Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Momentus Space LLC	)	File No. SAT-STA_________
	)	
Application for Special Temporary Authority to Launch and Operate an In-Space Transportation Spacecraft	))))	

APPLICATION FOR SPECIAL TEMPORARY AUTHORITY

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Dated: December 15, 2021

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APPLICATION FOR SPECIAL TEMPORARY AUTHORITY

I. Introduction

By this application, Momentus Space LLC ("Momentus"), a wholly owned subsidiary of Momentus Inc. f/k/a Stable Road Acquisition Corporation, requests Special Temporary Authority, pursuant to 47 C.F.R. § 25.120, to launch and operate the Vigoride-3 ("VR-3") non-geostationary orbit ("NGSO") spacecraft in low-Earth orbit and to transport and deploy multiple, separate customer payloads.

VR-3 will operate in the S-band (2025-2110 MHz) for Space Operations (Earth-to-space) and in the X-band (8025-8400 MHz) for Space Operations (space-to-Earth). VR-3 is scheduled to be deployed from a Space Exploration Technologies Corporation ("SpaceX") Falcon 9 launch in June 2022, and the mission is expected to have a duration of 180 days, *i.e.*, from June 2022 to December 2022.

Momentus is a U.S. commercial space company headquartered in San Jose, California, that trades on the NASDAQ Global Select market under the ticker symbol: MNTS.[1] Since its founding in 2017, Momentus has brought together a team of engineering, technology and business experts

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[1] Ownership information for Momentus is provided in Exhibit 4 attached.

united by the mission of providing the backbone infrastructure services to help people, industries, and companies use space in new ways. There are three infrastructure services that Momentus anticipates will be commonplace demands of the future: 1) in-space transportation to carry customer satellites to precise custom orbits; 2) hosted payloads to provide customers with continual power, orbit keeping, orientation and communication services (also known as "Satellite as a Service"); and 3) in-orbit services like refueling, repositioning, repairing, and de-orbiting satellites. The Company believes it can make these new ways of operating in space possible with its planned in-space transfer and service vehicles that will be powered by the company's innovative water plasma-based propulsion system that is under development. When these future services are available, space-faring customers can reap the benefits of investing more time in their payloads and technologies and rely on service-providers, like Momentus, to navigate the in-space logistics needed for mission success. For these reasons, Momentus submits that the public interest would be served by grant of the application.

Consistent with the information required by the Commission's rules and practices, Momentus is also providing a completed FCC Form 312, ownership and related information,[2] a Schedule S form[3] and an Orbital Debris Assessment Report ("ODAR").[4]

II. System Description

A. General System Descriptions

1. Vigoride VR-3 Spacecraft

The Vigoride spacecraft product line is comprised of self-propulsive, free-flying spacecraft designed to transport and deploy customer payloads, permanently host customer payloads and, in

[2] *See* Exhibit 4.
[3] The Schedule S, submitted electronically via the FCC's IBFS database in parallel with this application, provides a representative orbit and mission profile.
[4] *See* Exhibit 2.

future iterations, perform on-orbit services including rendezvous, proximity operations and debris removal. Propelled primarily by a novel microwave electrothermal thruster ("MET"), which is designed to be non-toxic and low-pressurized water propellant system capable of providing orbit transfers, Vigorides are designed to be capable of the transportation and deployment of dozens of individual payloads which may be scheduled for deployment at any point after orbital insertion and prior to deorbit.

Figure 1: Artist's rendering of Vigoride deploying a customer spacecraft

With respect to this application, VR-3 will transport and directly and indirectly deploy a total of fifteen (15) third-party payloads. Six (6) payloads are Momentus customer cubesats that will be deployed directly from VR-3.[5] VR-3 will also fly with two additional fixed customer deployers, which in turn will deploy an additional nine (9) payloads.[6] Table 1 below provides a

[5] Gossamer-Picard and Disco-1 cubesats will be deployed simultaneously through a single door of a quad pack deployer, a deployment in keeping with common industry practices.
[6] Momentus has a contractual relationship with its fixed deployer customer, Fossa Systems, but has no contractual relationship with the customers of Fossa System.

summary of the third-party payloads and related information. Three of the seven FOSSASAT-2E satellites have electrospray propulsion; the other satellites have no propulsive capability.

