

**Before the
Federal Communications Commission
Washington DC 20554**

In the Matter of)	
)	
Inmarsat Inc.)	
)	IBFS File No. _____
Petition for Declaratory Ruling)	
Granting United States Market Access)	
For the Inmarsat ORCHESTRA)	
NGSO Satellite Network)	

PETITION FOR DECLARATORY RULING

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Pursuant to Section 25.137 of the Commission’s rules,¹ Inmarsat Inc. (“Inmarsat”) hereby petitions for a declaratory ruling to access the U.S. market using its planned ORCHESTRA NGSO constellation in the 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz bands (collectively, the “V-band”).² Inmarsat is applying for a license from the United Kingdom, which has submitted the constellation for coordination to the International Telecommunication Union.³ The ORCHESTRA network will revolutionize connectivity for mobility users in the maritime, aviation, government, and enterprise markets and enhance competition and technology access in the United States. Because the proposed constellation meets the requirements for entering the U.S. market, the Commission should grant the Petition expeditiously.

¹ 47 C.F.R. § 25.137(a).

² We use the abbreviations FSS, GSO, ITU, LEO, MSS, NGSO, PFD, and TT&C in accordance with their customary meaning in FCC satellite applications, *i.e.*, to mean “fixed-satellite service,” “geostationary satellite orbit,” “International Telecommunication Union,” “low-Earth orbit,” “mobile-satellite service,” “non-geostationary satellite orbit,” “power-flux density,” and “telemetry, tracking & control,” respectively.

³ See International Telecommunication Union Radiocommunication Bureau, e-Submission of Satellite Network Filings, Ref. No. G2021-42403 (received Nov. 2, 2021), <https://www.itu.int/ITU-R/space/asreceived/Publication/DisplayPublication/32195> (hereinafter “ITU Filing”).

I. INTRODUCTION

Since the dawn of the 5G era, Inmarsat has embraced the potential of new technology standards to transform how we communicate beyond the reach of terrestrial networks. It has viewed satellite systems as an integral component of a future 5G “network of networks” that delivers robust connectivity anywhere in the world—seamlessly, reliably, and across a wide range of devices and solutions.

ORCHESTRA represents Inmarsat’s signature effort to execute on that vision. Unveiled in July 2021, ORCHESTRA is a dynamic mesh network that will integrate terrestrial and multi-orbit satellite communications into a single, cohesive connectivity solution. By leveraging the benefits of each technology, ORCHESTRA will offer mobility users the highest capacity available worldwide and at congestion-prone hotspots. It also will provide the fastest average speeds and lowest average latency of any mobile network—planned or in existence.

To create ORCHESTRA, Inmarsat will combine its ELERA (L-band) and Global Xpress (Ka-band) networks with terrestrial 5G infrastructure and targeted LEO satellite capacity provided by the constellation proposed in this Petition. ELERA will provide a critical layer of always-on connectivity with all-weather resilience. Global Xpress will bring reliable, high-speed global coverage with security and full redundancy. Terrestrial 5G will add ultra-high capacity at high-demand hot spots, like ports, airports, and sea canals, while the NGSO system will layer additional capacity in higher demand and remote areas, including oceanic flight corridors.

Dynamic mesh networking will supplement this multilayered approach. These technologies will allow individual customer devices to act as nodes and route capacity to and from other devices, effectively creating a mobile web of terminals that expands the network’s reach and improves its performance and resilience. Importantly, none of the integration currently envisioned

for ORCHESTRA will be achieved by deploying satellite communications in cellular bands that lack an appropriate satellite allocation.

The Commission should grant Inmarsat's request for market access so that it can unleash ORCHESTRA's unique benefits in the United States. As shown below, Inmarsat meets all eligibility and operational requirements for an FCC authorization and seeks modest waivers only for good cause. In addition, granting the Petition would serve the public interest by expanding access to advanced technologies and enhancing U.S. satellite competition.

