EXHIBIT A

LAUNCHER INC. TECHNICAL ANNEX
FOR ORBITER SN3 SPACECRAFT

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I. SCOPE AND PURPOSE

This exhibit contains additional information regarding the Orbiter SN3 non-geostationary orbit ("NGSO") spacecraft required by the FCC Part 25 rules that cannot be entered into the Schedule S online submission system.

II. GENERAL DESCRIPTION

A. Radiofrequency and Earth Station Overview

Orbiter SN3 is a Launcher-built spacecraft, including commercial-off-the-shelf components. The following two tables capture Orbiter SN3's radiofrequency and earth station characteristics.

Table 1: Frequency Plan[1]

Beam ID	Dwn1	Dwn2	Dwn3	Up1
Description	S-band Downlink Low	S-band Downlink High	S-band Downlink Patch Omni	S-band Uplink Low
Direction	space-to-Earth	space-to-Earth	space-to-Earth	Earth-to-space
Frequency Band[2]	2200-2290 MHz	2200-2290 MHz	2200-2290 MHz	2025-2110 MHz
Bandwidth	780 kHz	3.9 MHz	780 kHz	270 kHz
Transmit Power	2W	2W	2W	20W
Transmit Antenna Gain	3dBi	10dBi	7dBi	33dBi

[1] Orbiter SN3 will have two S-band transceivers for telemetry, tracking, and command ("TT&C") and payload data. Further, the GPS payload will support on-orbit determination. 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 Orbiter SN3.

[2] Launcher will coordinate one unique uplink channel and two unique downlink channels for Orbiter SN3 (with only one downlink channel ever operational). The precise center frequency and bandwidth size will be inside the listed bands but are not finalized because coordination remains pending. As a result, the Schedule S includes one representative center frequency for each band.

Beam ID	Dwn1	Dwn2	Dwn3	Up1
EIRP	6dBW	13dBW	10dBW	50dBW
Polarization	RHCP	RHCP	RHCP	RHCP
Receive Antenna Gain	37.6 dBi	37.6 dBi	37.6 dBi	3dB
Receive Noise Temp.	284 K	284 K	284 K	730 K

Table 2: Earth Station Plan

Earth Station Locations	**Operator**	**Coordinates**	**# Passes Per Day**	**Duty Cycle (5 min pass)**	**GS Rx (Beam ID)**	**GS Tx (Beam ID)**
New Zealand	Leaf Space	-46.53, 168.38	2	10	Dwn1 Dwn2	Up1
Bulgaria	Leaf Space	42.48, 23.44	2	10	Dwn1 Dwn2	Up1
United Kingdom	Leaf Space	60.75, -0.86	2	10	Dwn1 Dwn2	Up1
Sri Lanka	Leaf Space	7.27, 80.72	2	10	Dwn1 Dwn2	Up1
Canada	Leaf Space	50.59, -113.97	2	10	Dwn1 Dwn2	Up1
Peterborough, Australia	Leaf Space	-32.96, 138.85	2	10	Dwn1 Dwn2	Up1
Nangetty, Australia	Leaf Space	-29.01, 115.34	2	10	Dwn1 Dwn2	Up1
Iceland	Leaf Space	63.96, -22.58	2	10	Dwn1 Dwn2	Up1
Mauritius	Leaf Space	-20.20, 57.58	2	10	Dwn1 Dwn2	Up1
Milan, Italy	Leaf Space	45.59, 9.36	2	10	Dwn1 Dwn2	Up1
Cork, Ireland	Leaf Space	51.95, -8.17	2	10	Dwn1 Dwn2	Up1
Spain	Leaf Space	38.67, -4.16	2	10	Dwn1 Dwn2	Up1
Azores	Leaf Space	36.99, -25.13	2	10	Dwn1 Dwn2	Up1

B. Orbital Information

Orbiter SN3 will operate in low Earth orbit (“LEO”) with the expected orbital parameters

listed in the following table.

