# APPLICATION FOR NEW EARTH STATION LICENSE

SES Americom, Inc. ("SES Americom") hereby applies for a license for a new 11.1 meter GD Satcom antenna at its existing Bristow, Virginia, teleport facility. SES requests authority to operate the antenna in the conventional Ku-band (11.7-12.2 GHz downlink; 14.0-14.5 GHz uplink) and extended Ku-band (10.95-11.2 GHz and 11.45-11.7 GHz downlink; 13.75-14.0 GHz uplink). Specifically, SES Americom is requesting authority for its new earth station to communicate with: (1) all present and future satellites on the Permitted Space Station List using the conventional Ku-band; and (2) the NSS-7, SES-4, NSS-806, NSS-703, AMC-4 and AMC-6 satellites in the extended Ku-band frequencies.

Grant of this request for a new earth station license would serve the public interest by providing SES with an additional antenna at its existing teleport facility that can be flexibly deployed to perform TT&C and communicate with its FCC-authorized fleet of Ku-band satellites in both conventional and extended Ku-band frequencies.

***Request for Conventional Ku-band Authority.*** SES Americom seeks authority to operate the new earth station in the conventional Ku-bands (11.7-12.2 GHz downlink; 14.0-14.5 GHz uplink) with all present and future satellites on the Commission's Permitted Space Station List. The technical parameters of the new earth station are consistent with the Commission's rules applicable to the conventional Ku-band frequencies.

***Request for Extended Ku-band Authority.*** SES Americom requests authority to operate in the extended Ku-band frequencies (10.95-11.2 GHz and 11.45-11.7 GHz downlink; 13.75-14.0 GHz uplink) with the NSS-7, SES-4, NSS-806, NSS-703, AMC-4 and AMC-6 satellites. All of these satellites are either licensed to operate, or have been granted U.S. market access, on the extended Ku-band frequencies.

Use of the extended Ku-band downlink frequencies has been coordinated with co-primary terrestrial services. In addition, the earth station will be operated consistent with the Commission's rules applicable to the extended Ku-band frequencies, except in the limited respect discussed below.

***Request for Limited Waiver of International Service Restriction.*** SES Americom acknowledges that use of the extended Ku-band frequencies in the United States is limited to international service only.[1] SES Americom will abide by this restriction. However, to the extent that use of this band to perform TT&C constitutes a domestic (*i.e.* non-international) service, SES Americom respectfully requests a limited waiver of the international-service-only restriction. This will facilitate use of this new earth station to perform TT&C with the NSS-7 and SES-4 satellites, for example, which have telemetry frequencies in the extended Ku-band frequencies.

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[1] 47 C.F.R. §§ 2.106 NG104, 25.202(a) Note 2.

Such a waiver is warranted in the circumstances. 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, including for two other earth stations located at SES Americom's Bristow teleport.[2]

Grant of the requested waiver would also not undermine the purpose of the rule, 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 from satellites authorized by the Commission to operate in the extended Ku-band will comply with the power flux density limits in the Commission's rules and, thus, will not interfere with FS station operations. Moreover, only a small number of U.S. earth stations will be used to perform TT&C in the extended Ku-band. As a result, there will be no significant restrictions placed on the deployment of FS in the same band.[3]

SES Americom acknowledges that the Commission has previously granted a waiver of the international-only restriciton for E020071 and E110104 to receive the extended Ku-band telemetry frequencies NSS-7 and SES-4. In those grants, the Commission limited the number of earth stations allowed to receive telemetry from those satellites to just those two earth stations. SES Americom requests that the number of earth stations be extended to include an additional earth station that is located in the same teleport facility as E020071 and E110104. The addition of one more such antenna at the same facility will increase TT&C redundancy for SES's fleet without placing additional restrictions on the deployment of FS in the extended Ku-band. As a result, the purposes of the international-only restriction will not be undermined.

