**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

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| In the Matter of Application by | ) | |
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| SES AMERICOM, INC. | ) | Call Sign E050287 |
| | ) | |
| To Modify its Earth Station License to Perform TT&C for ASTRA 3A | ) | |

**REQUEST FOR MODIFICATION**

By this application, SES Americom, Inc. ("SES Americom" or "SES") respectfully seeks to modify its license for earth station E050287 to allow it to communicate with the ASTRA 3A spacecraft in order to provide Tracking, Telemetry and Command ("TT&C") during and after relocation of the satellite from 47º W.L. to 86.8° W.L. (+/- 0.10° east/west stationkeeping).[1] SES previously received authority for E050287 to provide TT&C for ASTRA 3A during prior operations of the satellite at the nearby 86.85° W.L. orbital location using the same parameters described in this application.[2] The satellite was later relocated to 47° W.L. but is now returning to 86.8° W.L. The satellite commenced its drift on October 24, 2019, and is expected to arrive at 86.8° W.L. on or about December 6, 2019.

SES Americom's affiliate, SES ASTRA S.A. ("SES ASTRA"), holds an authorization from the Luxembourg Ministry of State, Office of Media and Communications[3] for

[1] SES is concurrently filing a request for Special Temporary Authority to permit the earth station to begin TT&C operations pending action on this modification.

[2] SES Americom, Inc., File No. SES-MFS-20160624-00607, granted Aug. 23, 2016 ("Prior ASTRA 3A Grant").

[3] Ministère d'État, Service des Médias et des Communications of the Grand Duchy of Luxembourg.

the ASTRA 3A Ku-band spacecraft. SES ASTRA has requested that SES Americom assist with providing TT&C to support the relocation of ASTRA 3A to 86.8º W.L. Upon arrival at the nominal 87º W.L. orbital location, ASTRA 3A will join the SES-2 and NSS-6 satellites and will operate in inclined orbit.[4]

SES is not requesting U.S. market access or any other authorization from the Commission in relation to the non-U.S.-licensed ASTRA 3A spacecraft, and therefore is not providing full technical information about the ASTRA 3A satellite as part of this application.[5] Details regarding the ASTRA 3A TT&C operations are provided in Attachment 1 to this request. SES has previously filed a basic technical description of the satellite's proposed operations and an updated orbital debris mitigation statement for ASTRA 3A at 86.8º W.L.[6] As discussed below, communications with ASTRA 3A will not adversely affect the operation of any adjacent satellites.

***Grant of this Modification Request Will Serve the Public Interest.*** Grant of this request is in the public interest. The requested TT&C authority will facilitate the safe operation of ASTRA 3A during and after its relocation to 86.8° W.L.

***No Harmful Interference to Other Spacecraft.*** During the drift of ASTRA 3A, all TT&C transmissions will be on a non-harmful interference basis and will comply with the

[4] SES's affiliate, New Skies Satellites B.V. is currently operating the NSS-6 satellite at 86.8° W.L. on a temporary basis, and SES anticipates that NSS-6 and ASTRA-3A will be collocated for an interim period before NSS-6 is relocated.

[5] *See* Waiver Requests, *infra*.

[6] SES Americom, Inc., Call Sign E170089, File No. SES-MFS-20191002-01233. *See also* Letter of Karis A. Hastings, Counsel to SES Americom, Inc., Call Sign E170089, File No. SES-MFS-20191002-01233 & SES-STA-20191002-01255, dated Oct. 15, 2019.

technical specifications in the existing earth station license. The drift has been coordinated with other satellite operators consistent with industry practice.[7]

Apart from SES-2 and NSS-6, both of which are operated by SES affiliates, the nearest satellites to 86.8° W.L. with Ku-band operations are Intelsat's Galaxy 28 at 89.0° W.L. and the Ku-band payload of AMC-16 at 85.0° W.L., which is licensed to EchoStar and operated by SES. SES certifies in Attachment 1 that the satellite will comply with the Commission's two-degree spacing requirements with respect to Galaxy 28. While AMC-16 is less than two degrees from the proposed operations, SES provides the TT&C operations for both ASTRA 3A and AMC-16 and will ensure they are operated safely.

***Waiver Requests.*** SES requests limited waivers of the Commission's requirements in connection with the instant request. Grant of these waivers is consistent with Commission policy:

> The Commission may waive a rule for good cause shown. Waiver is appropriate if special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule. Generally, the Commission may grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[8]

Sections 25.137 and 25.114. SES requests a waiver of Section 25.137 and the other Commission rules cross-referenced therein. SES seeks a modification of its authority in connection with TT&C for ASTRA 3A, a foreign-licensed spacecraft. Section 25.137 requires that applicants proposing to use U.S.-licensed earth stations to communicate with foreign-

[7] The 24/7 point of contact during the drift of ASTRA 3A is the SES Satellite Control Center in Betzdorf, Luxembourg, +352 710 725 212; e-mail: soc@ses.com.

