EXHIBIT A

TECHNICAL ANNEX
FOR OUTPOST MISSION 0 SATELLITE

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I. SCOPE AND PURPOSE

This exhibit offers additional technical information regarding the Outpost Mission 0 non-geostationary orbit satellite ("Mission 0").

II. GENERAL DESCRIPTION

A. Radiofrequency and Earth Station Overview

The following tables capture Mission 0's radiofrequency and earth station characteristics.

Table 1: Frequency Plan[1]

Beam ID[2]	UTX1 UTX2 UTX3	URX1 URX2 URX3
Description	UHF Downlink (Space-to-Earth)	UHF Uplink (Earth-to-Space)
Frequency Band	401-402 MHz	449.75-450.25 MHz
Bandwidth	3.5 kHz 14 kHz 25 kHz	3.5 kHz 14 kHz 25 kHz
Transmit Power	1 W	20 W
Transmit Antenna Gain	0 dBi	17 dBi
EIRP	0 dBW	30 dBW

[1] Mission 0 will have one UHF transceiver for telemetry and command. Further, Mission 0 will have one global positioning system ("GPS") receiver. The GPS payload will support on-orbit determination and atmospheric and Earth-surface sensing (temperature mapping occultations and precipitation, sea state, wind profile, and ocean current scatterometry). It will only passively monitor the readily accessible GPS L1 (center frequency of 1575.42 MHz) and L2 (center frequency of 1227.60 MHz) signals without decoding or decrypting any encrypted content within these waveform modulations. Reception of the GPS L1 and L2 signals is with pre-existing signals that have not been altered to provide service to Mission 0.

[2] Outpost will coordinate and use only one unique uplink channel and one unique downlink channel for Mission 0. The precise center frequency and bandwidth size will be inside the listed bands but are not finalized because coordination remains pending.

Beam ID[2]	UTX1 UTX2 UTX3	URX1 URX2 URX3
Polarization[3]	Circular or "Mixed" (RHCP / LHCP)	Circular or "Mixed" (RHCP / LHCP)
Receive Antenna Gain	16-17 dBi	0 dBi
Receive Noise Temp.	163 K	633 K

Table 2: Earth Station Plan

Earth Station Location	**Operator Name and Address**	**Coordinates**	**# Passes Per Day**	**Average Contact Duration Per Day (Minutes)**	**GS Rx (Beam ID)**	**GS Tx (Beam ID)**
Talkeetna, Alaska	Microcom 21518 S Comsat Road Talkeetna, Alaska 99676	62.33, -150.03	11	88	UTX1 UTX2 UTX3	URX1 URX2 URX3
Tucson, Arizona	RBC Signals 9052 South Rita Road Tucson, Arizona 85747	32.09, -110.81	2	16	UTX1 UTX2 UTX3	URX1 URX2 URX3

B. Orbital Information

Mission 0 is designed to operate in low-Earth orbit with expected parameters appearing in the following table.

Table 3: Expected Orbital Parameters

Orbital Parameter	**Value**	**Accuracy**
Inclination Angle (deg)	97.5	± 0.1
Apogee (km)	525	± 25 km
Perigee (km)	525	± 25 km
LTDN	13:00	+ 60 minutes

C. Ground Segment

Outpost will monitor and control all aspects of the Mission 0 mission through its

[3] "Circular" or "Mixed" is listed because the polarization is right hand circularly polarized ("RHCP") upward and left hand circularly polarized ("LHCP") downward.

headquarters in Santa Monica, California.

III. FREQUENCY TOLERANCE

The frequency tolerance requirements of section 25.202(e) will be met.

IV. OUT OF BAND EMISSIONS

The out-of-band emission limits of section 25.202(f)(1), (2), and (3) will be met.

V. FREQUENCY REUSE

Mission 0 does not operate in any frequency bands where section 25.210(f) frequency reuse requirements apply.

VI. CESSATION OF EMISSIONS

Mission 0 will be capable of ceasing radio emissions by the use of appropriate devices (including timing devices, battery life, ground command, etc), that will ensure definite cessation of emissions consistent with section 25.207.