II. DESCRIPTION OF THE PROPOSED CONSTELLATION

A. Space Segment

The proposed NGSO constellation will complement the terrestrial and GSO satellite connectivity layers of the ORCHESTRA network. Accordingly, Inmarsat has designed the NGSO constellation to be targeted and efficient. The constellation comprises 198 satellites, with ten planes of 18 satellites each in an orbit inclined at 50 degrees at an altitude of 1023.5 km, supplemented by an equatorial plane of 18 satellites at an altitude of 724 km. Inmarsat will operate ORCHESTRA under an ITU filing made by the United Kingdom.⁴

B. Frequency Plan

As explained in more detail in the attached Technical Narrative, Inmarsat proposes the following operations in the United States for the ORCHESTRA constellation:

⁴ *Id.*

Frequency Band	Use
37.5-40.0 GHz	Downlinks to individually licensed gateway earth stations
40.0-42.0 GHz	Downlinks to user terminals and individually licensed gateway earth stations
47.2-48.2 GHz	Uplinks from individually licensed gateway earth stations
48.2-50.2 GHz	Uplinks from user terminals and individually licensed gateway earth stations
50.4-51.4 GHz	Uplinks from individually licensed earth stations

While Inmarsat’s ITU Filing covers frequencies in the Ka-band, Inmarsat only seeks access in the United States to the V-band at this time. Inmarsat reserves the right to seek authority to operate outside the V-band in the United States in future applications.

C. Ground Segment

The ground segment of ORCHESTRA’s NGSO constellation component will consist of gateway earth stations, earth stations for TT&C, and user terminals. Inmarsat expects to operate several individually licensed earth stations at various locations along the fiber backbone in the United States. User terminals will take a variety of forms, and will include earth stations on vessels, aircraft, vehicles, and other platforms. Inmarsat will apply separately for Commission authority to operate earth stations in the United States and will make any further demonstrations required in those applications when filed. ORCHESTRA TT&C transmissions will occur with earth stations located outside the United States in the 47.2-47.25 GHz and 51.35-51.4 GHz bands (Earth-to-space), and 37.5-37.525 GHz and 41.975-42.0 GHz bands (space-to-Earth), and potentially in frequencies outside the V-band for which Inmarsat does not seek market access at

this time.⁵

III. GRANT OF THE PETITION WILL SERVE THE PUBLIC INTEREST, CONVENIENCE, AND NECESSITY.

Under the *DISCO II* framework, the Commission will grant requests for U.S. market access that serve the public interest, convenience, and necessity.⁶ In making that determination, the Commission considers “public interest factors such as the effect on competition in the United States, spectrum availability, eligibility and operating requirements, as well as national security, law enforcement, and trade and foreign policy concerns.”⁷ Inmarsat will comply with all eligibility and operating requirements applicable to the constellation, and the remaining public interest factors strongly favor the declaratory ruling sought here. The Commission therefore should grant the Petition.

A. Effect of Competition in the United States

Granting the Petition will enhance competition in the United States by expanding access to advanced mobility technologies.

1. ORCHESTRA Will Revolutionize Global Mobility Communications.

Inmarsat is the world leader in global mobile satellite communications. It is trusted by mariners, military, airlines, and enterprises to keep people and assets securely connected everywhere in the world through the toughest ground conditions. Its 14-satellite GSO fleet provides voice, video, broadband, and mission-critical IoT across disparate platforms, including inflight, on ships, at port, and even on the battleground. It has been a routine disruptor of satellite

⁵ Technical Narrative at 2-3.

⁶ See *Amendment of the Commission’s Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States*, Report and Order, 12 FCC Rcd. 24,094, 24,098 ¶ 7 (1997) (“*DISCO IP*”); 47 C.F.R. § 25.137(a).

