APPLICATION FOR EXPERIMENTAL
SPECIAL TEMPORARY AUTHORITY

Raysat Antenna Systems, LLC ("RAS") hereby files this application for experimental special temporary authority ("STA") to operate up to ten (10) StealthRay terminals with the Intelsat Galaxy-16 satellite at 99ºW at higher power and wider bandwidth than previously authorized by the Federal Communications Commission ("FCC" or "Commission") (*see* File No. 0203-EX-PL-2008 and previous file numbers). RAS seeks to test this new operational mode and conduct limited market studies associated with use of the StealthRay antenna in the satellite news gathering ("SNG") context. No other technical aspect of previously authorized StealthRay operations will change. For the reasons set forth herein, expeditious grant of the limited authority requested herein will strongly serve the public interest.

I. BACKGROUND

RAS holds an experimental license to operate the StealthRay antenna with a number other satellites across the geostationary arc from 72ºW (AMC-6) to 129ºW (G-27) for the provision of service under government contract.[1] RAS also holds commercial earth station licenses that are in the process of being modified to include necessary authority to operate across the full range of satellites, including the Galaxy-16 satellite..[2] However, RAS does not intend to

[1] *See* Call Sign WE2XTX, File No. 0203-EX-PL-2008**.** RAS has also held several experimental STAs for government and non-government limited market study operations. Because no further technical changes to StealthRay operations are proposed (other than higher power and wider bandwidth), RAS hereby incorporates by reference the technical information that supported prior grants of experimental authority for StealthRay operations). To the extent the Commission believes that this prior or any other technical information is necessary for grant of the instant STA application, RAS respectfully requests an opportunity to supplement the record.

[2] *See* Call Signs E060101, E060447, E060448, E060449, E060450 and E060451. License modification applications to add the Galaxy-16 satellite to these call signs were recently dismissed for unrelated, minor technical inconsistencies and are being refiled contemporaneous with this experimental STA request.

modify the commercial licenses to include higher power transmissions with Galaxy-16 until this operational mode can be validated pursuant to the experimental authority requested herein.

RAS has a critical need to operate the StealthRay antenna with the Galaxy-16 satellite for ongoing development and validation of its Ku-band land mobile-satellite service operations. Specifically, RAS seeks to validate the use of higher data rate operations of the StealthRay antenna in the SNG context. Among other things, these limited operations will be tested to facilitate enhanced coverage of important news and public interest events, including remote coverage of Administration transition and upcoming Inauguration events. Although RAS's terminals have previously operated in a more limited SNG capacity, they have not done so with Galaxy-16 or at the higher throughput levels associated with the proposed operations.

Given the limited nature of the proposed operations, the public benefits of enhanced coverage of the upcoming historic events surrounding the new Administration and the non-interfering operations proposed herein, grant of the requested experimental STA would serve the public interest.

II. NEW POWER LEVEL AND EMISSION DESIGNATOR

RAS has developed a higher-power version of the StealthRay antenna that permits the use of higher power and wider bandwidth emissions, thereby enhancing throughput and link performance. This, in turn, results in higher data rates and more robust service. The use of wider bandwidth emissions allows the higher-power signal to remain within the off-axis EIRP spectral density limits mandated by RAS's existing experimental authorization and the FCC's two-degree spacing requirements.

RAS seeks to operate with a wider 3.9 megahertz emission (3M97G7W) rather than the previously authorized 512 kilohertz emission (512KG7W). In addition, RAS seeks to operate at

an input power of 8.0 kW ERP rather than the previously authorized 1.6 kW ERP. Accounting for transmission losses through the antenna, the maximum uplink EIRP per carrier is increased from 30.5 dBW (for the 512 kHz emission) to 41.2 dBW (for the new 3.9 MHz emission). However, given the wider bandwidth, the maximum off-axis EIRP spectral density remains within the limits of the original filing as coordinated and authorized.

Importantly, the Galaxy-16 satellite at 99ºW is located near the center of the geostationary arc over the continental United States ("CONUS"). As a result, the skew angles to the satellite are significantly less than the angles from CONUS to previously authorized satellite points of communications on the eastern and western edges of the arc.[3] Table 1 demonstrates that regardless of location with CONUS, the StealthRay terminal will operate with the Galaxy-16 satellite at skew angles of no more than 35º rather than the more conservative figure of 50º set forth in RAS's prior experimental application.

Latitude	Longitude	Skew Angle
48.5	122.5	-19.4
40.25	124.5	-27
32.7	117.1	-25.8
25	80.5	34.2
35.5	75.5	29.2
47.3	68.5	25.1

Table 1. Representative Skew Angles

Because RAS fully accounts for skew angle in its operations, the reduced skew angel translates to a narrower beam for the StealthRay antenna. The predicted beam pattern for a 35˚ skew angle is shown in Figure 1.