VII. SPECTRUM SHARING ANALYSIS

Interference between Mission 0 and other systems is unlikely. Space operation service systems normally communicate only in short periods of time while visible from the dedicated earth stations (typically less than 10 minutes for a single pass). For interference to occur, either another operator's satellite would have to travel through the antenna beam of Mission 0's serving earth station or the Mission 0 satellite would have to pass through the antenna beam of the other operator's serving earth station and both systems would need to transmit at the same time on overlapping frequencies. In such a very unlikely event, interference avoidance is possible by coordinating the communications so that they do not occur simultaneously in the time, frequency, and geographic dimensions. Outpost commits to such coordination.

Other factors permit shared use of this spectrum. Outpost will employ only one satellite

when communicating with no greater than two earth stations (both of which are inside the United States). The satellite will use small bandwidths for operational and coordination flexibility.

VIII. PFD ANALYSIS

No power flux-density limits exist for the 401-402 MHz or 449.75-450.25 MHz bands in either the ITU or FCC rules. Outpost commits to coordination with other operators to avoid harmful interference.

IX. SATELLITE ANTENNAS

The uplink and downlink share a common antenna manufactured by EnduroSat that will be mounted on the satellite. The following figures show the spacecraft antenna radiation patterns.

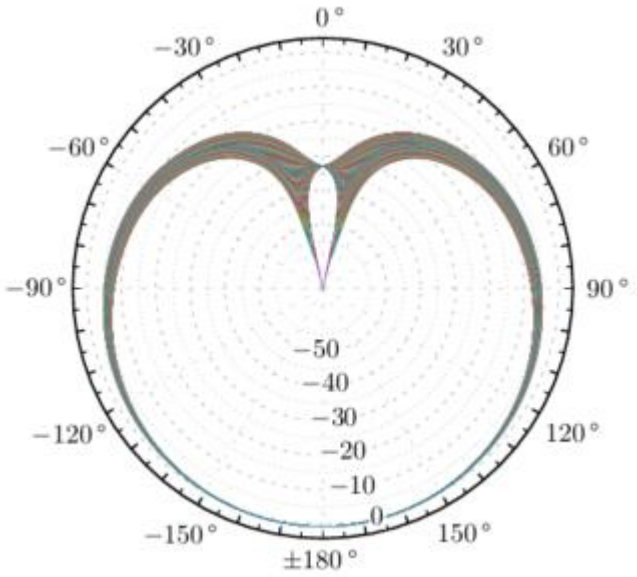

Figure 1: LHCP Radiation Pattern

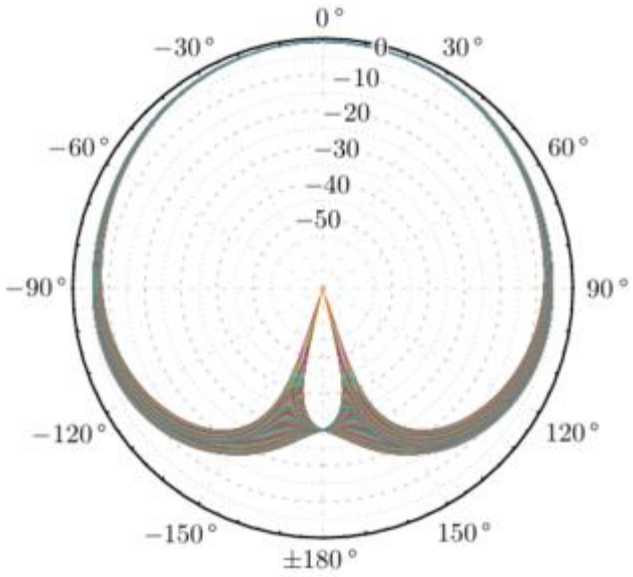

Figure 2: RHCP Radiation Pattern

The following figures show the spacecraft antenna gain contour plots. All plots show a map of the Earth out to the horizon for each ground station and satellite antenna pair. The plot labels indicate antenna gain contours in 2 dB steps down to 10 dB below the peak gain. For instance, a contour label of "-2" indicates 2 dB below the maximum gain for that antenna. (Note: gain (greater than 6 dB below the peak) is beyond the horizon and is not shown in the plots.)