Payload #	Payload Name	Payload Owner	Licensing Jurisdiction	Size	Mass
1	**STORK-6**	SatRevolution	Poland	3U	4.2 kg
2	**STORK-7**	SatRevolution	Poland	3U	4.2 kg
3	**GOSSAMER-PICARD**	Lunasonde	United Kingdom	1U	1 kg
4	**REVELA**	ARCA Dynamics	Italy	3U	3.4 kg
5	**DISCO-1**	Aarhus University	Denmark	1U	1 kg
6	**SELFIESAT**	OrbitNTNU	Finland	2U	1.8 kg
7	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
8	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
9	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
10	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
11	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
12	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
13	**FOSSASAT-2E***	FOSSA Systems	Spain	2P	0.6 kg
14	**Canary Hatchling***	Care Weather Tech.	United States of America	1P	0.24 kg
15	**TRS13***	Paul Kocyla (DL1UAC)	Germany	1P	0.23 kg

Table 1: VR-3 Payload Customers

**These pico-satellites are FOSSA Systems customers for deployment from a pair of FOSSA deployers, which will remain affixed to VR-3. One deployer contains four FOSSASat-2E pico-satellites (payloads 7-10), and another deployer contains three FOSSASat-2E pico-satellites (payloads 11-13) in addition to payloads 14 and 15.*

Each of the payload owners identified above is contractually obligated to obtain all necessary authorizations for operation of its payload prior to integration with VR-3 and the launch vehicle, and Momentus has or will confirm directly or indirectly prior to launch that each payload owner has all the necessary authorizations.

If necessary, and in order to meet the VR-3 launch schedule, Momentus may replace a payload with a mass dummy, which would not be deployed on orbit.[7] Any such mass dummies to replace Momentus customer payloads would simulate the mechanical interfaces and mass of the customer spacecraft and allow Momentus to conduct a demonstration of the planned deployment without any deployment in fact occurring.

The casualty risk assessment in the ODAR (see attached Exhibit 2 includes a scenario in which mass dummies would remain on board the spacecraft throughout the mission and during reentry. The mass dummies will be composed of aluminum and designed for demise. The ability to replace any payload with a mass dummy is key to the ongoing certification of the VR-3 mass properties to the launch service provider.

The VR-3 mission operations center is located at the company headquarters in San Jose, California. All primary telemetry and commanding will be handled through this facility, via

[7] In the event a payload on a Fossa Systems deployer fails to provide proof of licensing, then the entire Fossa System deployer will be replaced with a mass dummy.

commercial ground stations, using encrypted links. Additional information on the Ground Segment is in section B.4. below.

VR-3 has a planned launch on a Falcon 9 rideshare in June 2022. VR-3 will be affixed directly to the Falcon 9 vehicle and deployed into a targeted sun-synchronous orbit with approximately a ~97.5 degree inclination and maximum 600 km circular orbit.[8] After separation from the launch vehicle, VR-3 will undergo commissioning and, upon completion, will deploy payload 1 to payload 5.

After those initial payload deployments, VR-3 will conduct orbit-raising maneuvers to a targeted maximum 603 km circular sun-synchronous orbit with a ~97.5 degree inclination, followed by an orbital reduction to a 525 km circular sun-synchronous orbit with a ~97.5 degree inclination, at which point Momentus will deploy payload 6, SelfieSat, and payloads 7 through 15, the Fossa Systems sub-payloads.

Afterwards, VR-3 will conduct further orbit maneuvers and inclination adjustment maneuvers to a targeted 1,050 km x 350 km elliptical orbit with a ~98 degree inclination, by first reducing perigee to 350 km and then increasing apogee to 1,050 km. *See* Table 2 below (summarizing the relevant orbital parameters for the mission). VR-3 is planned to operate with an approximately 50% margin of propellant, in addition to the propellant necessary to achieve the operational concept. Momentus calculates that this reserve will be sufficient to support all contingencies during the VR-3 mission, including orbital debris and object avoidance maneuvers throughout the mission life. Additionally, our calculations suggest we would have sufficient

[8] For the purposes of this application, Momentus assumed a 600 km maximum insertion orbit based on information from the launch provider.

propellant remaining at the conclusion of the mission to conduct further perigee reduction maneuvers which could reduce to months the demise of the VR-3.

As demonstrated in the attached ODAR (see Exhibit 2), a 603 km circular sun-synchronous orbit would be the worst-case scenario in the assessment of orbital debris risk, and VR-3 would re-enter the Earth's atmosphere in approximately 23 years at that altitude. At a 1050 km (maximum) x 350 km orbit, Momentus calculates that VR-3 will de-orbit within approximately 5 years. Naturally, if VR-3 does not reach a 1050 km x 350 km elliptical orbit,[9] the VR-3 de-orbit period will be compressed further.

