Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Mangata Networks LLC	)	
	)	
Petition for a Declaratory Ruling	)	File No.
Granting Access to the U.S. Market	)	
For the Mangata Networks System	)	
	)	

PETITION FOR DECLARATORY RULING

Brian G. Holz
CEO
Mangata Networks LLC

May 25, 2020

TABLE OF CONTENTS

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Mangata Networks	)	
	)	
Petition for a Declaratory Ruling	)	File No.
Granting Access to the U.S. Market	)	
For the Mangata Networks System	)	
	)	

PETITION FOR DECLARATORY RULING

Mangata Networks LLC, pursuant to Section 25.146 of the Commission's Rules[1], hereby files this Petition for Declaratory Ruling ("PDR") requesting access to the U.S. market for Mangata Networks' planned non-geostationary orbit ("NGSO") satellite system, which will operate using 17.3 - 17.7 GHz (in Region 1 only), 17.7 - 18.6 GHz, 18.8 - 20.2 GHz, and 27.5 - 30 GHz (hereinafter, "Ka-band" frequencies) and 37.5-42.5 GHz (space-to-Earth) and the 47.2-50.2 GHz and 50.4-51.4 Ghz (Earth-to-space) bands (hereinafter, "V-band" frequencies).

A completed Form 312, accompanying Schedule S, Technical Narrative and Waiver Request are associated with this application, consistent with the information required by the Commission's rules in support of the requested authorization.

[1] 47 C.F.R. § 25.146

I. INTRODUCTION

The year 2019 marked a year of major milestones in internet adoption. On a global scale, 2019 served as the first year in which more than half the world (51.2%, or 3.9 billion people) participated in the global digital economy by logging on to the internet.[2] In the United States, 2019 was the year in which more Americans than ever had access to a high-speed broadband connection (at least 25 Mbps/3 Mbps) - with a majority of those gaining such connections, approximately 4.3 million, in rural America.[3] The efforts of the Commission, ITU, UN along with the other participants in closing the digital divide are starkly visible, and are paying off.

While the accomplishments leading up to the successful milestones of 2019 warrant continued celebration, the year 2020 has brought upon us a global pandemic, forcing businesses, schools, and healthcare centers to either close or resort to remote, online operation. The situation at hand has emphasized the need to focus ever more intently on our efforts to bring the rest of the world online. A need that is particularly true for individuals in rural and developing areas.

In the Commission's 2019 Broadband Deployment Report, the Commission identified specific efforts in closing the digital divide: reducing barriers to investment, providing Universal Service funding, increasing access to spectrum and establishing the Broadband Deployment Advisory Committee.[4] Clearly, enabling affordable access to the nation is a priority across the United States and the Commission, as it is also a priority to Mangata Networks.

---

[2] *The State of Broadband: Broadband as a Foundation for Sustainable Development.* September 2019. Broadband Commission

[3] *2019 Broadband Deployment Report*. FCC 19-44

[4] *See id.*

II. MANGATA NETWORKS' NGSO SYSTEM

Mangata Networks was founded in 2020 with a mission to deliver the lowest cost and highest performance capacity to anyone, anywhere by skillfully and cost-effectively combining terrestrial and satellite technologies to create a socially-responsible global network service provider. Mangata Networks' System is optimized for global cellular heterogeneous network backhaul, government, maritime and aero-mobility connectivity services with the aim of providing local networks, including cloud services, to under-connected or unconnected locations and to aircraft.

Since its inception, Mangata Networks has specifically focused on architecting a non-geostationary ("NGSO") satellite system that will utilize orbital and spectrum resources efficiently, without causing harmful interference as ensured via the operating limits established by the Federal Communications Commission ("FCC") and the International Telecommunications Union ("ITU"). A description of the space and ground segments are described below and in more detail in the Schedule S and the Technical Narrative accompanying this PDR.

A. Space Segment

Mangata Networks' NGSO constellation is a hybrid solution designed for optimal global coverage and system performance, consisting of 791 satellites distributed in 27 medium earth orbit ("MEO") planes with inclinations between 45-52.5 degrees and 32 highly elliptical orbit ("HEO") planes with inclinations of 63.4 degrees. A summary of the MEO and HEO orbital planes of Mangata Networks' System is provided in the Technical Narrative and in Schedule S.

