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

In the Matter of Application by	)	
	)	
SES AMERICOM, INC.	)	Call Sign E170089
	)	
To Modify its Earth Station License to Perform TT&C for ASTRA 3A at 86.8º W.L.	)	

REQUEST FOR MODIFICATION

By this application, SES Americom, Inc. ("SES Americom" or "SES") respectfully seeks to modify its license for earth station E170089 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] The satellite is expected to commence its drift on or about October 23, 2019, and arrive at 86.8° W.L. on or about December 5, 2019.[2]

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 the ASTRA 3A Ku-band spacecraft. SES ASTRA has requested that SES Americom assist with providing TT&C to support the planned relocation of ASTRA 3A to 86.8º W.L. Upon arrival at

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[1] SES previously received authority to modify its earth station antenna operating under call sign E050287 to provide TT&C for ASTRA 3A during prior operations at 86.85° W.L. using the same parameters described in this application. *SES Americom, Inc*., File No. SES-MFS-20160624-00607, granted Aug. 23, 2016 ("Prior Astra 3A Grant"). The satellite was relocated to 47° W.L. in January 2017 and will now return to the nominal 87° W.L. orbital location.

[2] SES is concurrently filing a request for Special Temporary Authority to permit the drift to begin pending action on this modification.

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

the nominal 87º W.L. orbital location, ASTRA 3A will join the SES-2 spacecraft 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. A basic technical description of the satellite's proposed operations, and an updated orbital debris mitigation statement for ASTRA 3A, are provided in Attachment 2 for the Commission's information. As discussed below, communications with ASTRA 3A will not adversely affect the operation of any adjacent satellites or other authorized spectrum users.

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 technical specifications in the existing earth station license. The drift will be coordinated with other satellite operators consistent with industry practice.[6]

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[4] Another SES affiliate, New Skies Satellites B.V., is currently operating the NSS-6 satellite at 86.8° W.L. on a temporary basis. SES expects the satellite to be relocated prior to ASTRA 3A's arrival.

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

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

Apart from SES-2, 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 modification. 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.[7]

Sections 25.137 and 25.114. SES requests any necessary 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-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.

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

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."[8] Here, the E170089 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."[9] Because SES is not seeking authority to provide commercial services in the United States, the requested modification does not raise any concerns about competitive equality.[10]

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 E170089 only for the limited purpose of performing TT&C to support the ASTRA 3A drift and once the satellite arrives at 86.8° W.L., and the relevant technical characteristics of those transmissions 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.

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[8] 47 C.F.R. § 25.137(a).

[9] *Id.*

[10] 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).

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.[11] The Commission has specifically authorized another SES earth station to provide TT&C for ASTRA 3A while it operated near 86.8° W.L. in 2016.[12]

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 respectfully requests a limited waiver of the international-service-only restriction.[13] Such a waiver is warranted in the circumstances for the limited purpose of providing 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 the international service restriction to enable TT&C to be performed in the U.S. using the extended Ku-band frequencies.[14]

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[11] *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 the foreign-licensed NSS-12 spacecraft for purposes of providing launch and early operations services).

[12] *See Prior Astra 3A Grant*.

[13] 47 U.S.C. § 2.106 Footnote NG52.

[14] *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

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") facilities 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 one U.S. earth station will be used to perform TT&C in the extended Ku-band.[15] Once ASTRA 3A is on-station at 86.8° W.L., call sign E170089 will be the only U.S. earth station to provide TT&C for the satellite. 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 allowing an increased stationkeeping volume would "not adversely affect the operations of other spacecraft, and would conserve fuel for future operations."[16]

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decisions granted waivers of the international only restriction in Footnote NG104, which has been replaced by Footnote NG52.

[15] *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).

[16] SES Americom, Inc., File Nos. SAT-MOD-20080124-00030 & SAT-AMD-20080311-00070, grant-stamped May 19, 2008, Attachment at ¶ 1.

The facts here fit squarely within this precedent. Allowing ASTRA 3A to be maintained within an increased stationkeeping volume will not harm other operators. ASTRA 3A's stationkeeping volume will not overlap with that of any other satellites. In addition, allowing ASTRA 3A to be flown at 86.8° W.L. in an expanded east-west stationkeeping volume of +/-0.10 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.

SES hereby certifies that no party to this application is subject to a denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862.

For the foregoing reasons, SES respectfully seeks to modify its E170089 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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Attachment 1: TT&C Emission Characteristics

1. Earth Station Transmission Characteristics

E170089 (Woodbine, MD)
Emission Designator: 800KF9D
Max EIRP: 75 dBW
Max EIRP Density: 46 dBW/4kHz

These EIRP and EIRP density levels are the maximum EIRP and EIRP density levels authorized in the current E170089 earth station license.

2. TT&C Frequencies

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: $-150 + (\delta-5)/2$ 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).

Attachment 2: Updated Orbital Debris Mitigation Statement

Information regarding the orbital debris mitigation plan for ASTRA 3A was previously submitted to the Commission in File No. SES-STA-20130722-00653, Attachment 3 and updates were provided in connection with the *Prior ASTRA 3A Grant*. The only changes to the plan are described below.

Safe Flight Profiles

ASTRA 3A will be positioned at 86.8° W.L. ±0.10 degrees, adjacent to the SES-2 spacecraft at the 87.0° W.L. orbital location. In considering current and planned satellites that may have a station-keeping volume that overlaps the ASTRA 3A satellite, SES has reviewed the FCC databases for FCC licensed satellite networks and those that are currently under consideration by the FCC. In addition, networks for which a request for coordination has been published by the ITU within ±0.15 degrees of 86.8° W.L. have also been reviewed. Only those networks that either operate, or are planned to operate, and have an overlapping station-keeping volume with the ASTRA 3A satellite, have been taken into account in the analysis.

Based on these reviews, the only satellite operating near 86.8° W.L. is SES-2, which is controlled and operated by SES.[1] SES is not aware of any pending applications before the Commission requesting authorization to use an orbital location within ±0.15° of 86.8° W.L., and within this sub-arc, SES is not aware of any proposals by any other administration to launch or deploy a satellite to such locations in the near term.

Based on the preceding, it is concluded that physical coordination of the ASTRA 3A satellite with another party is not required at the present time.

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[1] SES's affiliate, New Skies Satellites B.V., is currently operating the NSS-6 satellite at 86.8° W.L. on a temporary basis. SES expects the satellite to be relocated prior to ASTRA 3A's arrival.

On-station station-keeping operations will be within the +/- 0.10 degree E-W control box with no inclination control, thereby ensuring adequate collision avoidance distance from other satellites in geosynchronous orbit.

Post-Mission Disposal

SES previously reported that it will re-orbit the ASTRA 3A satellite to a minimum disposal orbit perigee altitude of 259.4 km above GSO (35,786 km). This plan remains unchanged by the relocation of ASTRA 3A to the nominal 87° W.L. orbital location. Based on recent propellant gauging that has increased SES's certainty in the amount of fuel needed to reorbit the satellite, SES intends to reserve 5.6 kg of propellant rather than the previously reported 6.5 kg in order to account for post-mission disposal of ASTRA 3A. SES has assessed fuel-gauging uncertainty and has provided an adequate margin of fuel reserve to address the assessed uncertainty.