[8] *PanAmSat Licensee Corp*., 17 FCC Rcd 10483, 10492 (Sat. Div. 2002) (footnotes omitted).

licensed spacecraft demonstrate that the Commission's policies for U.S. market access are satisfied. Section 25.137 also incorporates by reference other requirements for Commission-licensed space stations, including the obligation to file detailed technical information as specified in Section 25.114.

By its terms, Section 25.137 is inapplicable to the instant request. The rule's requirements come into play only when a non-U.S.-licensed satellite is to be used to "serve the United States."[9] Here, the E050287 earth station will be used solely for TT&C, not for commercial operations. Thus, SES is not seeking authority to communicate with ASTRA 3A for purposes of providing U.S. service within the meaning of Section 25.137.

To the extent the Commission disagrees, SES requests a waiver of the market access and other requirements imposed in Section 25.137. Grant of a waiver will not undermine the objectives of these requirements. The market access test described in the rule is intended to ensure that U.S.-licensed systems have "effective competitive opportunities."[10] Because SES Americom is not seeking authority to provide commercial services in the United States, the requested modification does not raise any concerns about competitive equality.[11]

Strict adherence with Section 25.114's requirements for detailed technical information is also unnecessary and would be unduly burdensome. SES Americom is proposing to use E050287 only for the limited purpose of performing TT&C for the satellite during and after its relocation to 86.8° W.L., and the relevant technical characteristics of those transmissions

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[9] 47 C.F.R. § 25.137(a).

[10] *Id.*

[11] In any event, the ASTRA 3A spacecraft at 86.8° W.L. will be operating under the authority of Luxembourg, a WTO member country, and therefore is exempt from the requirement to make a showing of effective competitive opportunities. 47 C.F.R. § 25.137(a)(2).

are provided below. The transmissions to the spacecraft will be conducted on a non-harmful interference basis. In these circumstances, no valid purpose would be served by requiring a complete description of the ASTRA 3A spacecraft.

SES Americom's request is consistent with Commission precedent. In similar cases in which limited communications by U.S. earth stations with a foreign-licensed satellite were proposed, the Commission has granted operational authority without requiring a market access showing under Section 25.137 or full technical data as required by Section 25.114.[12] The Commission has also specifically authorized this earth station to provide TT&C for ASTRA 3A while it operated at 86.85° W.L. in 2016.[13]

Section 2.106 Footnote NG52. To the extent that reception of telemetry at 11450.25 MHz and 11699.50 MHz constitutes a domestic (*i.e.*, non-international) service, SES Americom respectfully requests a limited waiver of the international-service-only restriction.[14] Such a waiver is warranted in the circumstances for the limited purpose of TT&C. As the Commission has recognized, TT&C operations generally require uplink and downlink capability from the same earth station. For this reason, the Commission has previously granted waivers of

[12] *See, e.g.,* SES Americom, Inc., File No. SES-MFS-20131108-00951 (Call Sign KA288), granted Mar. 19, 2014; Hawaii Pacific Teleport, L.P., File No. SES-MFS-20131030-00913 (Call Sign E030115), granted Apr. 16, 2014 (granting authority for earth station to provide TT&C services to ASTRA 3A operating at 176.85° W.L).; PanAmSat Licensee Corp., File Nos. SES-STA-20090922-01211 (Call Sign E4132) & SES-STA-20090922-01212 (Call Sign E040125), both grant-stamped Oct. 16, 2009 (granting authority for earth stations to communicate with foreign-licensed NSS-12 spacecraft for purposes of providing launch and early operations services).

[13] *See* Prior ASTRA 3A Grant.

[14] 47 U.S.C. § 2.106 Footnote NG52.

the international service restriction to enable TT&C to be performed in the U.S. using the extended Ku-band frequencies.[15]

Grant of the requested waiver would not undermine the purpose of the restriction, which is to ensure that earth station deployments in the extended Ku-band do not negatively impact the deployment of fixed service ("FS") in the same band or cause interference to such operations. The telemetry downlink signals from ASTRA 3A in the extended Ku-band are narrow in bandwidth, and will comply with the power flux density limits in the Commission's rules and, thus, will not interfere with FS station operations. Moreover, only two U.S. earth stations will be used to perform TT&C in the extended Ku-band.[16] SES will provide TT&C using call sign E050287 and E170089.[17] As a result, there will be no significant restrictions placed on the deployment of FS in this band.

Section 25.210(j). The ASTRA 3A satellite is authorized by the Luxembourg Government to operate at 86.8° W.L. within a +/- 0.10° east/west stationkeeping box. To the extent necessary, SES respectfully requests a waiver of Section 25.210(j) of the Commission's rules, which requires geostationary space stations to be operated within a +/- 0.05° east/west stationkeeping box. The Commission has previously waived this rule based on a finding that

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[15] *See*, *e.g.*, EchoStar KuX Corporation, 20 FCC Rcd 919 (Int'l Bur. 2004) ("*EchoStar 83W Order*"); EchoStar Satellite LLC, 20 FCC Rcd 930 (Int'l Bur. 2004) ("*EchoStar109W Order*"); EchoStar KuX Corporation, 20 FCC Rcd 942 (2004) ("*EchoStar 121W Order*"). These decisions granted waivers of the international only restriction in Footnote NG104, which has been replaced by Footnote NG52.