Table 3: Expected Orbital Parameters

	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

Launcher will monitor and control all aspects of the Orbiter SN3 mission using its Mission Operations Control Center ("MOCC") in Hawthorne, 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

Orbiter SN3 does not operate in any frequency bands where section 25.210(f) frequency reuse requirements apply.

VI. CESSATION OF EMISSIONS

All downlink transmissions can be turned on and off by ground station telecommand, thereby achieving cessation of emissions from the satellite, as required by section 25.207. All Orbiter SN3 transmissions will be initiated by ground command and not scheduled. Orbiter SN3 will always be listening for commands from the ground and transmit only when a transmit command is received. This "fail safe" mechanism assures that Orbiter SN3 does not regularly or constantly transmit in a scenario where a command to cease transmission cannot be received.

VII. SPECTRUM SHARING ANALYSIS

Interference between Orbiter SN3 and other systems is unlikely. Space operation and research service systems normally communicate only in short periods of time while visible from the dedicated earth stations or satellites (typically less than five minutes for a single pass). For interference to occur, either another operator's satellite would have to travel through the antenna beam of Orbiter SN3's serving earth station or Orbiter SN3 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. Launcher commits to such coordination.

Other factors permit shared use of this spectrum. Launcher will employ one satellite when communicating with the limited earth stations distributed across various latitudes outside the United States. The satellite will host software defined radios and small bandwidths for operational and coordination flexibility.

VIII. PFD ANALYSIS

The Commission's rules do not specify a power flux-density ("PFD") limit in the 2200-2290 MHz band. However, ITU Radio Regulations Table 21-4 do include PFD limits.

The maximum PFD levels for the Orbiter SN3 transmissions were calculated for the 2200-2290 MHz band. The results are provided in Schedule S and demonstrate that the downlink PFD levels of the Orbiter SN3 carriers do not exceed the ITU limits. Figure 1, Figure 2, and Figure 3 below illustrate the results of this PFD analysis. This PFD analysis assumes maximum EIRP in any pointing direction (to account for cases where 3-axis stabilization is temporarily interrupted due either to a fault or to support satellite body steering).