Along with the MEO/HEO orbital configuration, the system incorporates a redundant

payload (two-for-one redundancy for all major platform components), which enables Mangata Networks' constellation to provide a robust, high-availability service to a number of consumer and government applications, while also protecting invaluable orbital resources.

Furthermore, Mangata Networks' NGSO system is constructed for accelerated deployment, providing service to all of North America and Europe after two launches, and targeted capacity offerings to specific latitudes -- a feature that is inherently challenging with low earth orbit (LEO) solutions that require near-global deployments in order to provide continuous coverage in specific geographical areas or key mobility markets.

B. System Frequency Plan

Mangata Networks' NGSO System will utilize Ka-band and V-band for feeder links, connecting the satellites and gateway earth stations and Ka-band for service links, connecting the satellites and user terminals. The United Kingdom's Office of Communications ("Ofcom") will authorize Mangata Networks and has made spectrum filings with the ITU on Mangata Networks behalf. Specific frequency plan details (transmission type and direction, and frequency range) are provided in the Technical Narrative and Schedule S.

The U.S. Table of Allocations, set forth in Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106, identifies specific Ka-band and V-band spectrum allocations for non-Federal satellite operations, as well as for systems in other services. Mangata Networks will operate in accordance with the Commission's rules, including the Table of Frequency Allocations or, to the extent necessary, will seek limited waivers of the Commission's rules to permit its proposed operations in these bands. Mangata Networks also recognizes the requirement to coordinate in

good faith with incumbent and future operators in overlapping frequency bands, and in particular coordinate with other NGSO systems.

C. Ground Segment

The Mangata Networks' ground segment consists of user terminals, gateways, TT&C and operations infrastructure; all of which are described in more detail in the Technical Narrative. In summary, gateways will consist of antennas in either a dual Ka-/V-band or a Ka-band only configuration. User terminals will operate in Ka-band only with phased array or parabolic reflectors. TT&C will operate in Ka-band through a subset of the getaway antennas, and operations will follow a traditional architecture including a Satellite Operations Center (SOC) and a Network Operations Center (NOC). Additionally, a Mission Operations Center (MOC) will provide real time configuration of both the space and ground segments as it pertains to customer connectivity in order to optimize the network to provide a robust customer experience.

Mangata Networks will submit applications to the Commission requesting licenses for any TT&C and gateway earth station located in the United States, and for user terminals on a blanket basis pursuant to Sections §25.115 and §25.137 of the Commission's Rules.

III. GRANT OF THIS APPLICATION WOULD SERVE THE PUBLIC INTEREST

The Commission's framework for considering and approving requests for non-U.S. licensed space stations to access the U.S. market requires that the system be in the public interest.[5] The Commission also considers: (i) the effect on competition in the U.S.; (ii) spectrum

[5] *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,* 12 FCC Rcd 24094, ¶ 29 (1997) ("DISCO II Order"), on reconsideration, 15 FCC Rcd 7207, ¶ 5 (1999).

availability; (iii) national security, law enforcement, foreign policy and trade considerations, and (iv) eligibility and operational requirements[6]

Mangata Network's request for authority to operate its system in the U.S. market is supported by the considerations identified above, and thus it is in the public interest to allow Mangata Networks to provide services in the U.S. As demonstrated below, Mangata Networks is also legally and technically qualified to use the Mangata Networks System to serve the U.S. market.

A. Effect on Competition in the United States

An applicant seeking access to the U.S. market for a non-U.S. licensed satellite system is entitled to a presumption in favor of U.S. market access if the applicant is licensed by a World Trade Organization ("WTO") member country to provide satellite services covered by the WTO Basic Telecommunications Agreement (the "WTO Agreement").[7] The Mangata Networks System will be authorized by the United Kingdom, a member of the WTO.[8] Furthermore, Mangata Networks seeks authority to provide only satellite services that are covered by the WTO Agreement. These services do not include direct-to-home, Digital Audio Radio Service, or Direct Broadcast Satellite Service in the U.S. Thus, Mangata Networks is entitled to the presumption that market entry for the Mangata Networks System will satisfy the competition component of

[6] *See id.*

[7] DISCO II Order at ¶ 39 ("We adopt our proposal to apply a presumption in favor of entry in considering applications to access non-U.S. satellites licensed by WTO Members to provide services covered by the U.S. commitments under the WTO Basic Telecom Agreement. Specifically, we will presume that satellite systems licensed by WTO Members providing WTO covered services satisfy the competition component of the public interest analysis.").

