Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Turion Space Corp.	)	File No. SAT-LOA-_____
	)	
Authority to Deploy and Operate the DROID.003 as a Non-Geostationary Orbit Small Satellite System in the Space Research and Space Operations Service	)	

APPLICATION

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APPLICATION

I. Introduction

Turion Space Corp. ("Turion") hereby submits this application requesting authority to deploy and operate the DROID.003 ("DROID") non-geostationary orbit ("NGSO") small satellite in low-Earth orbit ("LEO") for a period of five (5) years, to demonstrate Rendezvous and Proximity Operations ("RPO") capabilities, image the local space environment and conduct Earth Observation operations. DROID is scheduled to launch from a SpaceX Falcon 9 mission no earlier than April 2027. Accordingly, Turion respectfully requests that the Federal Communications Commission ("Commission") grant this application pursuant to Section 25.122 of the Commission's rules[1] by January 1, 2027.

DROID will operate (Earth-to-space) in the 2025-2110 MHz band ("S-band uplink"), in the 2200-2290 MHz band ("S-band downlink") outside of the United States (Space-to-Earth), and in the 25.5-27 GHz band ("Ka-band") (Space-to-Earth). Additionally, DROID will transmit

[1] 47 C.F.R. 25.122.

to and receive signals from the Iridium constellation, with transmissions to the Iridium constellation in the range of 1618.725-1626.5 MHz.

II. System Description

A. General System Description

The DROID spacecraft is a 446.66-kg (wet mass) small satellite with dimensions of 3309 x 1317 x 2130 millimeters with the solar panels deployed. Following launch, DROID will be deployed directly into a passively safe circular orbit at its injection altitude. DROID will demonstrate a series of simulated RPO missions to advance capabilities for future servicing missions in geostationary orbit (GEO). The mission is designed to validate space maneuvering, navigation, and imaging technologies using virtual targets and opportunistic imaging of nearby spacecraft in LEO.

DROID's primary mission will be to conduct spacecraft maneuvering demonstrations using virtual targets in empty space to evaluate propulsion, guidance, navigation, and control performance. During these demonstrations, no physical object will be present at the virtual target location. Upon completion of DROID's simulated rendezvous, Turion will identify another spacecraft in a distinct and passively safe orbit. DROID will then image the other spacecraft when it is within five to ten kilometers of DROID. Furthermore, given a safe opportunity, DROID will perform thrusts for a flyby maneuver at a minimum.

When not conducting its simulated RPO missions, DROID will also collect, analyze, and disseminate space situational awareness ("SSA") data to assist in mapping objects around Earth

and promote a safer operational space environment for other space operators. DROID will also conduct Earth Observation operations with its onboard sensors.[2]

The primary option for DROID is to passively de-orbit within six years of launch, consistent with the Commission's post-mission disposal rules. However, if the Commission grants waiver of 25.122(c)(8), DROID will perform a controlled deorbit using its hydrazine propulsion system, as necessary, to ensure atmospheric demise. A disposal maneuver has been preplanned to target an uninhabited zone in the Pacific Ocean in the event the spacecraft is determined to be non-demisable. Turion will discontinue all other mission operations at an altitude of 300 km to ensure adherence to deterministic EOL mission procedures resulting in controlled reentry. In order to complete this positioning maneuver, Turion seeks authority to operate the spacecraft from 300 km to 530 km altitude.

As demonstrated in the attached Orbital Debris Assessment Report ("ODAR") (*see* Exhibit 2), DROID is fully compliant with the Commission's orbital debris mitigation rules. This mission serves as a risk-reduction and technology validation campaign supporting future operational RPO missions in GEO. By performing these demonstrations with virtual targets and maintaining large safety margins, DROID advances the development of responsible and safe proximity operations practices consistent with the Commission's orbital debris and collision avoidance requirements.

[2] Turion will seek a remote sensing license from the National Oceanic and Atmospheric Administration ("NOAA"). Turion will inform the Commission when it has obtained the necessary NOAA authorization.

Grant of this application will further the Commission's goal to enhance space safety and long-term sustainability, as well as to facilitate the deployment of in-space servicing spacecraft. Accordingly, authorizing this application would serve the public interest.

B. Technical Specifications

1. Frequency Bands

Turion seeks authority for the DROID spacecraft to provide space operations services ("SOS"), Earth exploration satellite services ("EESS") and space research services ("SRS"). Specifically, DROID seeks authority to operate in the S-band Uplink, S-band Downlink (collectively, the "S-band"), and the Ka-band The S-band frequency bands will be used for telemetry, tracking, and command ("TT&C") and the Ka-band the transmission of payload data.

Turion also seeks authorization to transmit to and receive signals from the Iridium constellation on a center frequency of 1622.4375MHz, providing a redundant TT&C channel to ensure reliable and timely communications with DROID as needed. *See* Table 1 below for additional details.

Turion acknowledges that both the S-band and Ka-band frequencies include federal and other incumbent operations. Turion intends to coordinate its proposed use of these frequencies with affected operators prior to commencing operations. Included in Exhibit 3 to this application are the antenna gain contours for all transmit and receive antenna beams, provided in 2 dB increments from 2 dB to 10 dB below maximum gain, as well as at 15 dB and 20 dB below maximum gain.[3]

[3] *See* Exhibit 3. For some gain contour plots, the lower-gain contours either lie beyond the horizon or do not exist and thus are not shown in the plots.

	Uplink 1 (Earth-to-space)	Uplink 2 (Earth-to-space)	S-band Downlink (space-to-Earth)	Ka-band Downlink (space-to-Earth)	Transmit to Iridium (space-to-space)
Center Frequency	2043.0 MHz[4]	2032.0 MHz	2203 MHz	25750 MHz	1618.725-1626.5 MHz
Bandwidth (max.)	1 MHz	1 MHz	5 MHz	364.5 MHz	41.7 kHz
Data Rate[5]	1 Mb/s	1 Mb/s	4.2 Mb/s	891 Mb/s	22 kb/s
Transmit RF Power	N/A	N/A	0.77 W	3.6 W	1.26 W
Transmit Antenna Gain	N/A	N/A	6.1 dBi	33.2 dBi	4.5 dBi
Transmit Antenna EIRP	N/A	N/A	4.9 dBW	38.8 dBW	5.5 dBW
Receive Antenna Gain	5.4 dBi	6.8 dBi	N/A	N/A	4.5 dBi
Max Transmission Duration per Pass	8 minutes	8 minutes	8 minutes	8 minutes	N/A
Duty Cycle	50%	50%	100%	100%	100%
Purpose	Primary TT&C	Backup TT&C	Telemetry downlink	Payload date & imaging downlink	Redundant TT&C &

[4] The identified center frequencies are representative frequency channels. As a result of coordination with federal operators, Turion may select another channel within the identified frequency bands for its operations.
[5] Data rate is configurable from approximately 1 kbps up to a maximum listed.

					spacecraft monitoring

Table 1: Radio Frequency Plan

a. 2025-2110 MHz (Earth to-space)

The DROID spacecraft will operate in the S-band, which is allocated to SOS and EESS across all International Telecommunication Union ("ITU") regions. In the United States, SOS in this band are limited to federal operators and non-federal launch operations,[6] while EESS use by non-federal operators is permitted subject to conditions.[7]

b. 2200-2290 MHz (space-to-Earth)

This band is allocated internationally for EESS, space research, and space operations.48 In the United States, this band is allocated primarily for Federal EESS, space research, and space operations. S-band downlink will only communicate with ground stations outside the United States. Turion will begin coordination with Federal operators in this band to ensure no harmful interference would be caused to their operations by such transmissions. Below Turion requests a waiver of the Table of Allocations and to operate in these frequencies.

c. 25.5-27 GHz (space-to-Earth)

DROID will also operate in the Ka-band, which is allocated to EESS (space-to-Earth) and space research services ("SRS") in all ITU regions. In the Unites States, this band is allocated for

[6] *See* 47 C.F.R. § 2.106 n. US94.
[7] *See* 47 C.F.R. § 2.106 n. US347.

federal EESS users and non-federal SRS users. Non-federal EESS operations are allocated on a primary basis subject to a case-by-case electromagnetic compatibility analysis.