⁷ See *DISCO II*, 12 FCC Rcd. at 24,098 ¶ 7.

markets throughout its 40-year existence, and the next 40 years will be no different. In fact, with the launch of its first I-6 satellite planned later this quarter, Inmarsat will unleash new, low-cost global data connectivity in the L-band, while continuing to expand its already significant broadband capabilities in Ka-band.

As the global leader in mobile satellite communications, Inmarsat has always strived to stay ahead of market expectations. With future demands in mind, the ORCHESTRA program was created to bring a significant leap in capability specifically focused on the mobility market. For example, the pandemic has accelerated the pace of maritime digitalization by almost three years, and the world's busiest ports are exploring new ways to improve operational efficiency in the face of unprecedented capacity squeezes. Meanwhile, passengers and crew increasingly demand a connected experience on the high seas, while vessel performance technologies increasingly leverage data for operational usage. Taken together, these trends have driven a massive jump in the average amount of daily data consumed per vessel—from 3.4 gigabytes in January 2020 to 9.8 gigabytes in March 2021.⁸ They also have resulted in a surge in investment in maritime digital products and services, a market projected to reach \$345 billion by the end of the decade.⁹

The need for inflight connectivity likewise continues to soar, notwithstanding the pandemic's impact on travel. Passengers increasingly choose to spend their flight time online, turning to their devices to for entertainment, communications, and work before landing. At the other end of the spectrum, businesses across virtually every industry vertical are leveraging low-cost global IoT connectivity to improve operations.

⁸ Nic Gardner, Matthew Kenney, Nick Chubb, *A Changed World: The State of Digital Transformation in a Post COVID-19 Maritime Industry*, at 12, Thetius (2021), https://www.iims.org.uk/wp-content/uploads/2021/10/Thetius-Inmarsat-A-Changed-World-2021_10.pdf.

⁹ *Id.* at 7, 21.

Facing these and other pressures, global mobility users need a connectivity solution that works everywhere that they are—and for every one of their connected applications. The ORCHESTRA NGSO constellation will provide such capability by integrating with GSO networks and terrestrial 5G to provide a seamless, state-of-the-art coverage solution. Leveraging Inmarsat’s existing GSO fleet, ORCHESTRA will continue to provide global coverage, high performance, security, and resilience for voice, video, broadband and narrowband IoT communications. ORCHESTRA’s terrestrial 5G stations will provide ultra-high capacity in crowded ports and airports, and along sea canals, while the proposed NGSO constellation will offer higher capacity still, including over remote locations. Positioned in LEO, the NGSO constellation also will support latency-sensitive communications.

Working together, these complementary layers will offer a service that is far greater than the sum of its parts. With expanded throughput, ORCHESTRA could virtually eliminate network congestion for mobility users, even in vexing hotspots where the issue seems impossible to cure. As ports get busier, and popular shipping and flight routes see surging demand for data, capacity needs will continue to strain mobile networks. By combining technologies, ORCHESTRA can help customers overcome these challenges, providing them with access to the highest capacity available worldwide of any network currently in existence.

Similarly, ORCHESTRA promises to offer the greatest average speeds and lowest average latency of any global network planned or in existence. This is again due to its ability to combine disparate network technologies and allow users to tap the benefits of each one as needed for their application. Importantly, Inmarsat also plans to leverage ORCHESTRA’s unique capabilities to unleash entirely new services for mobility users. These services include close-shore navigation for autonomous vessels, next-generation maritime emergency safety services, direct-to-cloud

connections for airlines, and secure private networks for governments, among others.

2. With Market Access, These Capabilities Will Promote U.S. Satellite Competition.

Because the United Kingdom is a member of the World Trade Organization, the Commission “presum[es]” that ORCHESTRA’s entry will promote competition in the United States and that there are no practical or legal constraints that limit or prevent access of U.S.-licensed systems to a relevant foreign market.¹⁰ But even absent the presumption, granting the Petition would unquestionably satisfy this important public interest factor. As explained above, ORCHESTRA will offer vastly improved performance relative to existing mobility offerings and a more cohesive option to meet the disparate connectivity needs of mobility users. U.S. companies in the maritime, aviation, trucking, energy, and mining industries will benefit from this new and compelling alternative, as will U.S. government customers that depend on global satellite connectivity.