[16] *See EchoStar 83W Order*, at ¶ 16 ("The Commission has waived this [international only] requirement where the number of potential earth stations in a particular service is inherently small."); *EchoStar 109W Order*, at ¶ 16 (same); *EchoStar 121W Order*, at ¶ 17 (same).

[17] *See* SES Americom, Inc., Call Sign E170089, File No. SES-STA-20191002-01255, granted Oct. 30, 2019; SES Americom, Inc., Call Sign E170089, File No. SES-MFS-20191002-01233, filed Oct. 2, 2019.

allowing an increased stationkeeping volume would "not adversely affect the operations of other spacecraft, and would conserve fuel for future operations." [18]

The facts here fit squarely within this precedent. Allowing ASTRA 3A to be maintained within an increased stationkeeping volume will not harm other operators. The only satellite with which ASTRA 3A's stationkeeping volume will overlap is the NSS-6 spacecraft operated by SES. In addition, allowing ASTRA 3A to be flown at 86.8° W.L. in an expanded east-west stationkeeping volume of +/-0.1 degrees will result in fuel savings for the spacecraft. This will prolong the time during which ASTRA 3A will be available to provide service. Under these circumstances, grant of any necessary waiver of Section 25.210(j) will serve the public interest.

For the foregoing reasons, SES respectfully seeks to modify its E050287 earth station license to permit it to communicate with ASTRA 3A in order to provide TT&C while the satellite drifts and once it is on station, as described herein. Grant of the requested authority will promote safe operation of the satellite during and after its relocation.

Respectfully submitted,

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By: *<u>/s/ Petra Vorwig</u>*


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[18] *See* File Nos. SAT-MOD-20080124-00030 & SAT-AMD-20080311-00070, grant-stamped May 19, 2008, Attachment at ¶ 1.

## Attachment 1: TT&C Emission Characteristics

### 1. Earth Station Transmission Characteristics

E050287 (Woodbine, MD)
Emission Designator: 800KF9D
Max EIRP: 78.5 dBW
Max EIRP Density: 55.5 dBW/4kHz

These EIRP and EIRP density levels are the maximum EIRP and EIRP density levels authorized in the current E050287 earth station license.

### 2. TT&C Frequencies

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| Telecommand: | 14499 MHz vertical polarization |
| Telemetry: | 11450.25 MHz horizontal polarization |
| | 11699.50 MHz horizontal polarization |

### 3. Part 25.140 Certification

With respect to proposed operation in the conventional or extended Ku-bands, SES certifies that the downlink EIRP density will not exceed 14 dBW/4kHz for digital transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in §25.218, §25.222(a)(1), §25.226(a)(1), or §25.227(a)(1) unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station.

Operations with the AMC-16 satellite, which operates in the Ku-band and is located less than two degrees from the proposed ASTRA 3A orbital location, will be coordinated internally within SES.

### 4. Compliance with PFD limits in 11.45-11.7 GHz

The allowable PFD levels in the 11.45-11.70 GHz bands (per 4 kHz) are defined in Section 25.208(b)(1) of the Commission's rules for all conditions, including clear sky, and for all methods of modulation as follows:

1. For angles of arrival between 0 and 5 degrees above the horizontal plane: -150 dBW/$m^2$ in any 4 kHz band;
2. For angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane: -150 + (δ-5)/2 dBW/$m^2$ in any 4 kHz band; and
3. For angles of arrival between 25 and 90 degrees above the horizontal plane: -140 dBW/$m^2$ in any 4 kHz band.

In order to demonstrate such compliance, the PFD levels for the telemetry carriers are calculated below. It can be seen from the results that compliance with the PFD levels has been achieved.

| PFD level compliance calculation | | | | | |
|---|---|---|---|---|---|
| Angle of Arrival | Applicable PDF limit | Spreading Loss | Gain Contour | Worst case PFD | PFD Margin |
| 0 | -150.0 | -163.4 | -0.2 | -172.0 | 22.0 |
| 5 | -150.0 | -163.3 | -0.1 | -171.8 | 21.8 |
| 10 | -147.5 | -163.2 | -0.1 | -171.7 | 24.2 |
| 15 | -145.0 | -163.0 | 0.0 | -171.4 | 26.4 |
| 20 | -142.5 | -162.9 | 0.0 | -171.3 | 28.8 |
| 25 | -140.0 | -162.8 | 0.0 | -171.2 | 31.2 |
| Peak (90) | -140.0 | -162.1 | 0.0 | -170.5 | 30.5 |

## 5. TT&C Contour Maps

SES Americom is not including antenna gain contours for the TT&C beams because the contours at 8 dB below peak fall entirely beyond the edge of the visible Earth.[1]

[1] *See* 47 C.F.R. 25.114(c)(4)(vi)(A).