

Applicant: Denali 20020, LLC
File No.: SES-STA-20200113-00043
Call Sign: E990066
Special Temporary Authority (STA)

Denali 20020, LLC is granted special temporary authority, beginning November 17, 2021 for 180 days to provide communication services to facilitate a demonstration by its customer, Astroscale Ltd. (Astroscale), of rendezvous and proximity operations (RPO), capture, and de-orbit of a mock debris. The mission involves a 7.6 meter earth station antenna located at geographic coordinates 48° 08' 47" N, 119° 41' 30" W in Brewster, WA, that will communicate using the 2095 MHz (Earth-to-space); and the 2275 MHz and 8470 MHz (space-to-Earth) frequencies to provide space operations services, including telemetry, tracking and command functions (TT&C) to Astroscale's "Servicer" satellite of the ELSA-d system. The "Servicer" satellite will be in a sun-synchronous orbit with an inclination of 97.6 degrees, at an altitude of perigee at 534.8 km and an altitude of apogee of 551.6 km. The Local Time of the Ascending Node (LTAN) will be 11:00.

STA operations will be conducted under the following conditions:

1. Communications between U.S.-licensed earth stations and the Astroscale ELSA-d system must comply with all existing and future space station coordination agreements reached between Japan and other administrations.
2. All Denali 20020, LLC operations shall be on an unprotected, non-interference basis, including with respect to authorized federal stations, and Denali 20020, LLC should be aware that any interference to these users will subject the licensee to immediate shut down. In the event that there is a report of interference, Denali 20020, LLC must terminate transmissions and notify the Commission in writing.
3. Denali 20020, LLC shall be aware that long term or operational use of the 2200-2290 MHz frequency band by non-Federal stations in the United States is highly unlikely, and Denali 20020, LLC shall have no expectations that future requests for operation or renewal of licenses in this band will be approved.
4. All operations shall be limited to an initial "Commissioning" phase and three short-term demonstration phases. The "Commissioning" phase includes operations for approximately three 10-minute periods, for a total of 30 minutes over four weeks. The demonstration phases consist of Demo 1 for 3 days (operations for a total of 90 minutes), Demo 2 for 3 days (operations for a total of 90 minutes), and Demo 3 (Parts 1 and 2: for a total of 6 days; operations for a total of 180 minutes), as specified in the documentation provided by Astroscale for the purpose of pre-coordination with federal agencies and in the materials supporting this STA. This authorization will expire 180 days from [date].
5. Only the following frequencies and emissions (bandwidths) are authorized for communications between the Brewster, WA, earth station and the ELSA-d satellite

system, in accordance with pre-coordination discussions between Astroscale and federal agencies:

- a. 2095 MHz (S-band uplink to the Servicer satellite): 100 kHz
 - b. 2275 MHz (S-band downlink from the Servicer satellite): 256 kHz (nominal)
 - c. 8470 MHz (X-band downlink from the Servicer satellite): 8.33 MHz
6. The Denali 20020, LLC earth station shall not transmit using the 2095 MHz uplink frequency when the NASA International Space Station (NORAD ID 25544 or International Spacecraft ID 1998-067A) is within 10 degrees of the Brewster, WA, earth station antenna boresight.
 7. Denali 20020, LLC shall notify the NASA GSFC Spectrum Management Office at NASA-DL-GSFC-Spectrum-Management@mail.nasa.gov, the NASA JSC Spectrum Management Office at JSC-DL-Spectrum-Management@mail.nasa.gov, the U.S. Air Force at jimmy.nguyen@us.af.mil, and the Department of Commerce/NOAA at carlos.flores@noaa.gov of the proposed ground station contact dates and times, at least 2 weeks in advance of planned demonstrations. If planned demonstrations conflicts with U.S. government operations, additional evaluations and/or restrictions will be required.
 8. All transmissions in the band 2200-2290 MHz shall comply with national and international power flux-density limits, except in cases where expected exceedances are pre-coordinated and agreed upon. The applicant has not identified any such cases for the planned operations, and none are hereby approved.
 9. Transmitter(s) must be turned off during antenna maintenance to ensure compliance with the FCC-specified safety guidelines for human exposure to radiofrequency radiation in the region between the antenna feed and the reflector.
 10. The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. The FCC's OET Bulletin 65 (available online at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alert signs and protective equipment for workers.
 11. Any actions taken or expenses incurred as a result of operations pursuant to this authority are solely at Denali 20020, LLC's risk.

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.