B. Technical Specifications

1. Orbital Parameters

The VR-3 concept of operations is as follows:

1. Launch vehicle arrives at initial orbit (maximum 600 km altitude circular sun-synchronous orbit ("SSO"))
2. VR-3 separates from launch vehicle
3. VR-3 undergoes commissioning and preliminary testing
4. VR-3 deploys payloads 1 to 5
5. VR-3 conducts orbit raising maneuvers to second orbit (maximum 603 km circular SSO)
6. VR-3 performs detailed system functional testing
7. VR-3 conducts orbit reduction maneuvers to third orbit (525 km circular SSO)
8. VR-3 deploys payload 6; VR-3 (via Fossa Systems deployers) deploys payloads 7 to 15[10]
9. VR-3 conducts orbit and inclination adjustment maneuvers to a fourth and final end-of-life orbit (maximum 1,050 km x 350 km elliptical with a ~98° inclination), by first reducing perigee to 350 km and then raising apogee to 1,050 km.[11] As discussed below in Section 5

[9] Momentus is committed to the prevention of payload co-location with NASA assets. The specific techniques are provided in Section 5 of the ODAR.
[10] Deployment of payloads 6 through 15 will be deployed on a best-efforts basis at a targeted altitude of 525 km.
[11] If VR-3 is unable to achieve a 350 km perigee, Momentus will not conduct any apogee-raising maneuvers.

of the ODAR, Momentus will ensure that its maneuvers through the orbits of inhabitable spacecraft will not create risk to such spacecraft.

	VR-3 Insertion Orbit[6]	Second Orbit	Third Orbit	VR-3 Final Orbit
Apogee Altitude	600 km (max)	603 km (max)	525 km	1,050 km (max)
Perigee Altitude	600 km (max)	603 km (max)	525 km	350 km
Inclination	~97.5° (SSO)	~97.5 (SSO)	~97.5° (SSO)	~98° (Elliptical)
Period	96 mins	96 mins	95 mins	98 mins
Argument of Perigee	N/A	N/A	N/A	N/A
Local Time of the Ascending Node (LTAN)	~01:00	~01:00	~01:00	N/A
Maximum De-Orbit Life	VR-3[12] ~23 years	VR-3[13] ~23 years	VR-3[14] ~8 years	VR-3 ~5 years

Table 2: Orbital Parameters

2. Frequency Bands

VR-3 will operate in the S-band (2025-2110 MHz) for Space Operations (Earth-to-space) and in the X-band (8025-8400 MHz) for Space Operations (space-to-Earth). *See* Table 3 below. The use of those frequencies will be primarily for telemetry, tracking, and command ("TT&C"). However, Momentus will also downlink imagery generated from one or more on-board cameras to confirm successful deployment of the payloads and perform associated mission assurance

[12] This is the deorbit duration, if VR-3 fails after deployment.
[13] This is the deorbit duration, if VR-3 achieves the second orbit and then the propulsion system fails.
[14] This is the deorbit duration, if VR-3 achieves the third orbit and then the propulsion system fails.

functions.[15] Momentus is aware that there are federal and other operations in these frequency bands and intends to coordinate its proposed operations with affected operators prior to operations.

Criteria	Uplink (Earth-to-space)	Downlink (space-to-Earth)	Notes
Center Frequency	2075.0 MHz[16]	8200 MHz	
Bandwidth	0.1 MHz	1 MHz	
Data Rate	50 kbps	500 kbps	Data rate is configurable from approximately 1 kbps up to a maximum listed
Modulation & Coding	BPSK	OQPSK	Links may include FEC.
Transmit Power	9W	3W	
Transmit Antenna	4.5m (dish)	Patch (6 dBiC)	
Transmit Antenna EIRP	43 dBW	6.16 dBW	
Receive Antenna	Patch (7 dBiC)	Dish (48 dBiC)	
Receive Antenna G/T	-23 dB/K	25 dB/K	

Table 3: Radio Frequency Plan

[15] Momentus holds a commercial remote sensing license issued by the National Oceanic and Atmospheric Administration ("NOAA") for the operations of imaging sensors. *See* NOAA Licensees, https://www.nesdis.noaa.gov/commercial-space/regulatory-affairs/licensing/noaa-licensees (last visited Dec. 10, 2021).