***Request for Waiver of Section 25.115(h) for Telecommand Carriers in the Conventional and Extended Ku-band.*** SES Americom seeks authority to operate one megahertz wide, FM-modulated telecommand carriers in the extended and conventional Ku-band frequencies.[4] Such transmissions will comply with the applicable off-axis EIRP envelopes for analog Ku- and extended Ku-band carriers in Section 25.218.[5] This is mathematically assured because (i) the antenna is known to comply with the applicable antenna sidelobe performance standards in Section 25.209,[6] and (ii) the maximum input

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[2] *See* File Nos. SES-MFS-20110715-00822 (granted Mar. 27, 2012), SES-MFS-20120525-00476 (granted Sept. 6, 2012). *See also 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).

[3] *See EchoStar 83W Order*, at ¶ 16 ("The Commission has waived this requirement [i.e. NG104] 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).

[4] Consistent with Section 25.202(g) of the Commission's rules, these telecommand transmissions will be made, if at all, only at the edge of the conventional or extended Ku-band, unless the satellite with which the earth station is communicating has been granted a waiver of Section 25.202(g).

[5] 47 C.F.R. § 25.218(e) and (g).

[6] 47 C.F.R. § 25.209.

power density for these telecommand transmissions will be no greater than -8 dBW/4 kHz.[7]

Accordingly, SES Americom respectfully requests a waiver of the requirement in Section 25.115(h) to provide the three tables of off-axis EIRP levels in each of the geostationary and elevation planes, as well as the EIRP levels towards the horizon.[8] A waiver is warranted in this case because the purpose of rule would not be undermined by the omission of such tables. The purpose of Section 25.115(h) is to ensure compliance with the applicable off-axis EIRP envelopes in Section 25.218(e) and (g). Here, compliance is assured for the reasons given above.

***Request for Waiver of Section 25.115(h) for Extended Ku-band Digital Carriers.*** SES Americom also seeks authority to operate digital carriers in the extended Ku-band uplink frequencies (13.75-14.0 GHz). Such transmissions will comply with the applicable off-axis EIRP envelopes for digital carriers in the extended Ku-band in Section 25.218(h).[9] This is mathematically assured because (i) the antenna is known to comply with the applicable antenna sidelobe performance standards in Section 25.209(a),[10] and (ii) the maximum input power density for these transmissions will be no greater than -14 dBW/4 kHz.[11]

Accordingly, SES Americom respectfully requests a waiver of the requirement in Section 25.115(h) to provide the three tables of off-axis EIRP levels in each of the geostationary and elevation planes, as well as the EIRP levels towards the horizon.[12] A waiver is warranted in this case because the purpose of rule would not be undermined by the omission of such tables. The purpose of Section 25.115(h) is to ensure compliance with the applicable off-axis EIRP envelopes in Section 25.218(e). Here, compliance is assured for the reasons given above.

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[7] For example, for off-axis angles between 1.5° to 7° in the geostationary plane, the off-axis EIRP density limit of 21 – 25log$\theta$ dBW/4 kHz will always be met for a transmission where the input power density is limited to -8 dBW/4 kHz and the antenna sidelobe performance complies with the 29 – 25log$\theta$ dBi standard specified in Section 25.209(a) (*i.e.*, -8 + 29 – 25 log$\theta$ = 21 – 25 log$\theta$ dBW/4 kHz). This is true for all other off-axis angles and planes specified in Section 25.218(e) and (g) of the Commission's rules.

[8] 47 C.F.R. § 25.115(h).

[9] 47 C.F.R. § 25.218(h).

[10] 47 C.F.R. § 25.209(a).

[11] For example, for off-axis angles between 1.5° to 7° in the geostationary plane, the off-axis EIRP density limit of 15 – 25log$\theta$ dBW/4 kHz will always be met for a transmission where the input power density is limited to -14 dBW/4 kHz and the antenna sidelobe performance complies with the 29 – 25log$\theta$ dBi standard specified in Section 25.209(a) (*i.e.*, -14 + 29 – 25 log$\theta$ = 15 – 25 log$\theta$ dBW/4 kHz). This is true for all other off-axis angles and planes specified in Section 25.218(h) of the Commission's rules.

[12] 47 C.F.R. § 25.115(h).