency band and Intelsat agrees to accept any level of interference into those earth stations from fixed service stations in the band. Accordingly, the KA258 providing LEOP services in the 10700-11700 MHz band poses no interference concerns with respect to co-frequency fixed service stations.

Given these particular facts, the waiver sought herein is plainly appropriate.

⁷ EchoStar 83° Waiver, ¶ 13.

Exhibit C

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 operate with a non-U.S. licensed space station *to serve the United States*" must demonstrate that effective competitive opportunities exist and must provide the same technical information 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. With respect to Section 25.114, Intelsat seeks authority only to provide LEOP services for the AMOS-6 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 AMOS-6 satellite, nor is Intelsat in contractual privity with that operator. Rather, an affiliate of Intelsat has a contract with Israel Aerospace Industries, the manufacturer of the AMOS-6 satellite, to conduct LEOP services for the satellite.

¹ 47 C.F.R. § 25.137 (emphasis added).

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*, DA 13-593, File No. SAT-STA-20130220-00023 (released Apr. 1, 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*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

The information that Intelsat is not including is not required to determine potential harmful interference. The Schedule S information for this satellite would pertain to the operation of the AMOS-6 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. 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. Section 25.137 is designed to ensure that “U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services” in other countries. 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 the information required by Section 25.137 is not implicated here. For example, Section 25.137(d) 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.⁷ The underlying purpose in having to post a bond—*i.e.*, to prevent warehousing of orbital locations by operators seeking to serve the United States—would not be served by requiring Intelsat to post a bond in order to provide approximately ten days of LEOP services to the AMOS-6 satellite.

It is Intelsat’s understanding that AMOS-6 is licensed by Israel, which is a WTO-member country. Thus, the purposes of Section 25.137—to ensure that U.S. satellite operators enjoy “effective competitive opportunities” to serve foreign markets and to prevent warehousing of orbital locations serving the United States—will not be undermined by grant of this waiver request.

⁷ See 47 C.F.R. §25.137(d)(4).