[16] Both the identified center frequencies are representative frequency channels. As a result of coordination with federal operators, Momentus may select another channel within the identified frequency bands for its operations.

Attached to this application, please find antenna gain contours for transmit and receive antenna beams showing, in 2 dB steps, to 10 dB below max gain.[17] The peak gain value for the transmit beam is 5.15 dB. The peak gain value for the receive beam is 6 dB.

The mission is expected to have a duration of 180 days, *i.e.*, from June 2022 to December 2022. Momentus will be communicating on the requested frequency bands, as necessary, throughout the full 180-day mission. It is possible that some portion of the 180 days will include time when VR-3 has a perigee lower than 300 km. For clarity, spacecraft disposal - *i.e.*, the period of time following the lowering of perigee to 300 km - is planned to begin prior to the 180-day mark. To the extent possible, Momentus will continue to conduct TT&C communications during the period when the perigee of VR-3 is below 300 km.

3. Frequency Tolerance and Emission Limitations

Momentus will comply with the frequency tolerance requirements of 47 C.F.R. § 25.202(e) and the emission limitations of 47 C.F.R. § 25.202(f). In addition, VR-3's transmitter does not turn on automatically, and manual commands from the ground are required to initiate communications from the spacecraft. Accordingly, VR-3 complies with 47 C.F.R. § 25.207.

4. Ground Stations

For the VR-3 mission, Momentus intends to utilize RBC Signals, LLC ("RBC") as the ground segment provider. RBC currently operates a ground station network that aggregates capacity of existing satellite ground stations around the world.[18] All operational communications between the Momentus Mission Operation Center ("MOC") and RBC stations will be protected by levels of encryption appropriate to secure control over the VR-3. To that end, TT&C

[17] *See* Exhibit 3.
[18] While RBC operates a network of approximately fifty ground stations, for the VR-3 mission, only those stations identified in Table 4 will be used.

transmissions will be sent using packetized protocols incorporating end-to-end AES256 encryption.[19] Table 4 below identifies the ground station from which RBC will communicate with the VR-3.[20]

Location	Latitude °	Longitude °	Status
Deadhorse, Alaska	70.21 N	148.41 W	Operational
Puertollano, Spain	38.67 N	4.16 W	Operational
Jeju Island, South Korea	35.54 N	126.81 E	Operational

Table 4: RBC Ground Stations Supporting VR-3

5. Microwave Electrothermal Thruster

VR-3 uses a radiofrequency generator that emits electromagnetic energy at a maximum theoretical power level of 750 watts to operate the thruster. This generator uses a magnetron to efficiently produce this level of power output, which, in turn, is delivered via a bolted waveguide connection to the thruster chamber. The location of the generator and the application of shielding mitigates the radiation of emissions outside of the thruster. The emission frequency generated by the magnetron is fixed and operates at 5750 MHz +/- 250 MHz. Electromagnetic Interference emission levels from the flight thruster payload have been measured in an anechoic facility, indicating emissions of less than 10 uV/m at a distance of 300 meters. In addition, there is expected

[19] RBC will not receive any keys necessary to decrypt or otherwise manipulate any packetized TT&C instructions sent from the MOC to VR-3.
[20] Momentus expects that it will have, as a minimum, between four to five passes per day over each of the identified ground stations (*i.e.*, four to five opportunities per day per station to communicate with VR-3) but may nominally have in excess of nineteen such passes in any given day. Each communication window presents an average of approximately seven minutes contact time.

to be further attenuation given the aluminum structure surrounding the thruster, which has no gaps larger than the wavelength (~5 cm).

Momentus' proposed thruster operations will not cause harmful radiofrequency interference to incumbent services. The narrow frequency range around 5750 MHz is used on a primary basis by Radiolocation and Fixed-Satellite (Earth-to-space) and is used on a secondary basis by the Amateur and Amateur-Satellite radio services in all three International Telecommunication Union ("ITU") regions.[21] The power flux density at the Earth's surface from 150 km, the estimated closest operational distance to the satellite, is far below the PFD threshold specified in the ITU Radio Regulations.[22] At the calculated emission levels, no emissions will be detectable (by a very large margin) by radar, mobile, fixed, or amateur systems. All other emissions from the thruster (*e.g.*, harmonics and sub-harmonics) will be further attenuated by at least an additional 20 dB.[23]

More specifically, per our calculations, the PFD at the Earth's surface is approximately -221 dB(W/m^2), which meets the limits specified in ITU RR 21.16 for all angles of arrival.