Importantly, ORCHESTRA’s multi-layer architecture means that Inmarsat can achieve class-leading performance with a focused LEO constellation of relatively modest size. The ORCHESTRA constellation is thus far more likely to reach full launch and achieve a level of commercial success consistent with sustained operations, and thereby promote competition over its entire operational lifetime.

B. Spectrum Usage and Availability

Inmarsat proposes to operate in the United States in a manner consistent with the U.S. Table of Frequency Allocations, the Commission’s rules, and the Commission’s spectrum sharing policies.

¹⁰ *Id.* ¶ 2; 47 C.F.R. § 25.137(a).

37.5-40 GHz Band (space-to-Earth). In the United States, the 37.5-40 GHz band is allocated to the FSS (space-to-Earth) on a co-primary basis with the Fixed Service and Mobile Service. The Commission's rules limit FSS operations in the band to communications with individually licensed earth stations, and further provide that FSS earth stations must not be ubiquitously deployed nor used to serve individual consumers.¹¹ Consistent with these requirements, Inmarsat proposes to use this band for a limited number of individually licensed gateway earth stations. Inmarsat will comply with the requirements and procedures specified in 47 C.F.R. § 25.136 for sharing with licensees in Upper Microwave Flexible Use Service ("UMFUS").

As shown in the Technical Narrative, Inmarsat also will comply with the relevant PFD limits set forth in Section 25.208(r)(1)-(2).¹² To the extent necessary, Inmarsat requests flexibility to communicate with U.S. earth stations up to the levels specified in regulation rather than the levels associated with the specific demonstrations made in this application.

40.0-42.0 GHz (space-to-Earth). The Commission has reserved the 40-42 GHz band for FSS space-to-Earth operations.¹³ Inmarsat's proposed use of the band for user terminals is therefore consistent with the U.S. Table and the Commission's rules. As shown in the Technical Narrative, Inmarsat will comply with the relevant PFD limits set forth in Section 25.208(s)&(t).¹⁴ Inmarsat reiterates its request to communicate with U.S. earth stations up to the levels specified in

¹¹ See U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106; *id.* § 25.202(a)(1)(ii).

¹² See 47 C.F.R. § 25.208(r); Technical Narrative (attached as Exhibit B) at 10-12.

¹³ *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd. 10,988, 11,051 ¶ 192 (2017) ("*Spectrum Frontiers Second Report and Order*"); U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106.

¹⁴ 47 C.F.R. § 25.208(s)&(t); Technical Narrative at 13-15.

regulation rather than the levels associated with the specific demonstrations made in this application.

Inmarsat also proposes to utilize the 40-42 GHz band for individually licensed earth stations in some cases, as needed to provide feeder link and, outside the United States, TT&C service.

Consistent with footnote US211, Inmarsat will take all practicable steps to protect radio astronomy observations in adjacent bands from harmful interference.

Inmarsat also seeks market access to operate in the MSS in the 40.0-41.0 GHz frequency band, as indicated and under the conditions shown in the FCC Table of Allocations.¹⁵ Characteristics of the space segment of MSS operation in this band will be identical to those for FSS operation described herein. Inmarsat will demonstrate that its proposed MSS operations, and FSS operations permitted under existing service rules, are equally compatible when applying for ORCHESTRA U.S. ground segment authorizations.