Figure 1: Dwn1 PFD Analysis

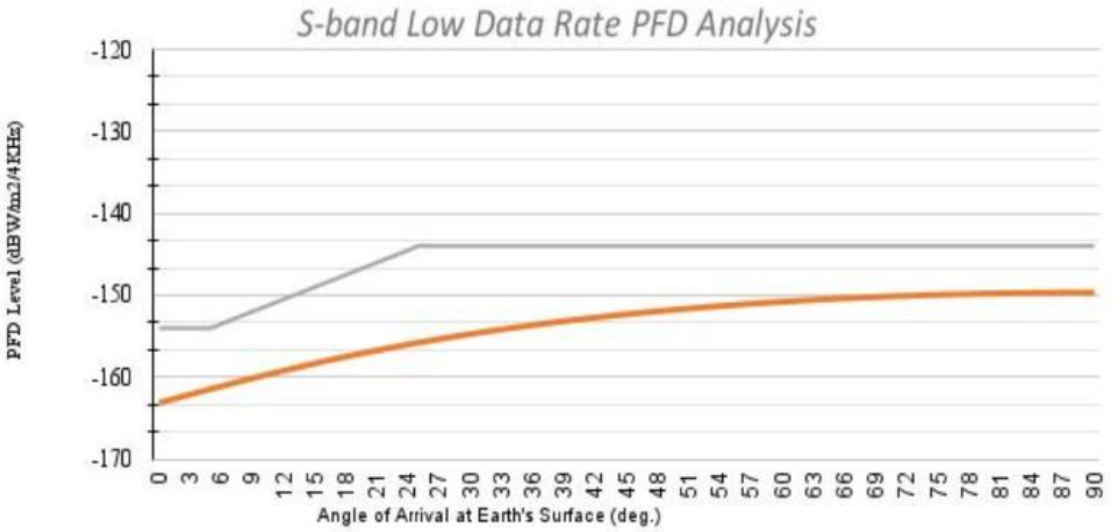


Figure 2: Dwn2 PFD Analysis

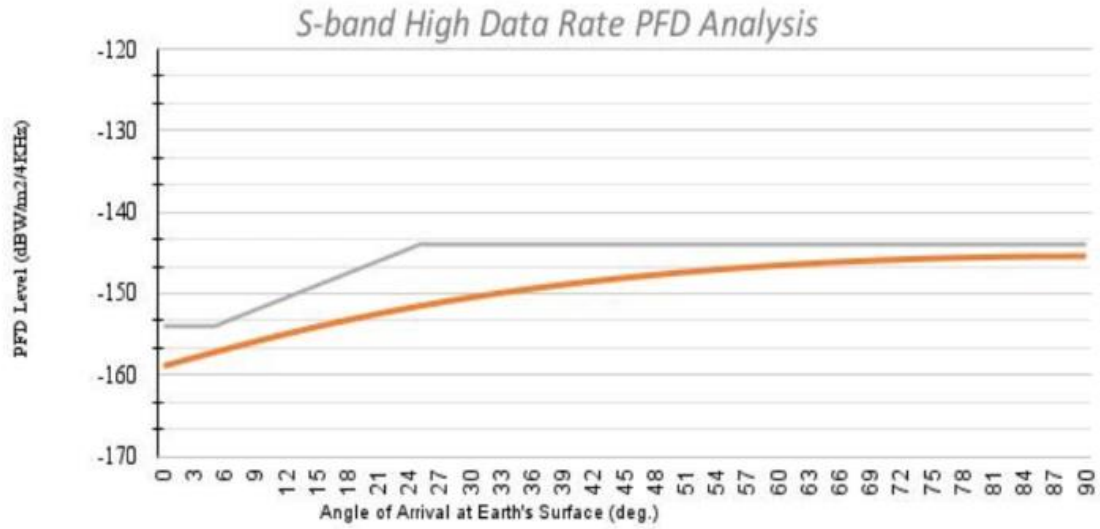
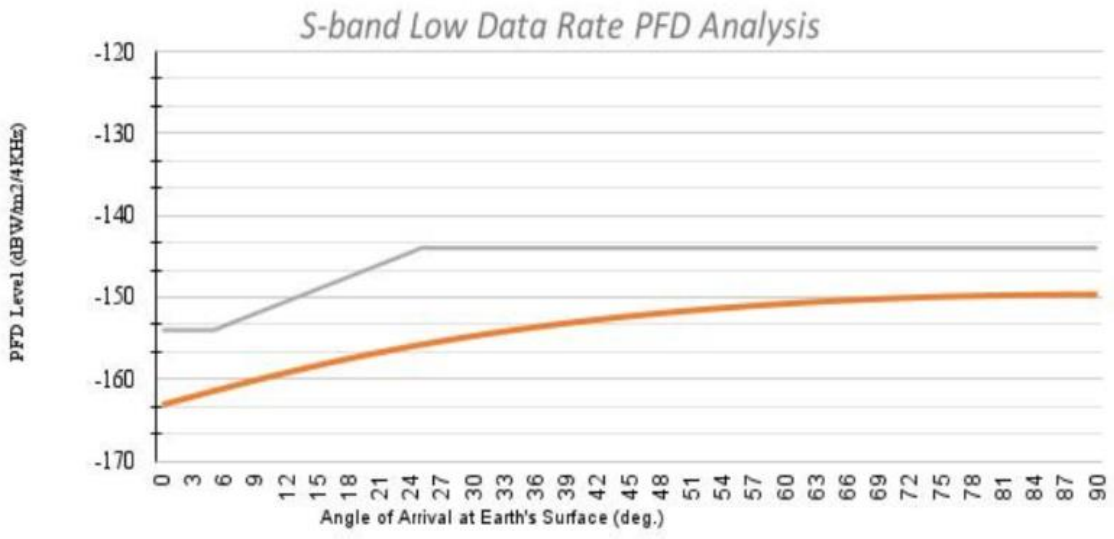


Figure 3: Dwn3 PFD Analysis



IX. ANTENNA GAIN CONTOUR PLOTS

Below are representative antenna gain contour plots for the Orbiter SN3 at the nominal 525 km altitude using a representative ground station located in Italy.