[8] The Commission treats British Crown Dependencies like Jersey and Guernsey as members of the WTO. See, *e.g., Intelsat Holdings, Ltd., Transferor, and Serafina Holdings Limited, Transferee, Consolidated Application for Consent to Transfer Control of Holders of Title II and Title III Authorizations,* 22 FCC Rcd 22151, ¶ 25, n. 57 (2007).

the public interest analysis. Accordingly, Mangata Networks is not required to make effective competitive opportunities showing.[9]

B. Spectrum Availability

Spectrum availability is also a factor the Commission considers in determining whether grant of authorization to a foreign-licensed satellite to serve the U.S. market is in the public interest.[10] The primary assessment in this consideration is whether grant of access would create the potential for harmful interference with U.S.-licensed satellite and terrestrial systems. The design of Mangata Networks System architecture ensures highly efficient spectrum use and compliance with Commission rules and ITU requirements regarding GSO/NGSO co-frequency sharing, namely Ka-band EPFD limits, as well as the Ka-band and V-band PFD limits, which provide interference protection for terrestrial services. EPFD and PFD compliance is demonstrated in Schedule S and the Technical Narrative accompanying this PDR.

Mangata Networks will share Ka-band and V-band spectrum with other NGSO systems that are currently operational, seeking in every case to reach coordination agreements, which allow for flexibility among the systems in the use of all authorized spectrum, and that comply with Commission's rules § 25.261(b). Therefore, granting U.S. market access to Mangata Networks would be consistent with the Commission's spectrum availability policies for non-U.S. licensed satellites.

[9] *See* 47 C.F.R. § 25.137(a)(2)
[10] *DISCO II Order,* at ¶ 149 ("We adopt our proposal to consider spectrum availability as a factor in determining whether allowing a foreign satellite to serve the United States is in the public interest.").

C. National Security, Law Enforcement, Foreign Policy and Trade Issues

The Commission has stated that the issues of national security, law enforcement, foreign policy, and trade, which it considers in evaluating requests for market access for non-U.S. licensed satellites, are likely to arise only in "rare circumstances."[11] Further, the Commission defers to the expertise of the Executive Branch in identifying and interpreting issues of this nature.[12] Mangata Networks' request for authority to operate in the U.S. market raises no such issues, and therefore satisfies the public interest analysis element of the Commission's *DISCO II Order*.

D. Eligibility and Operational Requirements

Pursuant to 47 C.F.R. § 25.146, of the Commission's rules, the entity filing a PDR for U.S. market access must provide the legal and technical information for its non-U.S. licensed space station that is required under Part 25 of the Commission's rules, including Section 25.114.

1. Legal and Technical Qualifications

The information set forth in this Legal Narrative, the Technical Narrative, Schedule S, and the accompanying FCC Form 312 demonstrates compliance with the requirements of Section 25.146 and the other applicable sections of Part 25 of the Commission's rules. Mangata Networks asserts that it does not have any other application for an NGSO-like satellite system on file with the Commission, or any licensed-but-unbuilt NGSO-like system, in any frequency band