47.2-50.2 GHz (*Earth-to-space*). The 47.2-48.2 GHz band segment is allocated to the FSS, Fixed Service, and Mobile Service, limited to non-Federal stations, while the 48.2-50.2 GHz band portion is allocated for the same services for both Federal and non-Federal stations. FSS operations in the 47.2-48.2 GHz band segment are limited by rule to individually licensed earth stations,¹⁶ while the 48.2-50.2 GHz band segment is reserved for general FSS use, including for blanket-licensed earth stations.¹⁷

¹⁵ See 47 C.F.R. § 2.106 (including a primary non-federal MSS allocation at 40.0-40.5 GHz and a secondary non-federal MSS allocation at 40.5-41 GHz).

¹⁶ *Spectrum Frontiers Second Report and Order*, 32 FCC Rcd. at 11,005-6, ¶¶ 54-56.

¹⁷ *Id.* ¶ 189.

Consistent with these requirements, Inmarsat proposes to communicate with individually licensed earth stations in the 47.2-48.2 GHz band and user terminals in the 48.2-50.2 GHz band. Inmarsat also proposes to utilize the 48.2-50.2 GHz band for individually licensed earth stations in some cases, as needed to provide feeder link and, outside the United States, TT&C service.

It will comply with the requirements and procedures specified in 47 C.F.R. § 25.136 for sharing with UMFUS licensees in the 47.2-48.2 GHz band. For operations in the 48.94-49.04 GHz band, Inmarsat also will take all practicable steps to protect radio astronomy as contemplated by footnote US342. To ensure that adjacent-band observations are protected, Inmarsat will comply with the unwanted emissions limit specified in footnote US156.¹⁸ These matters will be addressed in more detail in Inmarsat's ground segment applications.

50.4-51.4 GHz (Earth-to-space). The Commission designated the 50.4-51.4 GHz band for the Fixed Service and Mobile Service but authorized the licensing of individual FSS earth stations, subject to per-county and per-PEA numerical limits and aggregate population limits within the specified earth station PFD contour.¹⁹ Inmarsat proposes to communicate with individually licensed earth stations in this band and will comply with the relevant limitations imposed by 47 C.F.R. § 25.136(e). Inmarsat's operations in this band will comply with footnote US156 regarding unwanted emissions in the 50.2-50.4 GHz band.

Spectrum sharing considerations. Inmarsat has designed the ORCHESTRA constellation to share spectrum effectively with other users. **First**, as explained above, Inmarsat 1) will comply with all applicable PFD limits to protect terrestrial systems from interference, 2) will adhere to the procedures specified in 47 C.F.R. § 25.136 to ensure compatible operations in bands shared with

¹⁸ See 47 C.F.R. § 2.106 at footnote US156; *id.* § 25.202(j).

¹⁹ 47 C.F.R. § 25.136(e).

UMFUS licensees, 3) will comply with US342 to protect radio astronomy observations in the 48.94-49.04 GHz band, and 4) will comply with footnotes US156, US211, and US342. **Second**, to facilitate sharing with other qualified applicants, Inmarsat will comply with Section 25.261 in the United States.²⁰ Inmarsat also will coordinate in good faith with operators authorized during the first V-band processing round. Inmarsat's planned use of diversity sites, steerable spot beams, and state-of-the-art network control facilities will enable avoidance of inline interference which, in turn, would facilitate effective spectrum sharing between ORCHESTRA and other NGSO systems.²¹ **Third**, with respect to GSO networks, Inmarsat notes that the Commission has not adopted service rules governing sharing between NGSO FSS and GSO FSS systems in V-band. Inmarsat will comply with such rules if and when they are adopted, and with its obligations under 47 C.F.R. § 25.289.

C. Other Eligibility and Operational Requirements.

In addition to meeting the technical requirements applicable to FSS use of the V-band, Inmarsat will comply with all other relevant eligibility and operational rules.

1. Milestones, Bonds, and Related Requirements

Inmarsat will comply with the Commission's milestone requirements²² and post a surety bond to secure its compliance as required under 47 C.F.R. § 25.165.²³ Inmarsat confirms that it does not have any other application for an NGSO system on file with the Commission, nor any licensed-but-unbuilt NGSO system, in any frequency band at issue in this Petition.²⁴

²⁰ *Id.* § 25.261.