DROID will use this band to transmit data from its SRS[8] and EESS operations It's proposed use of the Ka-band is therefore consistent with the Commission's rules.

2. Frequency Use

DROID will transmit at most a single uplink transmission at any given time, with a center frequency of either 2043 MHz or 2032 MHz. Similarly, there will be a single Ka-band downlink transmission active at time, with a representative center frequency of 25.75 GHz.

a. S-band Downlink Interference Analysis

The Commission's rules do not specify a PFD limit in the 2200-2290 MHz band; however, there are PFD limits specified in rule No. 21.16 of the International Telecommunication Union ("ITU") Radio Regulations ("ITU RR"). The maximum PFD levels for the DROID transmissions were calculated for the 2200-2290 MHz band and the results, which are provided in Schedule S, demonstrate that the downlink PFD levels of the DROID carriers do not exceed the limits specified in the ITU RR.

The figures below illustrate the S-band downlink PFD values in comparison with the ITU PFD limits in No. 21.16. When operating at orbital altitudes above 300 km, the full EIRP of 5 dBW can be used for an emission bandwidth of 5 MHz as shown below. For narrower emission

[8] The Commission has previously stated that in-space inspection missions are likely to constitute SRS. *See Facilitating Capabilities for In-space Servicing, Assembly, and Manufacturing,* Notice of Proposed Rulemaking, FCC 24-21, IB Docket Nos. 22-271 and 22-272 (rel. Feb. 16, 2024) ("ISAM NPRM"), ¶ 34. Additionally, the definition of Space Research Services, including "spacecraft or other space objects are used for scientific or technological research," is consistent with the proposed DROID mission. *See*, ITU Radio Regulations, Article 1, 1.55.

bandwidths, the EIRP is reduced to keep the EIRP density constant. As the orbit altitude drops, the RF power is backed off to assure PFD limits are always observed. Figure 2 below demonstrates the case when the orbit altitude is down to 300 km, the EIRP has been reduced by 2 dB to 7 dBW and the emission bandwidth is still 5 MHz. The PFD of DROID's transmissions at the Earth's surface satisfies the PFD limits for all angles of arrival calculated at the 300 km orbital altitude, which is the lowest nominal operating orbital altitude for DROID. When the emission bandwidth is reduced to 2 MHz or 1 MHz, the RF power will be reduced commensurate to assure PFD compliance. As an example, Figure 3 below illustrates the PFD for a 1 MHz emission from 300 km orbit altitude and a maximum EIRP of 0 dBW.

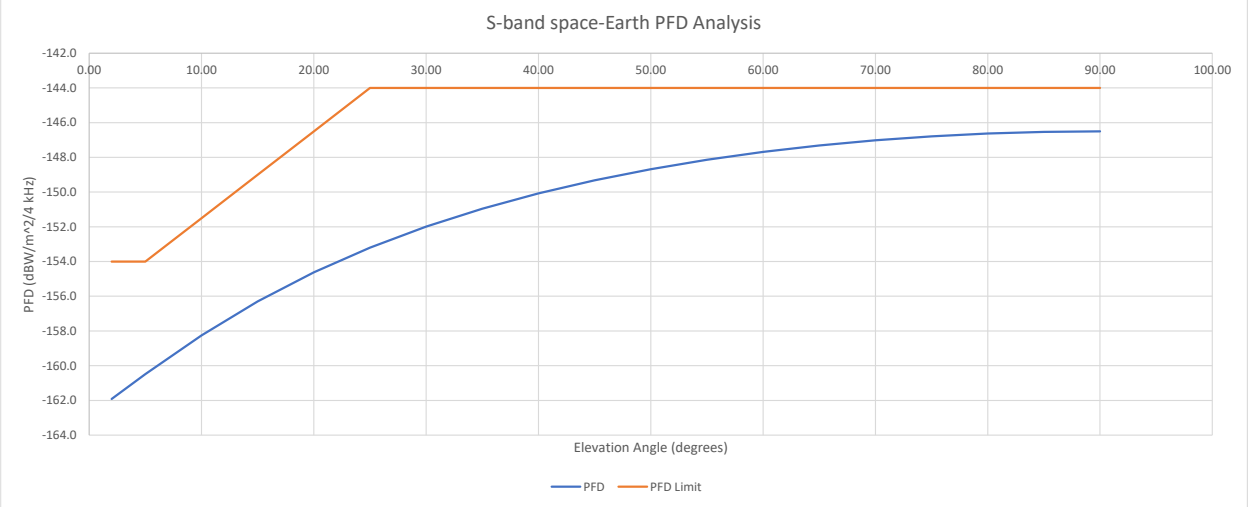

Figure 1 S-band PFD from 300 km Orbit Altitude at 5 dBW EIRP and 5 MHz Emission Bandwidth

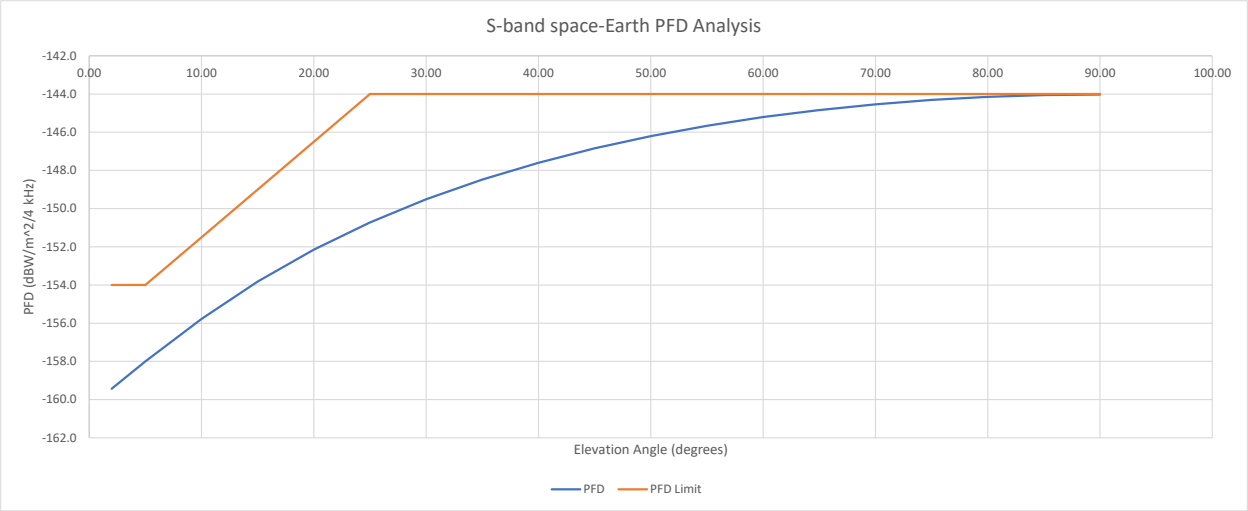

Figure 2 S-band PFD from 300 km Orbit Altitude at 3.5 dBW EIRP and 2 MHz Emission Bandwidth