[11] *DISCO II Order* at ¶ 180 ("We emphasize, however, that we expect national security, law enforcement, foreign policy and trade policy concerns to be raised only in very rare circumstances. Contrary to the fears of some commenters, the scope of concerns that the Executive Branch will raise in the context of applications for earth station licenses is narrow and well defined.").
[12] *See Id.*

involved in this application. Mangata Networks highlights its compliance with certain Part 25 rules that warrant special attention:

i. Sections 25.164(b)(1) & 25.164(b)(2): Milestones

Pursuant to 47 C.F.R. § 25.164(b)(1) of the Commission's rules, NGSO system licensees are required to launch 50 percent of the maximum number of space stations authorized for service, place them in their assigned orbits, and operate them in accordance with the station authorization no later than six years after the grant of the authorization. Mangata Networks anticipates that it will launch at least 50 percent of the maximum number of space stations authorized for service, place them in their assigned orbits and operate the complete system, as specified herein, within six years of the PDR. Additionally, 47 C.F.R. § 25.164(b)(2) of the Commission's rules states that a licensee that satisfies the requirement in 25.164(b)(1) must launch the remaining space stations necessary to complete its authorized service constellation, place them in their assigned orbits and operate each of them in accordance with the authorization no later than nine years after grant of the authorization. Mangata Networks anticipates it will launch and operate the remaining space stations necessary to complete its authorized service constellation no later than nine years after grant of the authorization. Mangata Networks will also submit to the Commission the requisite information to demonstrate compliance with the milestones required in the Commission's rules.[13]

[13] 47 C.F.R. § 25.164(f)

ii. Section 25.165: Posting of Bonds

Pursuant to 47 C.F.R. § 25.165(a)(1) of the Commission's rules, NGSO licensees are required to post a bond in an amount, at minimum, determined according to the following formula, rounded to the nearest $10,000: A = $1,000,000 + $4,000,000 * D / 2192, where A is the amount to be paid and D is the lesser of 2192 or the number of days elapsed from the date of license grant until the date when the license was surrendered.

Mangata Networks intends to post the required initial bond amount of $1 million within 30 days of grant of the PDR, as required by 47 C.F.R. § 25.165(a) of the Commission's rules. Mangata Networks will also increase the bond amount as necessary in order to comply with the Commission's escalating bond requirement on a going forward basis.

iii. Section 25.114(d)(14) & 25.283: Orbital Debris Mitigation and End-of-Life Disposal

Mangata Networks prioritizes orbital debris mitigation and end of life disposal and is committed to coordinating amongst other operators including would-be NGSO LEO constellation operators to avoid physical collision. Mangata Networks is designing its system with the technology (including maneuverability), experience and resources necessary to monitor, control and take ongoing efforts to avoid collision in space. Mangata Networks provides more information debris mitigation in the Technical Exhibit.

2. Waiver Requests

Mangata Networks respectfully requests waiver of certain FCC rules that pertain to spectrum allocations and administrative requirements. Grant of the requested waivers would serve the public interest.

i. Table of Frequency Allocations

Mangata Networks respectfully requests waivers of the U.S. Table of Allocations and the FCC's Ka-band Plan, as applicable, to allow Mangata Networks to use NGSO FSS Ka-band frequencies on a non-conforming basis relative to the allocated services in the following bands:

- *The 17.7 - 17.8 GHz band.* In the FCC Table of Allocations, 17.7 - 17.8 GHz is allocated to Fixed Services on a primary basis and FSS Earth-to-space transmissions for Broadcasting Satellite Services (BSS) feeder links.[14] Internationally, this band is authorized for FSS space-to-Earth transmissions on a globally harmonized basis, as well as Fixed, Mobile and FSS Earth-to-space transmissions. Mangata Networks plans to use this band consistent with the ITU allocations, outside of the U.S., and will not cause interference to authorized services. Use of this band would increase Mangata's ability to address potential interference and coordination issues by implementing frequency diversity.
- *17.8 - 18.3, 18.3 - 18.6 GHz, and 19.3 - 19.7 bands*. In the FCC Table of Allocations, 17.8 - 18.3 GHz is allocated to Fixed Services on a primary basis, and FSS on a secondary basis. To the extent necessary, Mangata Networks requests a waiver to provide NGSO FSS feeder and user link services in this band, and commits to