²¹ *See* Technical Narrative at 16.

²² *See* 47 C.F.R § 25.164(b).

²³ *See id.* § 25.165(a)(1).

²⁴ *See id.* § 25.159(b).

2. Section 304 Statement

To the extent required by 47 C.F.R. § 25.114(b), Inmarsat hereby waives “any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.”²⁵

3. Reporting Requirements

Inmarsat will comply with the reporting requirements specified in Sections 25.171 to 25.173 of the Commission’s rules.²⁶ As a non-common-carrier, Inmarsat would not be subject to reporting requirements in Part 4 of the Commission’s rules.²⁷

4. Safe Flight Profile, Debris Mitigation, and Disposal

The Commission generally requires space station applicants to describe the design and operational strategies to minimize orbital risk. Under the Commission’s rules, applicants for U.S. market access can satisfy these requirements by “demonstrating that debris mitigation plans for the space station(s) for which U.S. market access is requested are subject to direct and effective regulatory oversight by the national licensing authority.”²⁸ The U.K. Space Agency and other national regulatory authorities will exercise direct and effective regulatory oversight over the ORCHESTRA constellation, including the orbital debris plan that Inmarsat will file when it applies for a U.K. satellite license. Inmarsat will provide the Commission with updated information regarding its plan, as appropriate.

Inmarsat emphasizes that it shares the Commission’s concerns about maintaining a safe space operating environment. Inmarsat has been nominated by the British Standard Institute to

²⁵ See 47 U.S.C. § 304.

²⁶ See 47 C.F.R §§ 25.171-73.

²⁷ See *id.* § 25.170 at Note; *id.* § 4.9(c)(5).

²⁸ 47 C.F.R. § 25.114(d)(14)(v); *id.* § 25.114(d)(14)(viii) (effectiveness pending OMB approval).

represent the United Kingdom at the ISO level as an industry expert and has been contributing to the ISO 24113 standard development process. Inmarsat also represents the United Kingdom in the European Cooperation for Space Standardisation in both the Space Debris and Space Traffic Management working groups and is a member of both the U.S. and U.K. Commercial Integration Cell, which seek to improve space domain awareness and SSA coordination through high accuracy and timely data exchange.

Furthermore, Inmarsat plans to incorporate design and operational strategies that advance the material objectives of Section 25.114(d)(14). For example, Inmarsat plans to ensure that the ORCHESTRA satellites do not release debris during operation as per ISO 23312 (“Space systems – Detailed space debris mitigation requirements for spacecraft”), and that all separation and deployment mechanisms, and any other potential source of debris, will be retained by the spacecraft or launch vehicle as per ISO 16699 (“Space systems – Disposal of orbital launch stages”).²⁹ As satellite manufacturing progresses, Inmarsat also will assess and limit the probability of the satellite becoming a source of debris by collisions with small debris or meteoroids of less than one centimeter in diameter that could cause loss of control and prevent post-mission disposal, and will take steps to limit the effects of such collisions, however unlikely, through shielding, component placement, and use of redundant systems, all of which will result in an extremely rugged TT&C system.³⁰ Inmarsat also plans to assess and limit the probability of accidental explosions during and after completion of mission operations through a failure mode verification analysis, and to work with its satellite manufacturer to ensure that debris generation will not result from the conversion of energy sources on board the satellite into energy that

²⁹ See Technical Narrative at 8; 47 C.F.R. § 25.114(d)(14)(i).