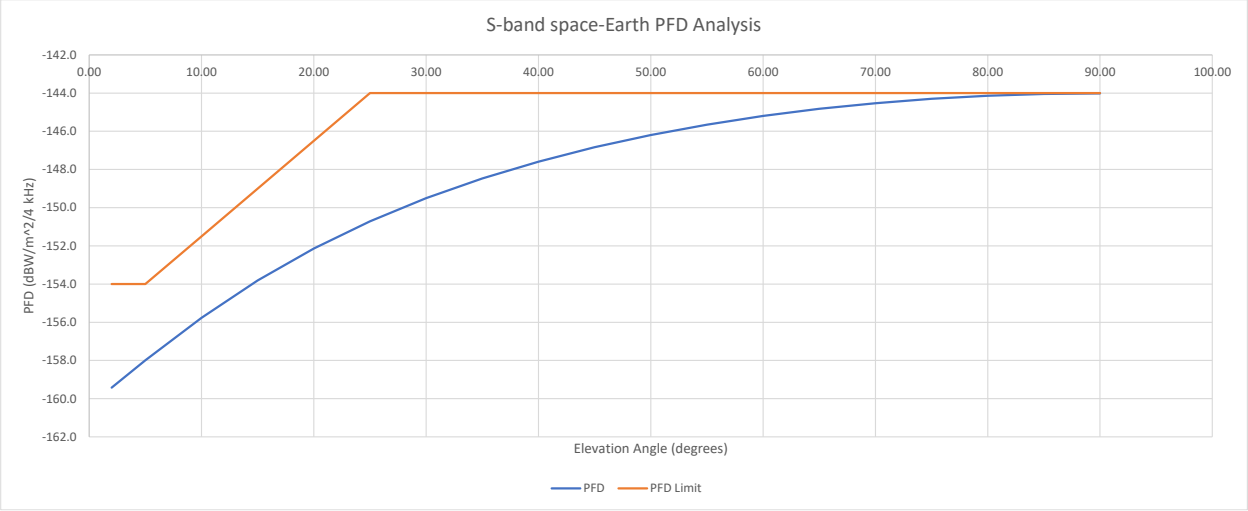

Figure 3 S-band PFD from 300 km Orbit Altitude at 0.5 dBW EIRP and 1 MHz Emission Bandwidth

d. Ka-band Interference Analysis

DROID complies with the ITU-established PFD limits on the Earth's surface and at the geostationary arc, and it sufficiently restricts emissions in the adjacent frequency bands, as discussed below.

e. Ka-band PFD at the Earth's Surface

The Commission's rules do not specify PFD limits at the Earth's surface for emissions from space stations operating in the Ka-band.[9] However, Table 21-4 of the ITU Radio Regulations ("ITU RR") and ITU-R SA.1625 both specify applicable PFD limits for emissions at the Earth's surface produced by from a space station in the 25.5-27 GHz band. Specifically, emissions from a reflecting satellite, must not exceed the following PFD values:

- -115 dB(W/m²) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;
- -115 + 0.5(δ – 5) dB(W/m²) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and
- -105 dB(W/m²) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.
- [placeholder for relevant ITU protection criteria]

DROID's emissions comply with all applicable PFD limits for all angles of arrival calculated when operating at an orbital altitude of 350 km, which represents the lowest nominal operating orbital altitude for DROID. To the extent possible and helpful for de-orbiting, Turion will continue to conduct TT&C communications during the period when the perigee of DROID is below 300 km and as low as 150 km, as DROID is de-orbiting. In that event, Turion will either reduce transmission power to maintain compliance with the PFD limits or restrict payload transmissions to periods when the spacecraft's instantaneous orbital altitude is above 300 km.

Reduced emission bandwidths will typically be employed either early in the operational lifetime or in cases where additional link margin is necessary. Under nominal conditions, the Ka- band transmitter will operate below the maximum EIRP level of 38.8 dBW. Because DROID operates across a range of orbital altitudes, the minimum emission bandwidth that can be

[9] 47 C.F.R. § 25.208.

employed will change as a function of orbital altitude to ensure ongoing compliance with PFD limits.

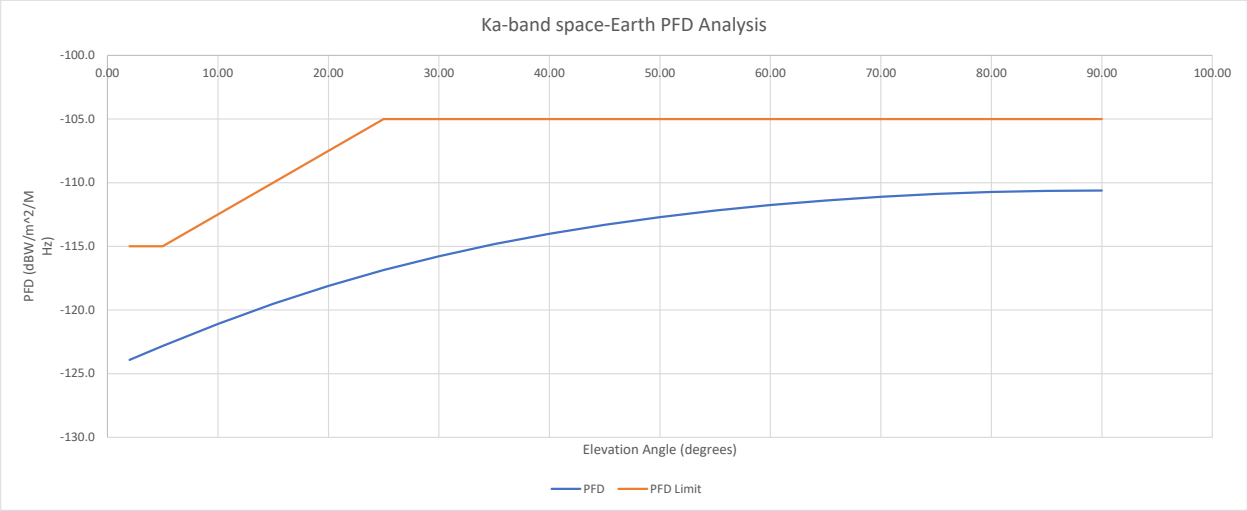

Figure 4 Ka-band PFD from 300 km Orbital Altitude, EIRP is 38.8 dBW and Emission BW is 364.5 MHz

The minimum orbital altitude at which the payload will transmit in Ka-band is 300 km. Between orbital altitudes of 300 km down and 510 km, the maximum EIRP cannot be utilized for emission bandwidths below 216 MHz. The corresponding PFD for a transmission at 38.8 dBW EIRP within a 364.5 MHz bandwidth at a 300 km orbital altitude is illustrated in the figure above while the PFD for a transmission of 26.8 dBW (12 dB backoff) within a 13.5 MHz bandwidth at a 300 km orbital altitude is illustrate in the figure below.

