

Experimental License Modification Description

Astro Digital US Inc. ("Astro Digital") requests authority to modify its license (Call Sign WJ2XWG) to permit its authorized satellite, Momentus X1, to communicate with an additional earth station located in Tromsø, Norway ("Tromsø Station") (Latitude: 37° 22' 48" N, Longitude: 122° 57' 40" W) and extend the license term from Nov. 1, 2020 to Nov. 1, 2021. On July 5, 2019, Astro Digital successfully launched and commenced operations of the Momentus X1 satellite.¹ However, Astro Digital has completed only a portion of the planned experiments for the satellite, and its license is due to expire in several months. Specifically, Astro Digital was able to commission the satellite as well as perform the initial experiments of the propulsion system. The initial experiments included a functional check and characterization of each sub-component of the propulsion system and experiments of the propulsion system's thermal control system and short duration thruster operations. In order to experiment beyond short duration thruster operation, the thermal management of the system needed to be automated which required the collection of large amounts of telemetry to fully characterize and configure the system. This activity required a much longer period of time than originally predicted, so the full propulsion system experiment plan was delayed.

To facilitate the experiments, Astro Digital seeks authority to communicate with the Tromsø Station, using currently authorized frequencies, 400.5 MHz (space-to-Earth) and 402.9 MHz (Earth-to-space). Adding the Tromsø Station will increase the daily number of contacts with the satellite and allow experiments to progress at a faster rate.

The license term extension will allow Astro Digital to conduct additional experiments to further assess the capabilities of the propulsion system as well as implement methods to accelerate the orbital decay of the satellite. Such experiments will include attempts to operate the propulsion system at increased power and duration settings, as well as implementation of a new satellite attitude control mode that maximizes atmospheric drag during non-propulsion system operation. The latter experiment could provide insight into the use of differential drag as an orbital debris mitigation technique.²

Grant of the modification will facilitate the development of technology that could be used to mitigate the risk of orbital debris and accordingly is in the public interest.

Astro Digital will coordinate use of the Tromsø Station with incumbent Federal operators.

¹ See Letter from Tony Lin, Counsel to Astro Digital, to the Federal Communications Commission, ELS File No. 0049-EX-CR-2020 (filed Jan. 31, 2020).

² See *Mitigation of Orbital Debris in the New Space Age*, Draft Report and Order and Further Notice of Proposed Rulemaking, IB Docket No. 18-313, FCC-CIRC2004-03 ¶ 62 (circulated Apr. 2, 2020).