Figure 4: Dwn1 – Low Rate Omni S-band Downlink

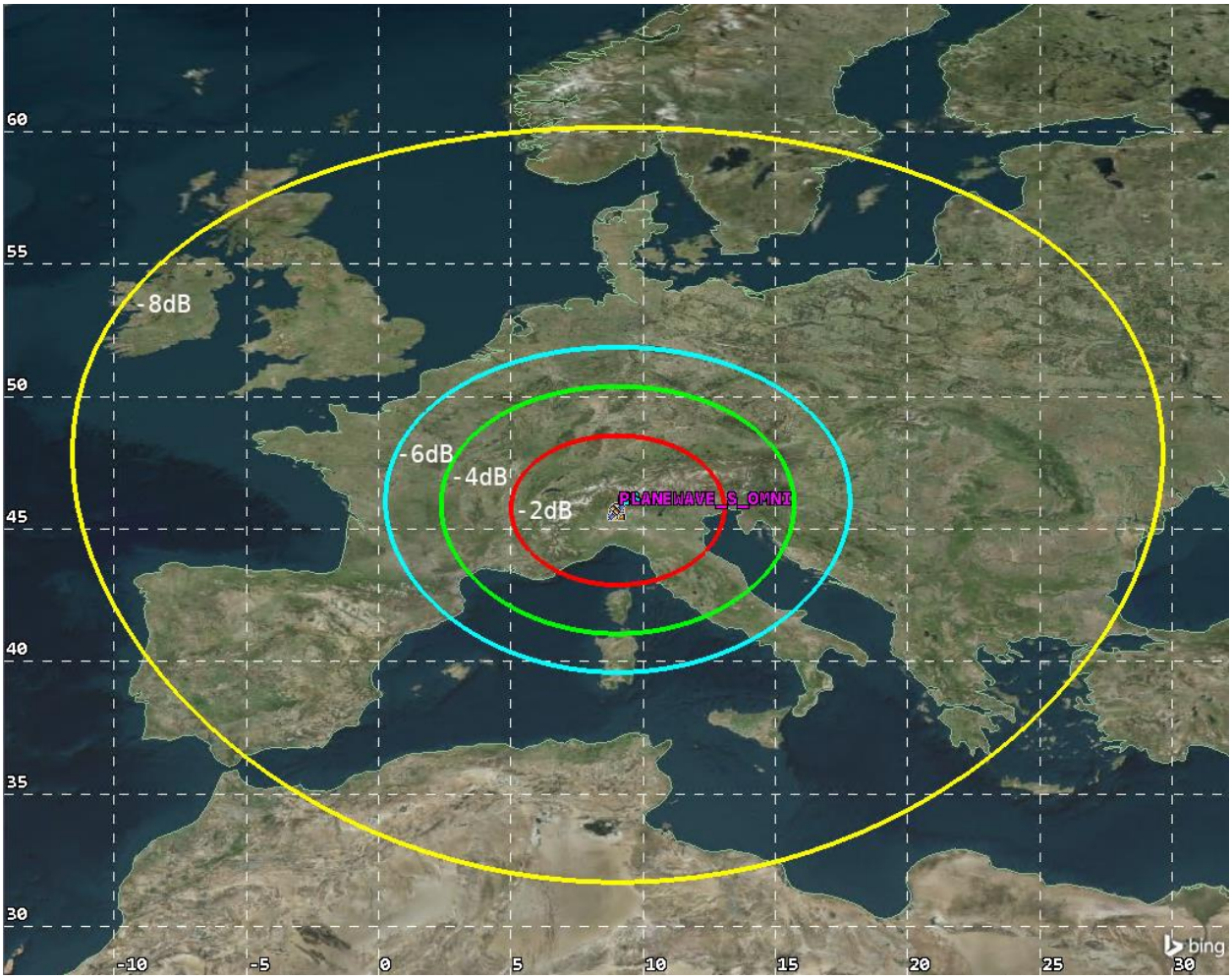