PFD Calculation
===============
PFD = P*G/(4*π*D^2)
P = -7.27 dBW/4kHz Ref BW (750W)
θ = 0°
D = 150.0 km (worst case - decommissioning)
G = 1E-10 (as measured)[24]

PFD = -221.78 dBW/m^2 @ 4.0 kHz Ref BW

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[21] *See* 47 C.F.R. § 2.106.
[22] *See* ITU Radio Regulations 21.16.
[23] Due to the operation of the equipment as part of the spacecraft, Momentus believes the VR-3 thruster should not be characterized as Industrial, Scientific or Medical equipment. *See* 47 C.F.R. §18.101, *et. seq*. In any event, as discussed above, due to the low calculated emissions levels, the frequency range within which the thruster will operate, and the operations of the equipment in space, the emissions from the propulsion system are unlikely to cause harmful interference to any authorized services.
[24] As measured, there is a gain of less than -100 dBi within the 5670-5725 MHz range.

III. Waiver Requests

The Commission may waive any of its rules if there is "good cause" to do so.[25] In general, 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.[26] Generally, the Commission will grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[27] Here, the development of efficient, flexible and non-toxic space transportation infrastructure, and the benefits such a service provide – including, critically, the potential to assist in orbital debris risk mitigation – represent a special circumstance warranting waiver of the FCC rules.

A. U.S. Table of Frequency Allocations

1. 2025-2110 MHz TT&C Uplink

This band is allocated to Space Operations and Earth-Exploration Satellites Services ("EESS"), *inter alia*, in all ITU regions. In the United States, Space Operations are limited to federal operators, and EESS use by commercial operators is subject to conditions as may be applied on a case-by-case basis and the limitation that any use may not cause harmful interference to authorized operations.[28] Accordingly, to the extent necessary, Momentus requests waiver of the Table of Allocations to use the 2025-2110 MHz band (Earth-to-space) for TT&C. Given the limited use of the frequencies during the brief 180-day mission, Momentus' commitment to

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[25] *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).
[26] *See Northeast Cellular*, 897 F.2d at 1166.
[27] *See WAIT Radio*, 418 F.2d at 1157.
[28] *See* 47 C.F.R. § 2.106 n. US347.

coordinate use of these frequencies, and the public interest justification supporting the mission, Momentus submits that waiver is warranted.

2. 8000-8400 MHz TT&C Downlink

This band is allocated to EESS (space-to-Earth), *inter alia*, in all ITU regions and in the United States. For VR-3, the 8025-8400 MHz band is, as discussed above, to be used primarily for TT&C and some satellite imaging.[29] Accordingly, to the extent necessary, Momentus requests waiver of the U.S. Table of Frequency Allocations. Given the limited use of the frequencies during the brief 180-day mission, Momentus' commitment to coordinate use of these frequencies, and the public interest justification supporting the mission, Momentus submits that waiver is warranted.

Additionally, VR-3 meets ITU PFD requirements. ITU RR 22.5 states that in 8025-8400 MHz band "the maximum power flux-density produced at the geostationary-satellite orbit by any Earth exploration-satellite service space station shall not exceed −174 dB(W/m^2) in any 4 kHz band." Per our calculations, our PFD at geostationary orbit, assuming we have reached our maximum 1050 km in altitude and are pointed directly at geostationary orbit is approximately -190 dBW/m^2, which complies with the limit.

PFD Calculation
===============
PFD = P*G/(4*π*D^2)
P = -34.26 dBW/4kHz Ref BW (1.5W)
θ = 0°
D = 34786.0 km
G = 3.98
PFD = -190.08 dBW/m^2 @ 4.0 kHz Ref BW

[29] Such use will also include transmission of limited imagery of the payloads during deployment primarily to provide mission assurance and, to a limited degree, selected images for publicity or marketing purposes.

B. 47 C.F.R. § 25.113(g)

The Commission's rules require orbital deployment approval and operating authority to be applied for and granted prior to orbital deployment and operation of a space station. In this case, given (1) the short operational life of the VR-3 spacecraft; (2) the similarity in function of VR-3 to an upper stage launch vehicle; (3) the information contained in this application regarding spacecraft operations and debris mitigation plans; and (4) the public interest justification supporting the mission, Momentus believes the underlying purposes of the rule (to provide sufficient information for the FCC to evaluate the satellite mission) is met and that grant of the requested waiver is justified. Further, the FCC has granted similar applications for in-space transportation spacecraft in the recent past.[30]

In any event, to the extent necessary, Momentus provides responses to questions 29-34 and 36-40 of the Form 312 and is submitting in parallel a Schedule S.[31] Section 310(b)(4) of the Communications Act of 1934, as amended, establishes certain limitations on indirect foreign ownership and voting of certain common carrier and broadcast licensees. By definition, these limitations do not apply to the non-broadcast, noncommon carrier operations of Momentus, as proposed in this application.