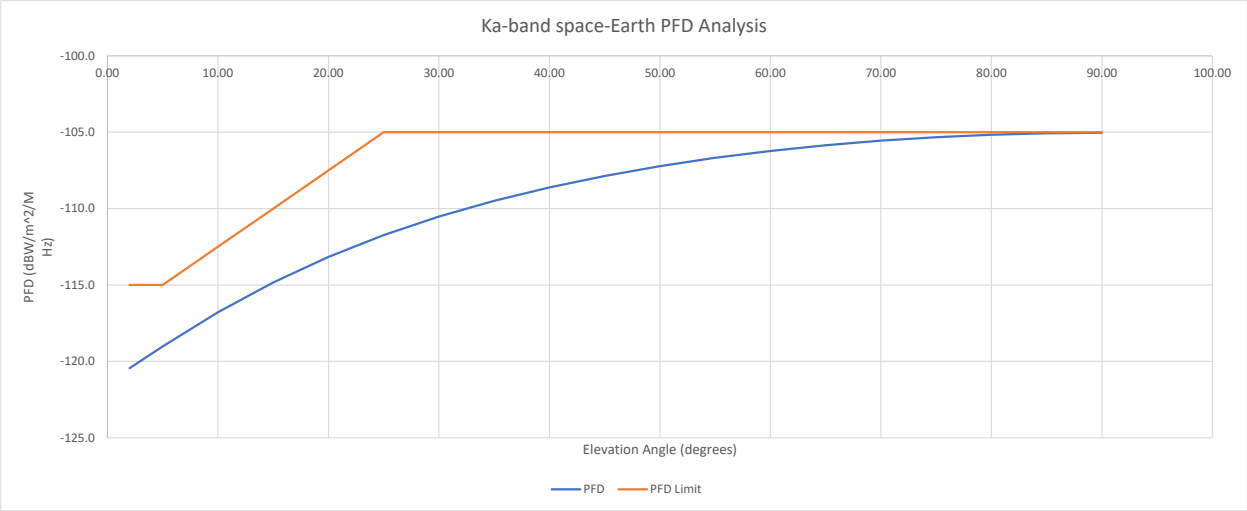

Figure 5 Ka-band PFD from 300 km Orbit Altitude, EIRP is 26.8 dBW, Emission BW is 13.5 MHz

As discussed above, the Ka-band payload may continue operating as the spacecraft's perigee descends below 300 km. In this case, the RF power will be backed off to assure PFD compliance.

i. PFD at the Geostationary-Satellite Orbit

ITU RR 22.5 does not provide maximum PFD produced at the geostationary-satellite orbit ("GSO") for emissions from EESS space stations. However, Radio Regulation 5.536A states that "earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862." And ITU-R SA.1862 provides guidelines for the efficient use of the 25.5-27 GHz band by EESS and SRS. These guidelines include PFD limits on the geostationary orbit for NGSO satellites, such as DROID.

The Recommendation states that "EESS and SRS satellites in non-geostationary orbits with space-to-Earth satellite links should not produce a PFD greater than -133 dB(W/(m2•MHz)) at any DRS satellite location on the geostationary orbit. This limit may be exceeded no more than 0.1% of the time for [NGSO] systems with altitudes greater than 1370 km."

ITU-R SA.1862, Recommends 5 states that the PFD in the 25.5-27.0 GHz band at the GSO arc from NGSO spacecraft shall not exceed -133 dBW/m^2/MHz. PFD analysis was conducted assuming the maximum EIRP of 38.8 dBW, spread over an emission bandwidth of 364.5 MHz from the maximum insertion orbit altitude of 600 km. Under a hypothetical assumption that the satellite antenna is radiating at its peak EIRP toward the GSO, the Ka-band transmitter produces a PFD at the GSO arc in the worst-case scenario of only -148.7 dB, which is more than 15 dB below the protection criteria.

ITU-R SA.1625, Recommends 1 states the the PFD in the 25.5-27.0 GHz band at the GSO arc from NGSO spacecraft shall not exceed -155 dBW/m^2/MHz more than 0.1% of the time. This requirement is 22 dB more stringent than the requirement above. However, the above analysis, which misses this more stringent protection criteria by only 8 dB, assumes the peak EIRP is directed towards the GSO arc. Since this is a space-Earth emission, the maximum EIRP would only be directed towards the GSO arc (or anywhere near) during an anomaly, likely as a result of multiple failures. Therefore, the fraction of time that such an EIRP would occur at the GSO arc would be orders of magnitude less than 0.1% of the time.

f. Iridium ISL

As previously noted, DROID will receive signals from the Iridium constellation in the range of 1618.725-1626.5 MHz. These signals will be used to monitor and confirm the location of the spacecraft. Turion will coordinate with Iridium to ensure that the appropriate companion license is filed in a timely manner.

3. Frequency Tolerance and Emission Limitations

Turion will comply with the frequency tolerance requirements set forth in 47 C.F.R. § 25.202(e) and the emission limitations in 47 C.F.R. § 25.202(f). In addition, DROID's

transmitter is not designed to activate automatically; communications for the spacecraft can only be initiated through manual commands issued from the ground. Accordingly, DROID complies with 47 C.F.R. § 25.207.

4. Ground Stations

All operational communications between the Turion Mission Operations Center ("MOC") and ground stations will be protected by encryption protocols appropriate for maintaining control over the DROID spacecraft. Specifically, TT&C transmissions will be conducted using packetized protocols incorporating end-to-end AES-256 encryption.[10] A table identifying the ground stations that Turion intends to use for communications with DROID is provided in Exhibit 6. Turion will coordinate the use of any ground stations with the appropriate Federal operators in the relevant frequency bands prior to initiating operations at such sites. Turion respectfully requests authority to conduct such communications, subject to coordination with relevant Federal operators. Turion will maintain an updated list of coordinated Earth stations in the license application docket throughout the duration of the mission.

C. Description of Spacecraft Maneuvering and Imaging Mission

Following completion of its initial systems check, DROID will proceed to the next phase of its mission: conducting spacecraft maneuvering demonstrations using virtual targets in empty space to evaluate spacecraft propulsion, guidance, navigation, and control performance. No physical object will be present at any virtual target location. To prepare for this operation, DROID will maintain its injection orbit altitude.

[10] The ground station operator will not receive any keys necessary to decrypt or otherwise manipulate any packetized TT&C instructions sent from the MOC to DROID.

DROID will then use its onboard cameras and sensors to scan the local space environment and verify nominal performance of all sensors. During this phase, DROID may also conduct opportunistic imaging and remote sensing of nearby ARSOs to support testing and calibration of DROID's on-orbit sensors, which will be used for both RPO and Earth observation tasks throughout the mission.

DROID may additionally conduct imaging of star fields, non-Earth celestial bodies, and Earth-based calibration targets to support payload calibration and sensor characterization activities.

Once systems are confirmed, DROID will initiate its spacecraft maneuvering sequence by identifying local points in the space environment and conducting trial maneuvers towards and around those points. All maneuvers will be conducted with a virtual target, there will be no physical object at any of the virtual RPO locations.

Once DROID has finished its virtual maneuvers, it will then target a nearby spacecraft with its onboard cameras and conduct imaging and inspection operations from a range of 5-10 km of separation distance. Furthermore, given a safe opportunity, DROID will perform thrusts for a flyby maneuver at a minimum. Once DROID has successfully imaged another nearby spacecraft, its maneuvering demonstration mission will be concluded. Turion estimates that its maneuvering mission will take approximately 6 months to complete.

D. Orbital Debris Mitigation

5. DROID Flight Safety

Turion has developed a robust series of mitigation techniques to ensure that RPO operations are conducted safely. DROID will be equipped with an advanced suite of sensors and

onboard navigation algorithms designed to accurately and continuously determine the relative position of the designated virtual target and nearby observed spacecraft to be imaged throughout the planned mission.

The first maneuvering demonstration conducted by DROID will utilize virtual targets to validate approach protocols and GNC algorithms prior to conducting the opportunistic imaging operations portion of DROID's mission. During these operations, all maneuver plans will be submitted to the 18th Space Defense Squadron ("18th SDS") for conjunction avoidance screenings. The mission design incorporates multiple go/no-go checkpoints, during which Turion's Operations team will evaluate telemetry and issue command to the spacecraft to hold or abort maneuvers if any off-nominal conditions arise.

DROID employs 18 thrusters in multiple redundant configurations to ensure maneuver reliability and fault tolerance. DROID only requires 12 thrusters to operate nominally, meaning that there are six additional thrusters onboard to mitigate the potential failure of one or more onboard thrusters. Similarly, there are three propellant tanks to provide system-wide redundancy for DROID's propulsive capabilities.