[3] "Skew angle" (the offset between the longest axis of the antenna and the GSO arc) is a function of the geographic location of the mobile terminal and the orbit longitude of the serving satellite.

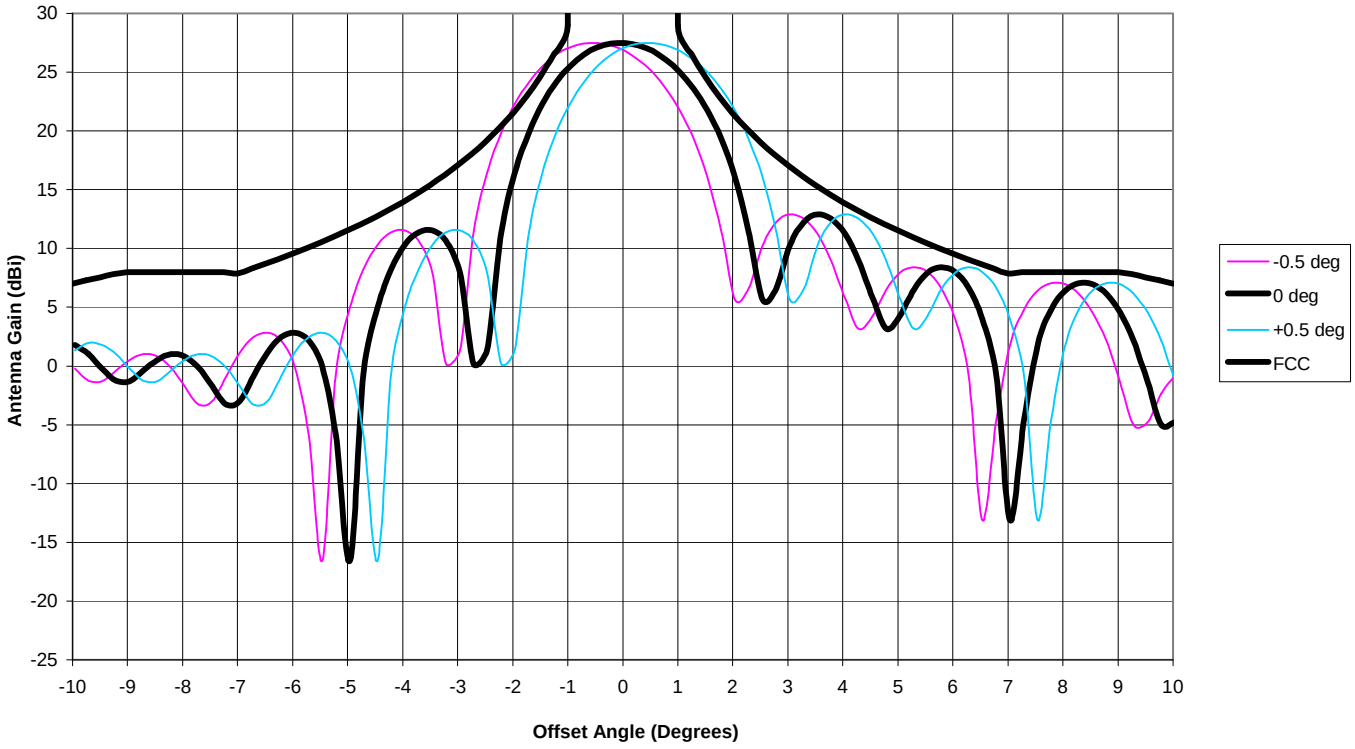

Figure 1. StealthRay Antenna Gain at 35º Skew Angle

Figure 2, below, shows the off axis EIRP with an input flange power spectral density of -15.7dBW/4kHz at a 35º skew angle. The off axis EIRP density falls below the 15-25log(θ) dBW/4kHz mask which is the formed form the combination of the off-axis sidelobe mask (29-25log(θ)dBi) and the maximum input flange power density of -14 dBW/4kHz) of a routinely licensed Ku-band VSAT antenna, even when the antenna is mispointed +/- 0.5 degrees. Because the antenna automatically ceases transmission at an offset angle of 0.5 degrees, *at no time will StealthRay transmissions exceed the off-axis EIRP spectral density limits associated with two-degree satellite spacing.*