³⁰ See Technical Narrative at 2, 8.

fragments the satellite.³¹ All pressures, including those of the batteries, will be monitored by telemetry, and Inmarsat will remove all stored energy from spacecraft placed into its final disposal orbit by depleting any residual fuel, leaving all fuel line valves open, venting the pressure vessels and ensuring that the batteries are left in a permanent state of discharge.³²

Inmarsat also will assess and limit the probability of collisions with large debris or other operational space stations,³³ though this risk should be presumed zero given spacecraft maneuverability capabilities.³⁴ ORCHESTRA spacecraft will be equipped with an on-board propulsion system to actively manage collision avoidance during early orbit, operational, and disposal phases of flight.³⁵ ORCHESTRA spacecraft also will observe reasonable orbital tolerances, and at 1023.5 km and 724 km, operate in relatively uncrowded orbits.³⁶ In addition, Inmarsat will share information for space situational awareness purposes and coordinate with other operators in similar orbits to avoid collisions and respond effectively to conjunction warnings. As an established operator, Inmarsat has procedures in place to do this successfully. It already uses both Space Data Association and 18th SPCS collision data messages, and has developed and evolved an automated system to ingest this data and ensure its use in planning collision avoidance maneuvers.³⁷

³¹ See Technical Narrative at 8; 47 C.F.R. § 25.114(d)(14)(ii).

³² See Technical Narrative at 8; 47 C.F.R. § 25.114(d)(14)(ii).

³³ Technical Narrative at 9; 47 C.F.R. § 25.114(d)(14)(iii).

³⁴ See 47 C.F.R. § 25.114(d)(14)(iv) (forthcoming) (effectiveness pending OMB approval) (“The collision risk may be assumed zero for a space station during any period in which the space station will be maneuvered effectively to avoid colliding with large objects.”).

³⁵ Technical Narrative at 9; 47 C.F.R. § 25.114(d)(14)(iii)-(iv).

³⁶ Technical Narrative at 1; 47 C.F.R. § 25.114(d)(14)(iii).

³⁷ Technical Narrative at 9.

For de-orbiting and passivation, Inmarsat will follow, at a minimum, IADC guidelines and the ISO 24113 standard on space debris mitigation requirements. At the time of disposal, Inmarsat plans to lower orbital altitude to 250 km or below to ensure that the spacecraft orbit degrades and burns upon re-entry into the atmosphere.³⁸ Inmarsat will require the spacecraft manufacturer to include an allocation in the propellant budget to ensure that sufficient propellant is reserved to provide the required delta-V for post mission disposal.³⁹ Typical lifetimes in the disposal phase are expected to last an average of 5 years, with minimum and maximum values between 2 to 8 years respectively depending on the solar cycle.⁴⁰

D. National Security, Law Enforcement, and Trade and Foreign Policy

This Petition does not present the “very rare circumstances” that raise national security, law enforcement, trade, or foreign policy concerns.⁴¹ To the contrary, grant of the Petition will only improve the connectivity options available to U.S. government customers with important national security and public safety missions. Similarly, the ORCHESTRA network stands to dramatically improve connectivity for maritime and aviation customers. Allowing market access for the ORCHESTRA NGSO constellation will ensure that U.S. companies benefit from these new capabilities.

IV. REQUEST FOR WAIVERS

The Commission may waive its rules for good cause shown.⁴² When applying the good cause standard, the Commission evaluates whether “special circumstances warrant a deviation

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ See *DISCO II*, 12 FCC Rcd. at 24,171 ¶ 180.

⁴² 47 C.F.R. § 1.3. See also *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969), cert. denied, 409 U.S. 1027 (1972); *Northeast Cellular Telephone Co., LP v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990).

from the general rule” and whether “such deviation would better serve the public interest than ... strict adherence,”⁴³ accounting for hardship, equity, the rule’s purpose, and whether a waiver would result in a “more effective implementation of overall policy.”⁴⁴ Inmarsat requests two waivers to the extent they are deemed necessary by the Commission. Each request justifies relief under the good cause standard.