All deployments, including solar arrays and sensor covers, use non-explosive hold-down release mechanisms that do not generate debris. The payload includes imaging sensors used to collect data during approach sequences, with one single-actuation protective cover that remains attached post-deployment.

Turion will screen its maneuvers with the 18th SDS to ensure all of DROID's flight profiles will be passively safe, ensuring that in the event of a maneuver failure the DROID spacecraft will not cross the path of its target spacecraft or any other nearby spacecraft, thereby eliminating the risk of collision.

6. Mitigation Against Accidental Explosion Events

Turion has performed extensive analysis to identify and mitigate potential risks associated with RPO, including the potential of accidental explosion events. The most likely cause of an accidental explosion would stem from an unintended collision with another spacecraft; however, the mission's passive-safety geometry and large separation distances of 5-10 kilometers from its target spacecraft effectively eliminate this possibility.

The probability of a battery explosion is extremely low, estimated at (< 0.01%) as multiple independent faults would need to occur for such a failure. In the unlikely event that a battery cell does explosively rupture, the small size, mass, and potential energy of these small batteries is such that while the spacecraft could be expected to vent gases, most debris from the battery rupture should be contained within the spacecraft due to the lack of penetration energy to the multiple enclosures surrounding the batteries.

Finally, DROID's electrical and propulsion systems have been designed and tested to minimize any risk of energetic failure. All deployment mechanisms, including solar arrays and sensor covers, utilize non-explosive hold-down mechanisms that do not generate debris. DROID uses hydrazine propellant for its propulsion system. Hydrazine is a stable and well-characterized monopropellant whose use in DROID's controlled-thrust architecture presents minimal risk of over-pressurization or inadvertent release. The spacecraft's propulsion tanks and feed systems have been qualified through environmental testing to meet applicable safety standards.

7. Mitigating Debris

Turion does not anticipate that the DROID mission, including its RPO operations, will pose any risk of generating accidental debris. Turion will maintain a minimum of 5 km separation distance from the target spacecraft, ensuring no risk of a debris-releasing collision. No explosive

devices or pyrotechnic separation systems are used. All deployed structures remain physically attached to the spacecraft following actuation.

Additionally, none of the DROID payloads or subsystems contain components that pose an unusual risk of accidentally detaching or fragmenting under the course of normal operations. The spacecraft employs redundant thrusters and conservative maneuvering profiles to avoid any unplanned mechanical stresses that could produce debris.

8. Collision Avoidance

Turion does not believe that its proposed orbit presents any specific collision risks. DROID is a single, fully propulsive spacecraft capable of performing avoidance maneuvers upon receipt of any conjunction warnings. DROID will be identified upon injection from its launch vehicle using the data from the on-board sensors and correlated to the information provided from the 19SDS for identification purposes.

Further, Turion will register with the 18th SDS and will pre-screen all propulsive maneuvers through them to ensure that DROID's operations do not pose a risk of collision with other spacecraft near DROID's operational orbit. Turion hereby certifies that upon receipt of a space situational awareness conjunction warning, the operator will promptly review and assess the collision risk and will execute appropriate mitigation maneuvers as necessary.

9. Post-Mission Disposal

As demonstrated in the ODAR, the primary option for DROID is to passively de-orbit within six years of launch, consistent with the Commission's post-mission disposal rules. However, if the Commission grants waiver of 25.122(c)(8), Turion has developed a controlled-deorbit plan that uses the hydrazine propulsion system to target a safe re-entry corridor over an uninhabited region of the Pacific Ocean.

Turion will discontinue all mission operations at approximately 300 km altitude. Any remaining propellant will be expelled prior to end of mission disposal to ensure complete passivation of the spacecraft.

III. Waiver Requests

The Commission may waive any of its rules if there is "good cause" to do so.[11] In general, a waiver is appropriate if (1) special circumstances warrant a deviation from the general rule; and (2) such deviation would better serve the public interest than would strict adherence to the rule.[12] Generally, the Commission will grant a waiver of its rules when doing so would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[13]

In this case, the development of an efficient, flexible and non-toxic space transportation infrastructure, along with the significant benefits it provides, – including, the potential to assist in orbital debris risk mitigation – constitutes a special circumstance warranting waiver of the applicable Commission rules.

A. U.S. Table of Frequency Allocations

Section 25.112(a)(3) of the Commission's rules provides that an application is deemed defective if an applicant fails to include a waiver request when seeking authority to operate a space station in a frequency band not allocated for such operations under the ITU Radio Regulations. The Commission has specifically stated, with respect to waiver requests to permit

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[11] *See* 47 C.F.R. § 1.3; *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).
[12] *See Northeast Cellular*, 897 F.2d at 1166.
[13] *See WAIT Radio*, 418 F.2d at 1157.

non-conforming uses, that it will grant such waivers when there is minimal potential for interference with authorized services and when the non-conforming operator accepts any interference from authorized services.[14] This standard for permitting non-conforming use and waiver of the rule has been applied to operations that do not conform to both the U.S. Table of Allocations and ITU allocations.[15] As discussed below, Turion has demonstrated that its proposed operations will not cause harmful interference and that it will accept interference from other systems authorized to use the requested spectrum. Accordingly, waiver of the applicable rule is appropriate in each instance outlined in this application.

10. 2025-2110 MHz Uplink

This frequency band is allocated to space operations and EESS, *inter alia*, across all ITU regions. In the United States, space operations in this band are limited to federal operators, while commercial EESS operations are permitted on a case-by-case basis, subject to the condition that such use must not cause harmful interference to authorized services.[16] For the DROID mission,

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[14] *Application for Modification of License to Authorize a Second-Generation NGSO MSS Constellation by Iridium Constellation LLC*, Order and Authorization, 31 FCC Rcd. 8676 at ¶ 21 (IB 2016); *see also Applications by Orbcomm License Corp. for Authority to Modify its Non-Voice, Non-Geostationary Satellite System et al.*, Order and Authorization, 23 FCC Rcd. 4804 at ¶ 15 (IB & OET 2008); *The Boeing Company*, Order and Authorization, 16 FCC Rcd. 22645 at ¶ 12 & n.48 (IB & OET 2001) (citing *Fugro-Chance, Inc.*, Order and Authorization, 10 FCC Rcd. 2860 at ¶ 2 (IB 1995); *Motorola Satellite Communications, Inc.*, Order and Authorization, 11 FCC Rcd. 13952 at ¶ 11 (IB 1996)).

[15] *See* Stamp Grant, Loft Orbital Solutions Inc., IBFS File Nos. SAT-LOA-20190807-00072 and SAT-AMD-20200527-00063, at Conditions 8-9 (Oct. 8, 2020) (granting waiver of 47 C.F.R. § 2.106 to allow use of commercial mobile-satellite service spectrum for intersatellite navigation correction service; granting waiver of 47 C.F.R. § 2.106 to allow use of commercial mobile-satellite service spectrum for intersatellite service on an unprotected, non-interference basis); Stamp Grant, Astro Digital US Inc., IBFS File No. SAT-LOA-20170508-00071 at n. 3 (granted in part Dec. 14, 2017) (granting use of commercial mobile-satellite service frequencies for intersatellite service based on showing of non-harmful interference); Stamp Grant, Spaceflight, Inc., IBFS File No. SAT-LOA-20220111-00007, at Condition 7 (granted in part May 10, 2022) (granting waiver of 47 C.F.R. 25.112(a)(3) to permit use of frequencies for space operation service in a frequency band allocated for other services, conditioned on operations on a non-interference, unprotected basis); *c.f. The Boeing Company Application for Authority to Launch and Operate a Non-Geostationary Satellite Orbit System in the Fixed-Satellite Service*, Order and Authorization, IBFS File Nos. SAT-LOA-20170301-00028, SAT-AMD-20170929-00137, SAT-AMD-20180131-00013 ¶¶ 12- 15 (rel. Nov. 3, 2021) (denying waiver of 47 C.F.R. § 25.112(a)(3) where applicant failed to provide sufficient technical information demonstrating that it could operate on a noninterference, unprotected basis).