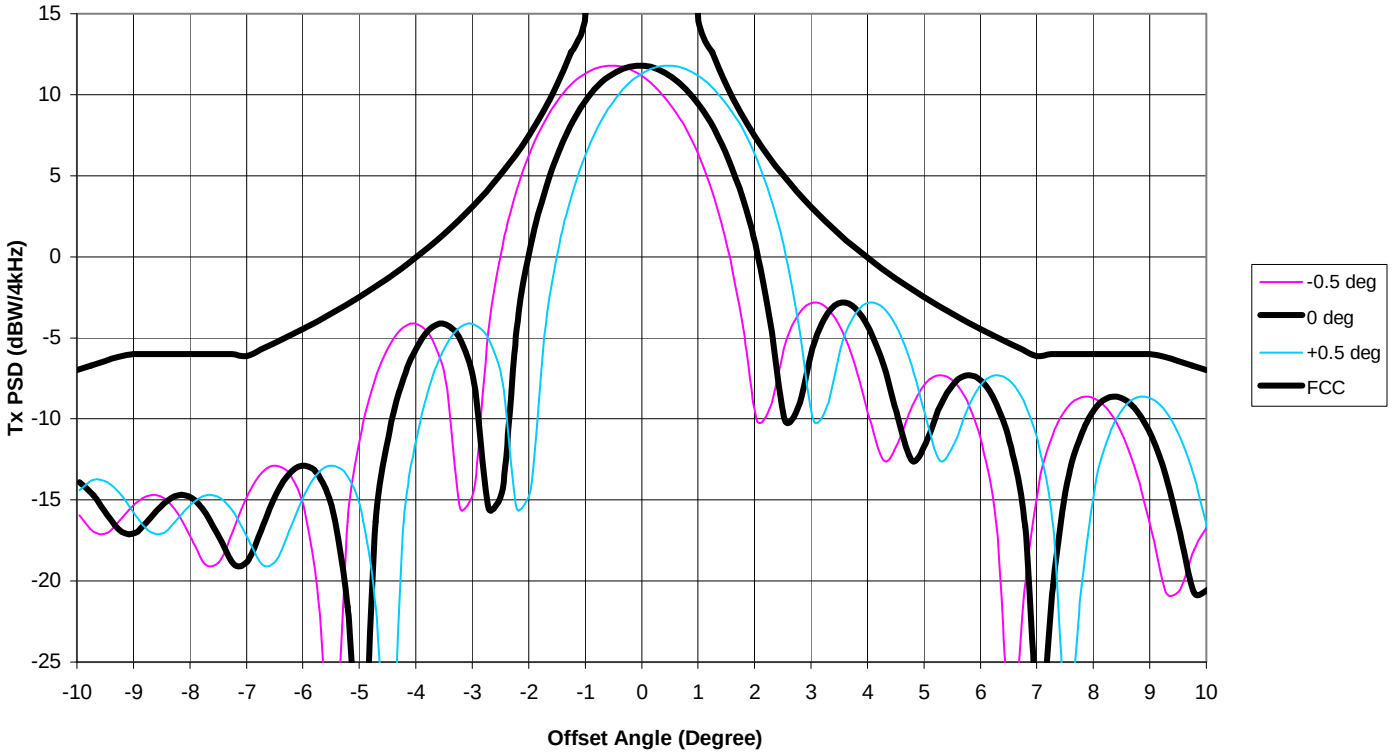

Figure 2. Off Axis EIRP Density with -15.7dBW/4kHz at Input Flange

The foregoing information demonstrates that RAS's proposed operations will not result in interference to adjacent Ku-band FSS satellite operations. RAS also confirms that it will continue to meet the stated levels and other requirements necessary to protect NASA TDRSS operations and Radio Astronomy stations.[4]

[4] *See* Attachment 1 (Coordination Agreements with the National Science Foundation and NASA).

III. SATELLITE POINT OF COMMUNICATION

RAS requests authority to communicate with the Intelsat Galaxy-16 satellite at 99ºW. Because the proposed operations remain below the Commission's off-axis EIRP spectral density limits at all time (even when mispointed at the maximum 0.5º offset), there is no increased potential for harmful interference to adjacent satellite operators.

Moreover, in three years of operating the StealthRay antenna on an experimental basis, there have been no instances of harmful interference. While the power levels requested herein are slightly higher than previously authorized, as discussed above the use of a wider emission will reduce the spectral density of the emission and thereby reduce the potential for interference to adjacent satellites.

IV. CONCLUSION

Except as described herein, RAS hereby confirms that it will operate the StealthRay antenna in conformance with the technical conditions contained in its existing experimental authorization. In particular, RAS will operate such that off-axis EIRP spectral density levels are no greater than that permitted for routinely licensed VSATs, and that it will operate on an unprotected non-harmful interference basis only (immediately ceasing transmissions in the event of interference to co-frequency operations).

Because RAS's proposed modifications will served the public interest and have no adverse effect on other users of the spectrum, and because it seeks to validate this new operational model through experimentation before seeking full commercial authority, RAS respectfully request grant of this experimental modification application at the earliest possible time.