- Question 29: NO
- Question 30: NO
- Question 31: NO
- Question 32: NO
- Question 33: NO
- Question 34: N/A
- Question 36: NO
- Question 37: NO
- Question 38: NO

[30] *See, e.g.,* Application of Spaceflight, IBFS File No. SAT-STA-20210205-00017 (granted May 28, 2021); Application of Spaceflight, IBFS File No. SAT-SAT-20180523-00042 (granted Oct. 12, 2018); Application of Spaceflight, IBFS File No. SAT-SAT-20150821-00060 (granted Oct. 26, 2016).
[31] *See also* Exhibit 4 (providing corporate and ownership information).

- Question 39: NO

IV. ITU Compliance

Momentus has prepared the ITU Advance Publication Information submission for its proposed system and is contemporaneously providing this information to the FCC under separate cover. Attached as an exhibit to this application is a signed ITU cost recovery declaration.

Respectfully submitted,

/s/ Philip Hover-Smoot

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Counsel for Momentus Space LLC

Dated: December 15 2021

EXHIBIT 1

ITU Cost-Recovery Letter

DECLARATION

I, Philip Hover-Smoot, hereby declare the following:

Momentus Space LLC ("Momentus") 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. Momentus hereby states that it is aware of this requirement and unconditionally accepts all cost recovery responsibilities associated with the ITU filings for the VIGORIDE-3 satellite network. Please address all cost-recovery inquiries, and ITU correspondence and filings, related to the VIGORIDE-3 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: Philip Hover-Smoot

Organization Name: Momentus Space LLC

Address: 3901 N. First Street
San Jose, CA 95134

E-Mail: philip.hover-smoot@momentus.space

Telephone Number: +1-415-254-1295

Momentus 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, 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/ Philip Hover-Smoot

Philip Hover-Smoot
Deputy General Counsel
Chief Ethics & Compliance Officer
Momentus Space LLC

December 15, 2021

EXHIBIT 2

Orbital Debris Assessment Report

EXHIBIT 3

Antenna Gain Plots

EXHIBIT 4

Momentus Space LLC Leadership and Ownership

OWNERSHIP INFORMATION

Momentus Space LLC is a domestic Delaware corporation, wholly owned by its parent company Momentus Inc., a publicly held domestic Delaware corporation which trades on the NASDAQ under the symbol MNTS. No foreign entities are known to hold, directly or indirectly, aggregated ownership of ten percent or more in MNTS. Should Momentus become aware of any new foreign ownership of MNTS which, in the aggregate, meets or exceeds the ten percent threshold, Momentus will notify the Commission.

As a publicly traded company, ownership is inherently fluid. Other than those entities listed below, but Momentus is not aware of any owners of Momentus stock which would, in the aggregate, have more than a 10% or greater equity and/or voting interest in Momentus:

1. **Dakin Sloss**[32]
   General Partner, Prime Movers Lab ("PML")

   PO Box 12829

   Jackson, WY 83002

   PML Ownership Interest: approximately 34.74%[33]

OFFICERS AND DIRECTORS

All Momentus directors and officers listed below are, apart from Mr. Hadfield who holds Canadian citizenship, US citizens, and may be reached at the following address:

c/o Momentus Space LLC
3091 N. First Street
San Jose, CA 95134

1. John Rood
Chief Execution Officer, Director

2. Fred Kennedy
President

[32] This ownership reflects the aggregated ownership of outstanding stock by Prime Movers Lab and its related entities.
[33] This ownership information is accurate as of September 30, 2021.

3. Mitch Kugler
Director

4. Chris Hadfield
Director

5. Linda Reiners
Director

6. Brian Kabot
Director

7. Kimberly Reed
Director

8. Victorino Mercado
Director

9. Paul Ney
Chief Legal Officer

10. Philip Hover-Smoot
Chief Ethics & Compliance Officer

11. Dawn Harms
Chief Revenue Officer

12. Jikun Kim
Chief Financial Officer

13. Rob Schwarz
Chief Technology Officer