Figure 5: Dwn2 – High Rate Directional S-band Downlink

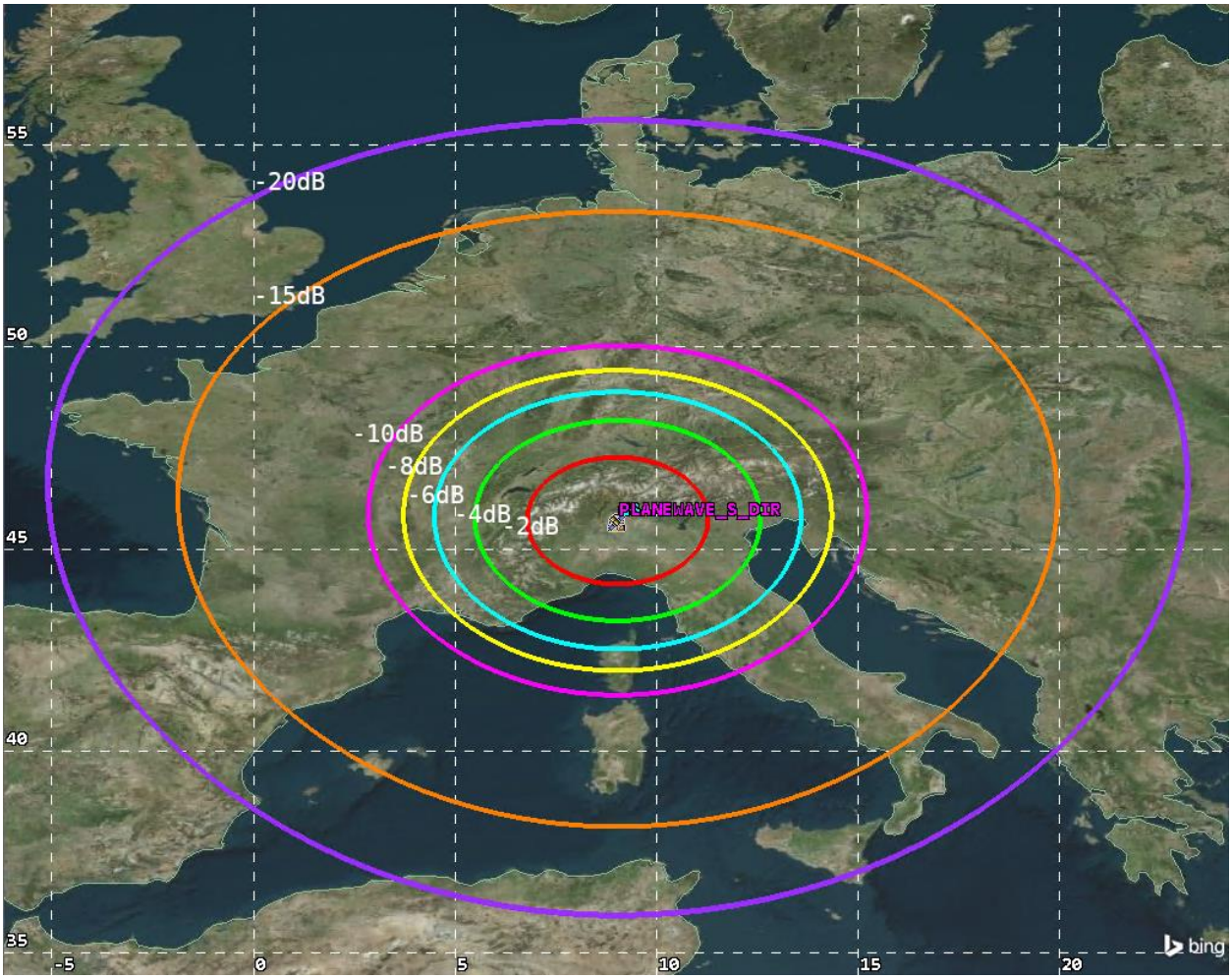
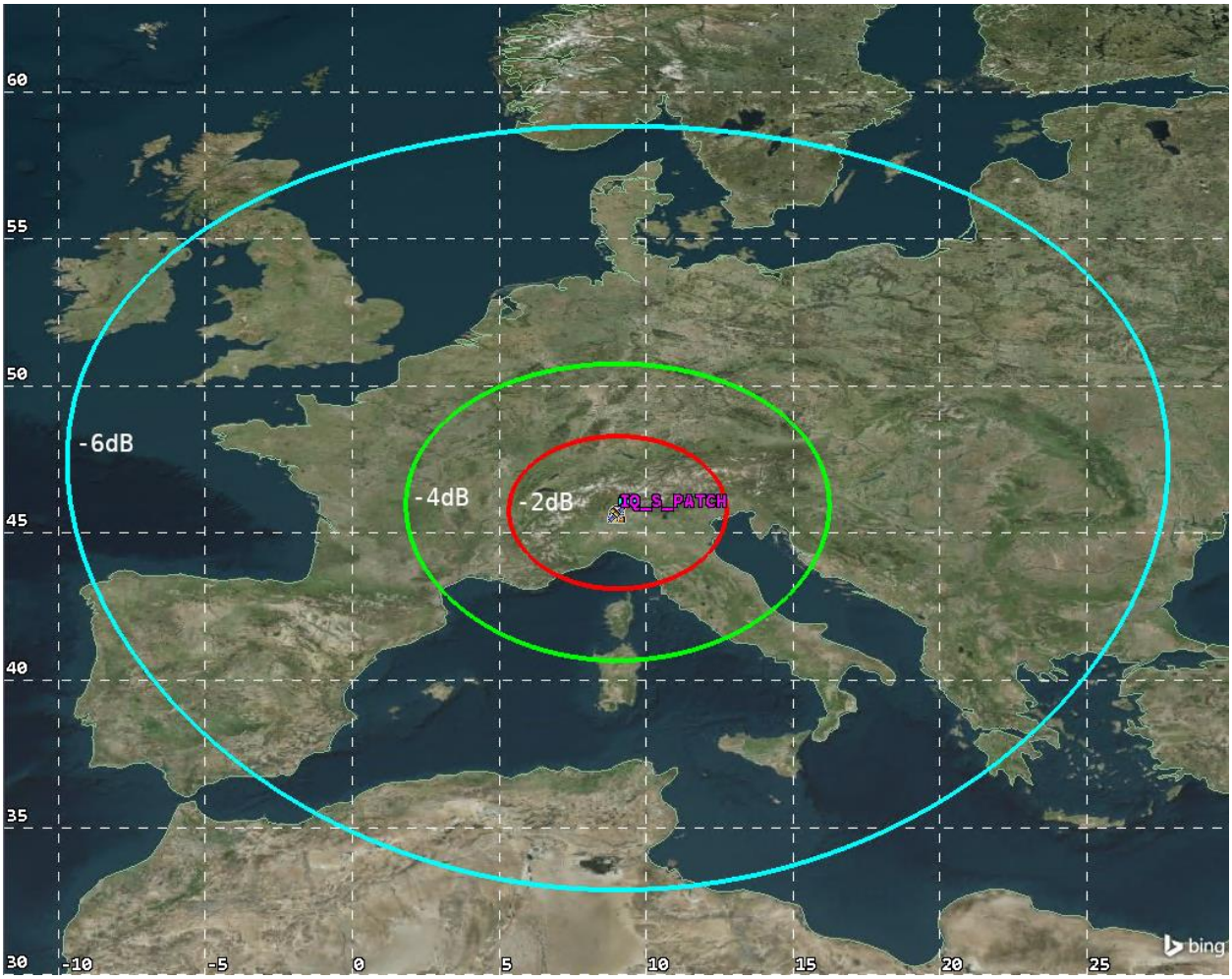