[16] *See* 47 C.F.R. § 2.106 n. US347.

Turion proposes to use the 2025-2110 MHz band primarily for TT&C, along limited payload transmissions in support of its RPO and EESS objectives.

Accordingly, Turion respectfully requests a waiver of the U.S. Table of Allocations and 47 C.F.R. § 25.112(a)(3), to the extent necessary, to permit such use for TT&C and related testing.[17] Given the mission's limited duration and the restricted nature of its use of the coordinated frequencies, granting this waiver would serve the public interest. Turion therefore respectfully submits that a waiver is appropriate and warranted in this case.

11. 2200-2290 MHz Downlink

This band is allocated internationally for EESS, space research, and space operations.48 In the United States, this band is allocated primarily for Federal EESS, space research, and space operations. S-band downlink will only communicate with ground stations outside the United States. Turion will begin coordination with Federal operators in this band to ensure no harmful interference would be caused to their operations by such transmissions. Given the mission's limited duration and the restricted nature of its use of the coordinated frequencies, granting this waiver would serve the public interest. Turion requests a waiver of the Table of Allocations and to operate in these frequencies.

12. 1618.725-1626.5 MHz Band

[17] Waivers of the U.S. Table of Frequency Allocations are generally granted "when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the nonconforming operator accepts any interference from authorized services." *The Boeing Company*, Order and Authorization, 16 FCC Rcd. 22645 at ¶ 12 & n.48 (IB & OET 2001) (citing *Fugro-Chance, Inc.*, Order and Authorization, 10 FCC Rcd. 2860 at ¶ 2 (IB 1995); *Motorola Satellite Communications, Inc*., Order and Authorization, 11 FCC Rcd. 13952 at ¶ 11 (IB 1996)).

The 1618.725-1626.5 MHz band is allocated for MSS,[18] an allocation which can include the use of inter-satellite links.[19] However, the MSS allocation in the 1618.725-1626.5 MHz band is limited to communications between earth stations and non-federal space stations.[20] Turion therefore requests a waiver to communicate with the Iridium system in this band.

Here, a waiver is justified because Iridium is the sole user of the band for earth station to space station communications. Turion is Iridium's customer and will coordinate with Iridium to ensure that these communications do not cause harmful interference to Iridium's conforming MSS operations in the band. All transmissions between DROID and Iridium will only occur on frequencies assigned by Iridium to the spaceborne Iridium modem. In the unlikely event that there is a report of harmful interference, Turion will cease transmissions in the band. Additionally, the Commission has granted similar waiver requests for other applicants.[21]

Because of the above mitigation measures to prevent harmful interference, the Commission should grant Turion's request for a waiver.

B. Small Satellite Streamlined Rules

Turion respectfully requests that this application be processed pursuant to the Commission's small satellite streamlined licensing rules under Section 25.122 of the Commission's rules.[22] In order to qualify for streamlined process, Turion requests a waiver of 25.122(c)(8) and 25.122(c)(12) of the Commission's rules. Grant of this waiver is in the public interest because DROID otherwise complies with the requirements of 25.122 of the Commission's rules and can operate consistent with the orbital debris mitigation and spectrum use requirements.

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[18] *See*, 47 C.F.R. § 2.106.
[19] *See*, 47 CFR § 25.103.
[20] *See* 47 C.F.R. § 2.106 n. US319.
[21] *See* Stamp Grant, Sidus Space, Inc., ICFS File No. SAT-MOD-20241104-00248, Call sign: S3175 (Granted Jan. 15, 2025).
[22] 47 C.F.R. § 25.122(c)(12).

First, although DROID's probability of human casualty from portions of the spacecraft surviving re- entry is greater than zero as articulated in 25.122(c)(8), DROID is capable of conducting a controlled reentry in a large, uninhabited area of the Pacific Ocean, thereby mitigating the risk and achieving the Commission's goal. Second, although DROID's individual mass exceeds the requirement articulated in 25.122(c)(12), the rules contemplate a total system mass of 1,800 kg for a ten-satellite small satellite constellation. DROID remains well within this mass threshold.

The Commission implemented section 25.122 in an effort to streamline the processing for space stations applications that would present relatively limited concerns regarding spectrum use and orbital debris mitigation.[23] Below is a list of requirements for an applicant to qualify for the small satellite streamlining process:

Streamlined Rules Requirements[24]	**Turion Certifications**
(1) The space station(s) will operate only in non-geostationary orbit.	DROID will operate only in non-geostationary orbit.
(2) The total in-orbit lifetime for any individual space station will be six years or less.	DROID will de-orbit in less than six years.
(3) The space station(s): (i) Will be deployed at an orbital altitude of 600 kilometers or below; or (ii) Will maintain a propulsion system and have the ability to make collision avoidance and deorbit maneuvers using propulsion.	DROID will be deployed to a maximum orbit of 530 km. DROID also has a propulsion system and will have the ability to make collision avoidance and deorbit maneuvers using propulsion.
(4) Each space station will be identifiable by a unique signal-based telemetry marker distinguishing it from other space stations or space objects.	DROID will have a unique transmitting telemetry channel, allowing it to be identifiable during commissioning and in-orbit activities.
(5) The space station(s) will release no operational debris.	Turion will not release any operational debris.

[23] *See e.g., Streamlining Licensing Procedures for Small Satellites*, Report and Order, 34 FCC Rcd 13077 (2019) (Small Sat R&O"), ¶ 10. "The goal of this small satellite process is to enable satellites that have shorter missions, less intensive spectrum use, and lower risk of producing orbital debris to be licensed on a streamlined basis."
[24] *See* 47 C.F.R. 25.122.

(6) The space station operator has assessed and limited the probability of accidental explosions, including those resulting from the conversion of energy sources on board the space station(s) into energy that fragments the spacecraft.	Turion has assessed and limited the probability of accidental explosions.
(7) The probability of a collision between each space station and any other large object (10 centimeters or larger) during the orbital lifetime of the space station is 0.001 or less as calculated using current NASA software or other higher fidelity model.	The probability of collision between DROID and other large objects is 0, well below the Commission's threshold.
(8) The space station(s) will be disposed of post mission through atmospheric re-entry. The probability of human casualty from portions of the spacecraft surviving re- entry and reaching the surface of the Earth is zero as calculated using current NASA software or higher fidelity models.	For uncontrolled reentry, the risk of human casualty from surviving debris is 1:11700. Turion is capable of conducting a controlled reentry in a large, uninhabited area of the Pacific Ocean.
(9) Operation of the space station(s) will be compatible with existing operations in the authorized frequency band(s). Operations will not materially constrain future space station entrants from using the authorized frequency band(s).	DROID will be compatible with existing operations due to sporadic and narrow use of the band, coordinated by Turion's ground-station-as-a-service partner.
(10) The space station(s) can be commanded by command originating from the ground to immediately cease transmissions and the licensee will have the capability to eliminate harmful interference when required under the terms of the license or other applicable regulations.	DROID can be commanded by command originating from the ground to immediately cease transmissions and Turion will have the capability to eliminate harmful interference when required under the terms of the license or other applicable regulations.
(11) Each space station is 10 cm or larger in its smallest dimension.	DROID is 10 cm or larger in its smallest dimension.
(12) Each space station will have a mass of 180 kg or less, including any propellant.	No, but the mass of DROID will not exceed the total mass of a ten-satellite system where each satellite is 180 kg.
(13) The probability that any individual space station will become a source of debris by collision with small debris or meteoroids that would cause loss of control and prevent disposal is 0.01 (1 in 100) or less; and	The probability is less than 1 in 100.