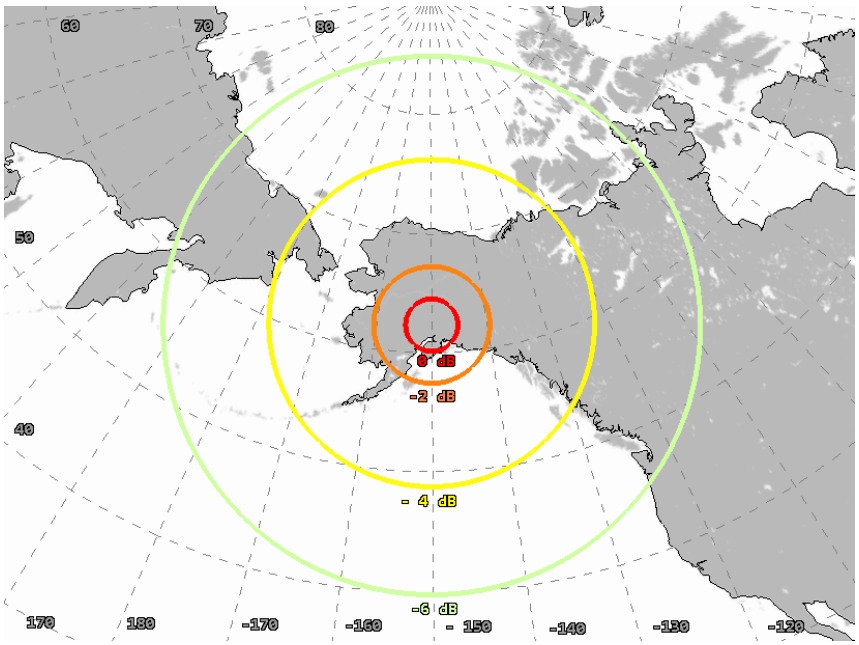

Figure 3: Talkeetna, Alaska Contour

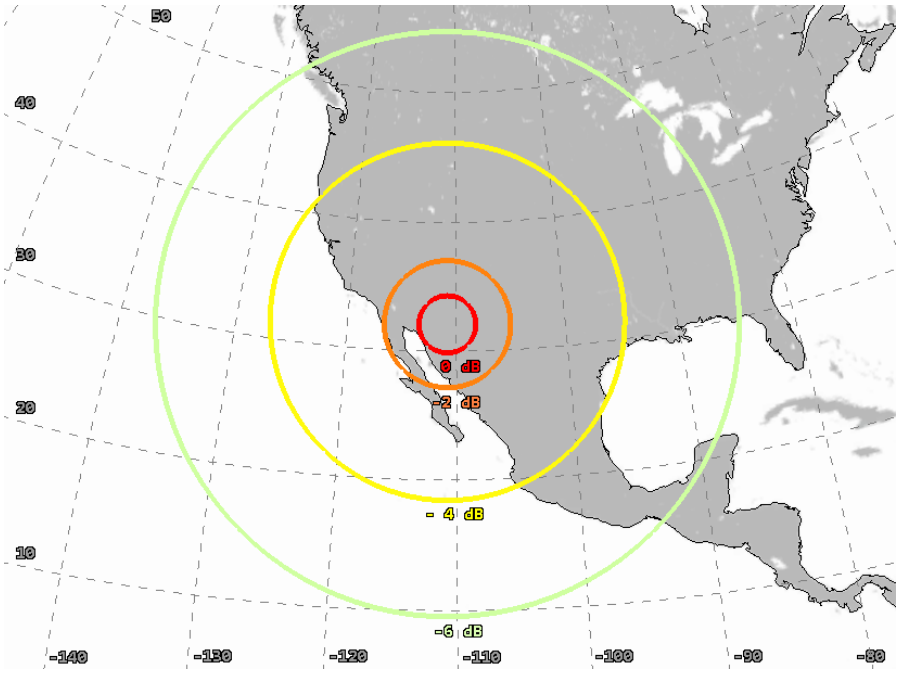

Figure 4: Tucson, Arizona Contour

X. ORBITAL DEBRIS RISK MITIGATION PLAN

Outpost has completed an orbital debris assessment report ("ODAR") for Mission 0. See Exhibit B. Outpost used the National Aeronautics and Space Administration ("NASA") Debris

Assessment Software ("DAS") v3.2.3 and is compliant with every NASA standard and relevant FCC rule. The following subsections offer a high-level ODAR summary.

