Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
SIDUS SPACE, INC.	)	File Nos.: SAT-MOD-2024_____
	)	
Modification to Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite System in the Earth Observation Satellite Service	)	Call Sign: S3175

MODIFICATION

Pursuant to Section 25.117 of the Federal Communications Commission's ("Commission") rules, Sidus Space, Inc. ("Sidus") hereby seeks to modify the operational parameters of a single satellite—LizzieSat-3—within its non-geostationary orbit ("NGSO") Earth exploration satellite service ("EESS") constellation to test data relay capabilities (the "Modification").[1] A revised Schedule S is included as part of this Modification. Except as described herein, all other technical aspects of LizzieSat-3—and the LizzieSat Constellation, as a whole—remain unchanged from the Sidus Grant and are incorporated herein by reference.[2] LizzieSat-3 is slated for launch on a SpaceX Transporter mission, currently scheduled for NET March 1, 2025. Sidus therefore respectfully requests grant of this Modification by no later than January 15, 2025.

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[1] *See* Sidus Space, Inc., *Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite System in the Earth Observation Satellite Service*, Stamp Grant with Conditions, ICFS File Nos. SAT-LOA-20230613-00141, SAT-AMD-20240506-00094 (Oct. 1, 2024) ("Sidus Grant"); *see also* 47 C.F.R. § 25.117.

[2] Sidus Space, Inc., *Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite System in the Earth Observation Satellite Service*, ICFS File No. SAT-LOA-20230613-00141, call sign S3175 (granted Oct. 1, 2024) ("Application"); Sidus Space, Inc., *Modification to Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite System in the Earth Observation Satellite Service*, ICFS File No. SAT-AMD-20240506-00094, call sign S3175 (granted Oct. 1, 2024) ("Amendment").

Sidus seeks to modify its authorization in order to install an Iridium Satellite LLC ("Iridium") 9602 modem on LizzieSat-3 and test space-to-space transmissions between the LizzieSat-3 satellite and the Iridium satellite network in the 1618.725-1626.5 MHz band. The Iridium transceiver will be contained within the FeatherEdge payload. This second generation FeatherEdge ("FeatherEdge Gen2") payload is comprised of the same materials as the first generation model and has no material impact on the orbital debris assessment for the spacecraft.[3] Sidus will conduct testing between the Featheredge Gen2 payload and the Iridium network. Iridium will concurrently file an application for experimental authority to conduct such space-to-space operations with LizzieSat-3.

The data forwarded over the Iridium network will consist of analytics derived from imagery and other data sources collected by LizzieSat-3. Raw collected data will be processed onboard LizzieSat-3 by machine learning/machine vision algorithms to extract the useful and relevant information. Then, the derived data will be packetized into short burst messages that will be forwarded over the Iridium network. Satellite commands and telemetry will also be transmitted between LizzieSat-3 and the Iridium network.

While the space-to-space communications between the systems otherwise conform to Iridium's authorized operating parameters and are consistent with Commission precedent,[4] out of

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[3] *See* Sidus Space, Inc., *Amendment to Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite System in the Earth Observation Satellite Service*, ICFS File No. SAT-SAT-AMD-20240506-00094, ODAR (May 6, 2024) (updating the orbital debris assessment for LizzieSat-3, among other spacecraft).

[4] *See*, *e.g.*, Capella Space Corp., *Application for Authority to Launch and Operate a Non-Geostationary Satellite System in the Earth Exploration Satellite Service*, Stamp Grant with Conditions, ICFS File No. SAT-LOA-20200914-00108 (2020) ("Capella Grant") (permitting Capella-2 through 4 to communicate via intersatellite links with the Inmarsat system using BGAN terminals onboard space stations); *see also* Iridium Satellite LLC, ELS File No. 0427-EX-CN-

an abundance of caution and to the extent necessary, Sidus requests a waiver of section 2.106 of the Commission's rules to communicate with the Iridium network in the 1618.725-1626.5 MHz band.[5]

The Commission may waive any of its rules if there is "good cause" shown.[6] 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.[7] 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.[8]

The Commission has previously indicated that in considering requests for such non-conforming spectrum uses it would generally grant waivers "when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services."[9] Sidus affirms that transmissions between the spacecraft will only occur on frequencies assigned by Iridium to the spaceborne Iridium modem incorporated into the Featheredge Gen2 payload, consistent with

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2023 (granted Dec. 15, 2023); Internet Think Tank, Inc., ELS File No. 0878-EX-CN-2023 (granted Oct. 3, 2023).

[5] 47 C.F.R. § 2.106.

[6] *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).

[7] *See Northeast Cellular*, 897 F.2d at 1166.

[8] *See WAIT Radio*, 418 F.2d at 1157.

[9] *See*, *e.g.*, *Fugro-Chance, Inc.*, 10 FCC Rcd. 2860, ¶ 2 (IB 1995) (authorizing non-conforming MSS in the C-band); *Motorola Satellite Communications, Inc.*, 11 FCC Rcd. 13952, ¶ 11 (IB 1996) (authorizing service to fixed terminals in bands allocated to MSS); Capella Grant, Condition 5 (authorizing non-conforming space-to-space MSS in the L-band).

Iridium's coordination agreements in the band, thereby ensuring there is no harmful interference. Moreover, Sidus accepts that all space-to-space transmissions in the 1618.725-1626.5 MHz band are non-conforming and will be made on a non-interference, non-protected basis. In the unlikely event any reports of interference are received, Sidus will immediately cease all transmissions in the band. Thus, grant of such waiver would be consistent with Commission precedent and would advance the state of the art.

The Modification serves the public interest because it will facilitate testing of inter-satellite links with the novel FeatherEdge Gen2 payload. As the Commission is well aware, inter-satellite links greatly reduce data transmission delays, free up valuable capacity onboard smaller spacecraft, and facilitate the creation of more efficient and responsive networks for customers. Coupled with the FeatherEdge Gen2 technology, these inter-satellite links will enable Sidus to more expediently and efficiently transmit onboard image-analysis and detection results to consumers. Moreover, the transmissions will help demonstrate how commercial operators may ultimately reduce the coordination burden on both Federal and commercial operators in shared Earth observations bands, limiting the number of and duration that co-frequency earth stations will be subject to coordination worldwide.

For the foregoing reasons, Sidus respectfully requests the Commission grant this Modification to enable LizzieSat-3 to communicate with the Iridium network in 1618.725-1626.5 MHz band on a non-interference, unprotected basis. Grant of the Modification is requested no later than January 15, 2025, given current launch service provider requirements for the Transporter-13 mission.

Respectfully submitted,

/s/ John Curry

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