(14) Upon receipt of a space situational awareness conjunction warning, the licensee or operator will review and take all possible steps to assess the collision risk and will mitigate the collision risk if necessary.	Turion certifies that if it receives a conjunction warning, Turion will review and take all possible steps to assess the collision risk, and will mitigate the collision risk if necessary

13. 25.122(c)(8)

The Commission included the human casualty requirement to ensure that applications for the small satellite streamlining process were consistent with less need for further inquiry into potential legal and financial arrangements due to liability concerns.[25]

Turion notes that it has provided in this application the option of conducting a controlled reentry in a large, uninhabited area of the Pacific Ocean, as a means to mitigate the human casualty risk. This alternative would alleviate the Commission's concern of exposing the United States Government to potential legal and financial liability which require additional factual inquiry.[26]

Accordingly, Turion respectfully submits that granting a waiver of 25.122(c)(8) and allowing the DROID application to proceed under the small satellite streamlined process would serve the public interest and align with the Commission's policy objectives.

14. 25.122(c)(12)

[25] *See e.g., Streamlining Licensing Procedures for Small Satellites*, Report and Order, 34 FCC Rcd 13077 (2019) (Small Sat R&O"), ¶ 51. "This certification is generally consistent with applications that can be processed on a streamlined basis, as it typically indicates that no additional factual inquiry by the Commission or discussion of insurance and liability arrangements, for example, is necessary."

[26] *See e.g., Streamlining Licensing Procedures for Small Satellites*, IB Docket No. 18-86, Notice of Proposed Rulemaking, 33 FCC Rcd 4152 (2018), ¶ 39. "If a statement indicates a risk of human casualty, the spacecraft could result in a future claim being presented to the United States under the relevant United Nations Outer Space Treaties.128 In light of the casualty risk, it may be necessary to consider satellite modifications that could reduce the risk to zero, or insurance and liability arrangements."

At the time, the Commission instituted the mass requirement to ensure that the satellites considered for the small satellite streamlining process were relatively small.[27] The Commission felt that this would filter out any systems that are not appropriate for the streamlined process.[28]

However, Turion notes that the Commission also adopted Section 25.123, which permits a spacecraft with a mass of up to 500 kg to qualify for streamlined processing under certain conditions. DROID, with a mass of 474.35 kg, falls within that limit. Additionally, the Commission has proposed that in-space service, assembly and manufacturing spacecraft ("ISAM") activities may also be appropriate candidates for streamlined treatment.[29]

Turion further notes that DROID's mass is due in part to the specific demands of its on-orbit mission, such as carrying a customer spacecraft and hosted payloads, rather than by the characteristics of its onboard communication systems. As a result DROID's mass is not reflective of its spectrum use, which closely mirrors the spectrum use of other systems that have sought and received streamlined treatment.[30]

Additionally, the small satellite streamlined process permits up to ten spacecraft per system, permitting a single licensee to potentially launch up to 1,800 kg of mass. If an applicant is able to meet the non-mass requirements of Section 25.122, it has shown that it can comply with the applicable requirements for the use of spectrum and orbital debris mitigation. Therefore, operation of a single spacecraft exceeding the 180 kg mass limit but within the 500 kg mass limit of Section

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[27] *See e.g., Streamlining Licensing Procedures for Small Satellites*, Report and Order, 34 FCC Rcd 13077 (2019) (Small Sat R&O"), ¶ 51. "We find that this maximum mass characteristic is useful to demarcate a particular type of licensee—a small satellite. Spacecraft are generally grouped according to their mass and mass is also easier to measure in many respects than cross-surface section area, which may change depending on what parts of the spacecraft are deployed following launch. Alongside the other qualifying characteristics, a maximum mass helps to act as a check on the types of operations that may be licensed in a streamlined fashion."

[28] *Id*. at 52.

[29] *See Facilitating Capabilities for In-space Servicing, Assembly, and Manufacturing,* Notice of Proposed Rulemaking, FCC 24-21, IB Docket Nos. 22-271 and 22-272 (rel. Feb. 16, 2024) ("ISAM NPRM"), ¶ 14.

[30] *See .e.g.* Grant, Turion Space Corp., File Number SAT-LOA-20240516-00104, Call sign: S3198 (Granted Dec. 26, 2024).

25.123 and the total mass limit of 1,800 kg that can be authorized for a small satellite system does not contravene the intent of the small satellite streamlining rules. Indeed, such a waiver would streamline the application process for DROID, which presents relatively limited concerns regarding spectrum use and orbital debris mitigation.[31]

Accordingly, Turion respectfully submits that granting a waiver of 25.122(c)(12) and allowing the DROID application to proceed under the small satellite streamlined process would serve the public interest and align with the Commission's policy objectives.

C. Alternative to Small Satellite Streamlined Rules

In the event the Commission is not able to grant waiver requests for 25.122(c)(8) and 25.122(c)(12) of the small satellite streamlined licensing rules, Turion requests the following waivers in the alternative.

15. Modified Processing Round Rules

Turion requests that this application be processed pursuant to the first-come, first-served procedure adopted for "GSO-like satellite systems" under Section 25.158 of the Commission's rules.[32] To the extent necessary to allow for such processing, Turion also requests waiver of Sections 25.156 and 25.157 of the Commission's rules, which stipulate the processing of "NGSO-like satellite systems" under a modified processing round framework.[33]

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[31] *See e.g.,* Small Sat R&O, ¶ 10. "The goal of this small satellite process is to enable satellites that have shorter missions, less intensive spectrum use, and lower risk of producing orbital debris to be licensed on a streamlined basis."

[32] 47 C.F.R. § 25.158.

[33] 47 C.F.R. §§ 25.156 and 25.157.

The Commission has not required modified processing rounds and essentially allowed similar in-orbit servicing missions[34] to be processed on a first-come, first-served basis on multiple occasions.[35] Turion's spectrum use would be limited in time and location, and Turion is capable of both sharing the spectrum on which it proposes to operate and operating on a non-interference basis. A grant of Turion's requested authorization would not preclude later grants of applications for the same spectrum. Accordingly, the underlying basis of the processing round rules would not be served by applying them under these circumstances here.

16. Milestone and Bond Requirements

Turion also requests waiver of the Commission's milestone and bond requirements for NGSO systems.[36] The Commission's bond requirements have been developed to prevent licenses from warehousing spectrum.[37] Turion does not seek mutually exclusive use of the spectrum used, as discussed above. A grant of Turion's requested authorization would not preclude other

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[34] *See Facilitating Capabilities for In-space Servicing, Assembly, and Manufacturing,* Notice of Proposed Rulemaking, FCC 24-21, IB Docket Nos. 22-271 and 22-272 (rel. Feb. 16, 2024) ("ISAM NPRM"), ¶ 13 (" Servicing activities include but are not limited to *in-space inspection*, life-extension, repair, refueling, alteration, and orbital transfer of a client space object, including collection and removal of debris on orbit." emphasis added)

[35] Application of Spaceflight, IBFS File No. SAT-STA-20210205-00017 (granted May 28, 2021); Application of Spaceflight, IBFS File No. SAT-STA-20180523-00042 (granted October 12, 2018); Application of Spaceflight, IBFS File No. SAT-STA-20150821-00060 (granted October 26, 2016); Application of Momentus Space LLC, IBFS File No. SAT-STA-20211216-00195 (granted April 28, 2022); Application of Momentus Space LLC, IBFS File No. SAT-LOA-20220504-00047 (granted November 15, 2022); Application of Momentus Space LLC, IBFS File No. SAT-LOA-20221009-00131 (granted Feb. 27, 2022, reissued Mar. 29, 2023).