A. Spacecraft Hardware Design

Outpost confirms that Mission 0 will not undergo any planned release of debris during its normal operations. In addition, all separation and deployment mechanisms, and any other potential source of debris, will be retained by the spacecraft. Outpost has also assessed the probability of Mission 0 becoming a source of debris by collision with small debris or meteoroids of less than one centimeter in diameter that could cause loss of control and prevent post-mission disposal.

B. Minimizing Accidental Explosions

Outpost is designing its spacecraft in a manner that limits the probability of accidental explosion. Outpost has assessed the possibility of accidental explosions during and after completion of mission operations through failure mode verification analysis. As part of the satellite manufacturing process, Outpost has taken steps to ensure that debris generation will not result from the conversion of energy sources onboard Mission 0 into energy that fragments the satellite. All sources of stored energy onboard the spacecraft will have been depleted or safely contained when no longer required for mission operations or post-mission disposal.

C. Safe Flight Profile

Outpost has assessed and limited the probability of Mission 0 becoming a source of debris by accidental collisions with large debris or other operational spacecraft. Outpost will work closely with its launch provider to ensure that the satellite is deployed in such a way to minimize the potential for in-plane collision. DAS shows that collision with a large object at the highest altitude of 550 km is 1.2023×10^{-7}, much below the 0.001 threshold in NASA-STD-

8719.14C and recently adopted (but not yet effective) FCC rules.[4]

Outpost will track Mission 0 passively using its GPS receiver and register the satellite with the 18th Space Control Squadron or successor entity. Outpost will engage with operators of constellations and other space stations in the same orbit to ensure safe and coordinated space operations. Outpost will provide all relevant agencies, the 18th Space Control Squadron or successor entity, entities engaged in space situational awareness, and other operators with any information they need to assess risks and ensure safe flight profiles (particularly for inhabitable space stations, as necessary), as well as contact information for Outpost personnel at its headquarters. If Outpost receives a conjunction warning, Outpost will coordinate with the other satellite operator, including sharing ephemeris data and other appropriate operational information. Mission 0 will not engage in any proximity operations.

D. Post-Mission Disposal

Mission 0 will deorbit naturally because it has no propulsion. The satellite will deorbit 3.592 years after launch through uncontrolled atmospheric reentry. Approximately 6 months after launch, Mission 0 will passivate its batteries in preparation for reentry.

Outpost has conducted the preliminary reentry risk analysis using DAS. As modeled, DAS indicates that Mission 0 will burn up completely during uncontrolled re-entry with no material surviving to reach the Earth's surface. The result is the risk of human casualty on the ground from Mission 0 re-entering the atmosphere is 0, below the 1:10,000 threshold in NASA-STD-8719.14C and recently adopted (but not yet effective) FCC rules.[5]

[4] *See Mitigation of Orbital Debris in the New Space Age*, 85 Fed. Reg. 52422 (Aug. 25, 2020).

[5] *See Mitigation of Orbital Debris in the New Space Age*, 85 Fed. Reg. 52422 (Aug. 25, 2020).

XI. SCHEDULE S CLARIFICATIONS

Given Schedule S limitations and ongoing frequency coordination, below are related clarifications. Outpost indicated –

- the orbital lifetime is 4 years (not 3.592 years, as calculated in DAS) because Schedule S precludes entry of extra digits.
- representative center frequencies and bandwidths because coordination remains pending.
- the smallest channel size is 0.003 MHz (not 0.0035 MHz, as indicated in this document) because Schedule S precludes entry of extra digits.
- RHCP polarization because Schedule S requires that only one polarization be selected.

Certification of Person Responsible
for Preparing Engineering Information

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this application, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this application, and that it is complete and accurate to the best of my knowledge and belief.

/s/ Vanessa Kuroda

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