47 C.F.R. § 25.112(a). Section 25.112(a) describes criteria for dismissing and returning space station applications. Should the need arise, Inmarsat respectfully requests a waiver of the rule so that it may cure any defects perceived with its application. Inmarsat has submitted substantial information about its proposed system in this Petition, Form 312, Schedule S, and supporting exhibits. Under these circumstances, providing it with an opportunity to address the Commission’s concerns prior to dismissal will facilitate the efficient processing of applications and deployment of new services in the United States, resulting in a more effective implementation of Commission policy without undermining the purpose of Part 25 application requirements. The Commission’s other rules, which “include limiting the number of licensed but unbuilt satellite systems, adopting new milestones, [and] including a bond-posting requirement,” adequately safeguard against speculation in any event.⁴⁵

47 C.F.R. § 25.157(e). Section 25.157(e) establishes a procedure for band segmentation in the event spectrum subject to a processing round is “insufficient ... to accommodate all ... qualified applicants.”⁴⁶ The Commission should waive Section 25.157(e) to the extent necessary to assign all requested V-band frequencies to Inmarsat and any other qualified applicant. The

⁴³ *GE American Communications, Inc.*, Order and Authorization, 16 FCC Rcd. 11,038, 11,041 ¶ 9 (IB 2001).

⁴⁴ *WAIT Radio*, 418 F.2d at 1159.

⁴⁵ *Amendment of the Commission’s Space Station Licensing Rules and Policies*, First Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd. 10,760, 10,797 ¶ 86 (2003).

⁴⁶ *See* 47 C.F.R. § 25.157(e).

Commission has consistently rejected band segmentation for NGSO FSS systems in favor of providing qualified applicants with equal access to all the spectrum available for FSS use, subject to coordination to mitigate interference during in-line events.⁴⁷ Relying on coordination in lieu of segmentation in this processing round will advance the same policy and promote the efficient use of spectrum.

47 C.F.R. § 25.156(d)(4). Section 25.156(d)(4) provides that applications for feeder-link authority will be “treated like an application separate from its associated service band.”⁴⁸ The Commission has held that this rule does not apply to requests for feeder links that support FSS operations given that FSS systems do not involve “feeder links” as a technical matter.⁴⁹ Nevertheless, Inmarsat notes that it seeks flexibility to operate in the MSS in 40.0-41.0 GHz in a manner consistent with the U.S. Table of Frequency Allocations. It thus seeks a waiver of Section 25.156(d)(4) to the extent necessary to ensure that its request to operate feeder links that support such MSS operations is not considered separately.

Good cause exists for such a waiver. Initiating a processing round merely to cover the feeder-link request would be duplicative and wasteful of Commission and industry resources and merely lead to unnecessary delay.⁵⁰ The public notice initiating this processing round did not preclude requests for a conforming MSS designation; indeed, at least one lead applicant made such a request.⁵¹ Moreover, separate consideration would lead to multiple rounds of processing for the

⁴⁷ *See id.* § 25.261 (providing for temporary segmentation only during in-line events and only in the absence of coordination between affected systems).

⁴⁸ *Id.* § 25.156(d)(4).

⁴⁹ The Boeing Company, Order and Authorization, IBFS File Nos. SAT-LOA-20170301-00028, SAT-AMD-20170929-00137 & SAT-AMD-20180131-00013, ¶ 45 (rel. Nov. 3, 2021).

⁵⁰ *See* Kuiper Systems, LLC, Order and Authorization, IBFS File No. SAT-LOA-20190704-00057 ¶ 55 (rel. July 30, 2020).

⁵¹ *See* Application of Mangata Networks, LLC, IBFS File No. SAT-PDR-20200526-00054 (filed May 26, 2020), at Schedule S.

very same communication links: whether they are gateway operations that support FSS terminals or feeder-link operations that support MSS terminals, the operations in question would be technically indistinguishable. Furthermore, Inmarsat's proposed MSS operations themselves would be identical to its FSS operations and would not affect its ability to co-exist with other users.

Respectfully submitted,

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