Figure 6: Dwn3 – Patch Omni S-band Downlink



X. ORBITAL DEBRIS RISK MITIGATION PLAN

Launcher Space has completed an orbital debris assessment report ("ODAR") and long-term recontact analysis for Orbiter SN3. See attached exhibits B and C.

A. Spacecraft Hardware Design

Orbiter SN3 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. Orbiter SN3's on-board propulsion system will provide capability to reduce the probability of collision with other known objects. Launcher has also assessed the probability of Orbiter SN3 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

Launcher is designing its spacecraft in a manner that limits the probability of accidental explosion. Launcher 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, Launcher has taken steps to ensure that debris generation will not result from the conversion of energy sources onboard Orbiter SN3 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 Profiles

Launcher calculated the probability of collision with large objects using NASA Debris Assessment Software ("DAS"). At the highest possible mission altitude of 550 km, the nominal mission collision probability is 4.4056E-05, which is within the 0.001 threshold in NASA-STD-8719.14C and recently adopted (but not yet effective) FCC rules.[3]

Launcher will passively track and coordinate Orbiter SN3 operations. Launcher has partnered with Slingshot Aerospace to manage in orbit conjunction warnings from the 18th Space Control Squadron and will engage with any operators of nearby constellations and other space stations to ensure safe and coordinated space operations. Launcher will also provide all relevant agencies, the 18th Space Control Squadron or successor, entities engaged in space situational awareness, and other operators with any information they need to assess risks and ensure safe flight

[3] *See Mitigation of Orbital Debris in the New Space Age*, 85 Fed. Reg. 52422 (Aug. 25, 2020). Orbiter SN3 will not maintain orbital tolerances to a certain degree but has maneuvering capabilities as described in the attached Exhibit B, ODAR.

profiles (particularly for inhabitable space stations, as necessary), as well as contact information for Launcher personnel at its MOCC. If Launcher receives a conjunction warning, Launcher will coordinate with the other satellite operator, including sharing ephemeris data and other appropriate operational information.

Launcher will conduct proximity operations with the Otter Pup payload. No planned releases of debris are associated with these operations, and Launcher and the Otter Pup owner have taken measures to mitigate risks of accidental explosions and accidental collision.[4]

D. Post-Mission Disposal

Orbiter SN3 will re-enter within approximately 13.3 years of orbit insertion via natural atmospheric decay. Post mission, Orbiter SN3 will passivate by venting remaining propellant (pressurized Argon gas) via thrusters and command reaction wheels to 0 rpm.

Launcher has conducted the preliminary reentry risk analysis using DAS. As modeled, the human casualty risk is 1:38,000, which is below the 1:10,000 threshold in NASA-STD-8719.14C and recently adopted (but not yet effective) FCC rules.[5] Since its previous FCC discussions, Launcher has reduced the risk from 1:14,200 (SN1) to 1:38,000 (SN3) and expects to further decrease (and, if possible, eliminate) this risk with additional design changes.[6]

[4] *See* Exhibit B, ODAR.

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

[6] Given NASA DAS is highly conservative, Launcher has commissioned an independent Aerospace Corporation reentry risk analysis (which might not be complete before licensing is necessary).

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/ David Caponio

David Caponio
Chief Operating Officer and
SVP of Product & Business Development
Launcher Inc.