[36] *See* 47 C.F.R. §§ 25.164, 25.165.

[37] *See Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Second Report and Order, 30 FCC Rcd. 14713 at ¶ 53 (2015) (citing, *e.g., TMI Communications and Company, Limited Partnership and TerreStar Networks Inc., Application for Review and Request for Stay*, Memorandum Opinion and Order, 19 FCC Rcd. 12603 at ¶ 2 (2004); *PanAmSat Licensee Corp., Application for Authority to Construct, Launch, and Operate a Ka-Band Communications Satellite System in the Fixed-Satellite Service at Orbital Locations 58° W.L. and 125° W.L.*, Memorandum Opinion and Order, 16 FCC Rcd. 11534 at ¶ 12 (2001)).

operators from seeking authorization to use the frequency bands proposed by Turion. Accordingly, there is no basis to impose the milestone or bond requirements.

Additionally, as the Commission has recognized, the anticipated time period for implementation and overall length of time that individual satellites are expected to operate are relevant considerations with regards to public interest benefits of bond requirements.[38] Here, the mission life for DROID, a single spacecraft, is expected to be less than six years, in line with the requirements for small satellite streamlining applications.[39]

Another consideration that underlies the Commission's bond requirements is the Commission's concern not to impose a cost that is disproportionate to the overall cost of the mission.[40] The Commission has stated: "we note that the cost of maintaining a $3 million or $5 million final bond during satellite construction is nominal in comparison with the cost to implement licensed space stations, which generally cost several hundred million dollars each to launch and operate."[41] For NGSO constellations with costs to construct and launch measured in the billions, a $5 million bond and associated fees might indeed be viewed as "nominal." But, for a single satellite with a limited mission duration, the bond and associated fee, even for a short period of time, would be excessive and would be a disproportionate and unfair cost. For these reasons, Turion submits that waiver of the milestone and bond requirements is justified.

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[38] *In the Matter of Streamlining Licensing Procedures for Small Satellites*, Notice of Proposed Rulemaking, 33 FCC Rcd. 4152 at ¶ 51 (2019). The ultimate rule adopted by the Commission for small satellites provides that individual satellites must have a lifetime from deployment of six years or less. 47 C.F.R. § 25.123(b)(2).

[39] Id.

[40] *See In the Matter of Amendment of the Commission's Space Station Licensing Rules and Policies*, First Order on Reconsideration and Fifth Report and Order, 19 FCC Rcd. 12637 at ¶¶ 28-31 (2004).

[41] *In the Matter of Comprehensive Review of Licensing and Operating Rules for Satellite Services, Second Report and Order*, 30 FCC Rcd. 14713 at ¶ 60 (2016).

IV. ITU Compliance

Turion has prepared the ITU Advance Publication Information submission for its proposed system and is contemporaneously providing this information to the Commission under separate cover. A signed ITU cost-recovery declaration is included as Exhibit 1 to this application.

Respectfully submitted,

/s/ Ravina Gogna

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Counsel for Turion Space Corp

Dated: September 2, 2026

EXHIBIT 1

ITU Cost-Recovery Declaration

September 2, 2026

Marlene H. Dortch
Office of the Secretary
Federal Communications Commission
45 L Street, N.E.
Washington, D.C. 20554

Subject: ITU Cost Recovery Declaration for the USASAT-30S-2 Satellite Network Operating in Non-geostationary Orbit in the Non-Planned Frequency Bands. (USASAT-30S-2)

Dear Ms. Dortch,
Turion Space Corp. ("Turion") is aware that in accordance with Resolution 88 of the International Telecommunication Union's (ITU) Plenipotentiary Conference (Marrakech, 2002), and ITU Council Decision 482, as modified, cost-recovery fees will apply to satellite network filings received by the Radiocommunications Bureau after November 7, 1998. As a consequence, Commission applicants are responsible for any and all fees charged by the ITU to process their satellite network filings. Turion hereby states that it is aware of this requirement and unconditionally accepts all cost recovery responsibilities associated with the ITU filings for the USASAT-30S-2 satellite network. Please address all cost-recovery inquiries, and ITU correspondence and filings, related to the USASAT-30S-2 satellite network to the following point of contact. We understand that should there be any change in the point of contact information, we will inform the Commission within 30 days of the foreseen event.

Point of Contact Name:	Ravina Gogna
Organization Name:	Turion Space Corp.
Address:	5 Technology Drive
	Irvine, CA 92618
E-Mail:	rgogna@turionspace.com
Telephone Number:	(949) 775-7096

Turion understands that it must remit payment of any resultant cost-recovery fee to the ITU by the due date specified in the ITU invoice, unless an appeal filed prior to the due date is pending with the ITU. We fully understand that a license granted in reliance on such a commitment will be conditioned upon discharge of any such cost-recovery obligation. We also acknowledge that, in accordance with 47 C.F.R. § 25.111, should we have an overdue ITU cost-recovery fee and have no appeal pending with the ITU, the Commission may dismiss any application associated with that satellite network.

Sincerely,

/s/Ravina Gogna
Ravina Gogna
Corporate Counsel

EXHIBIT 2

Orbital Debris Assessment Report

EXHIBIT 3

Antenna Beam Projections

EXHIBIT 4

Turion Space Corp. Leadership and Ownership

Turion Space Corp. ("Turion") is a privately held corporation.

The following entities hold 10% or more of the equity and/or voting interest in Turion.

Shareholder	Citizenship or County of Incorporation	Equity and/or Voting Interest Percentage
Washington Harbour SDA LLC	U.S.	17.8532%

The following individuals are Turion's board of directors

Name	Citizenship
Ryan Westerdahl	U.S.
Tyler Pierce	U.S.
Mina Faltas	U.S.
Mark Scianna	U.S.

The following individuals are Turion's officers.

Name	Title	Citizenship
Ryan Westerdahl	CEO	U.S.
Tyler Pierce	President	U.S.
Patryk Wiatr	CIO	U.S.
Rich Minford	COO	U.S.

All Turion board directors and officers may be reached at the address below.

Turion Space Corp.
5 Technology Drive
Irvine, CA 92618

EXHIBIT 5

Technical Certification

Technical Certification

I, David Morse, hereby certify, under penalty of perjury, that I am the technically qualified person responsible for the preparation of the engineering information contained in the technical portions of the foregoing application and the related attachments, that I am familiar with Part 25 of the Commission's rules, and that the technical information is complete and accurate to the best of my knowledge and belief.

/s/
David C. Morse, Ph.D.
Avaliant, LLC
Bellevue, WA USA
425-246-3080

Date: September 2, 2026

EXHIBIT 6

Ground Station List

Ground Station List

Location	Earth to Space Frequency (Center Frequency)	Space to Earth Frequency (Center Frequency)
Accra, Ghana	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Alice Springs, Australia	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Bahrain	2025-2110 MHz (2067.0 MHz)	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Cape Town, South Africa	2025-2110 MHz (2067.0 MHz)	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Cordoba, Argentina	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Dubbo, Australia	2025-2110 MHz (2067.0 MHz)	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Fairbanks, AK, USA	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	25.5-27.0 GHz (25750 MHz)
Guildford, UK	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Ojebyn, Sweden	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)

Pendergrass, GA, USA	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	25.5-27.0 GHz (25750 MHz)
Pretoria, South Africa	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Punta Arenas, Chile	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)
Stockholm, Sweden	2025-2110 MHz (2043.0 MHz, 2032.0 MHz (backup))	2200-2290 MHz (2203 MHz), 25.5-27.0 GHz (25750 MHz)