[14] *See* 47 C.F.R. § 2.106 - Table of Frequency Allocations. *See also NGSO FSS Order,* Appendix B

complying with applicable PFD and EPFD limits in this band to protect terrestrial and GSO FSS systems, respectfully. Additionally, In the FCC Table of Allocations, FSS in the 18.3 - 18.6 GHz band is limited to GSO FSS operations. Mangata Networks requests a waiver of this limitation to permit non-conforming use of the 18.3 - 18.6 GH band to support Ka-band FSS NGSO feeder and user link operations. Mangata Networks will not claim protection from conforming uses, and will comply with ITU EPFD limits designed to protect GSO FSS systems. Lastly, In the FCC Table of Allocations, 19.3 - 19.7 GHz is limited to (space-to-Earth) MSS feeder links. Mangata Networks seeks a waiver for this limitation to permit non-conforming use of 19.3 - 19.7 GHz to support Ka-band FSS feeder and user link operations. A waiver to permit Mangata Networks to operate in these bands would better enable Mangata Networks to control interference and serve the public interest.

- *The 19.4 - 19.6 GHz band.* As previously mentioned, Mangata Networks plans to provide MSS feeder link services and FSS in this band. According to the FCC's Ka-band plan, this band is allocated to fixed services and NGSO MSS feeder links from space-to-Earth it the U.S., and therefore a waiver is requested for MSS feeder link and FSS use of this band, given that Mangata Networks will coordinate with authorized operators in this band, including Iridium.
- *The 19.7 - 20.2 GHz band.* While the 19.7 - 20.2 GHz band is allocated to the FSS in the U.S., the Commission's Ka-band Plan designates this band for GSO FSS use. Mangata Networks seeks a waiver of the Commission's Ka-band Plan to permit the Mangata Networks NGSO Constellation to operate in this band.

- *The 19.7 - 20.2 GHz and 29.5 - 30.0 GHz bands.* Mangata Networks plans to provide both mobile-satellite service (MSS) and FSS in the 19.7 - 20.2 GHz and 29.5 - 30.0 GHz bands. Although these bands are allocated to MSS and FSS domestically and internationally, FCC service rules do not presently exist for MSS. Mangata Networks will utilize highly directional antennas in this band that have the same technical characteristics as its FSS operations, which comply with PFD and EPFD limits. Mangata Networks will also coordinate in good faith with other NGSO FSS operators in order to ensure all authorized operations, including MSS, jointly comply with the aggregate EPFD limits, and will operate its MSS on a non-interference, non-protected basis with respect to other FSS operations in these bands.
- *The 29.1 - 29.5 GHz band.* Under the FCC's Ka-band Plan, the 29.1 - 29.25 GHz band is allocated to fixed services and NGSO MSS feeder links in the Earth-to-space direction. Under the FCC's Ka-band plan, the 29.25 - 29.5 GHz band is allocated to GSO FSS and NGSO MSS feeder links for Earth-to-space transmissions. Mangata Networks requests a waiver to provide both FSS and MSS (feeder link) across 29.1 - 29.5 GHz, and commits to coordinating with authorized operations in this band, including Iridium.
- *The 42.0 - 42.5 GHz band* In the U.S. Table of Frequency Allocations, 42.0 - 42.5 GHz is allocated to FS on a primary basis, but is not allocated to FSS. Mangata Networks requests a waiver to permit limited feeder link use in the United States on a non-conforming basis in this band. As shown in the Technical Narrative, Mangata Networks will comply with PFD limits in this band, and therefore will not cause

interference to terrestrial services. Mangata Networks will also accept any harmful interference from these services while operating on a non-conforming, unprotected basis.

The Commission has authorized similar non-conforming uses when applicants are prepared to accept interference from primary operations and can demonstrate that their proposed operations are not likely to cause harmful interference to primary operations. As shown in the Technical Exhibit, Mangata Networks operations on a non-conforming basis would not cause harmful interference to primary operations in the band (via PFD and EPFD limit compliance). Mangata Networks is also committed to coordinate with commercial and government operators as required and in accordance with governing provisions and rules.

ii. Band Segmentation Applications Requirements

Mangata Networks respectfully requests a waiver of the band segmentation requirements in Section §25.157(c), §25.157(e) and in §25.261(c) of the Commission's rules. Band segmentation would not serve the public interest, as band-splitting among multiple NGSO-like constellation applicants does not provide enough spectrum to enable commercial viability for any of the individual applicants. Good faith coordination and the deployment of today's most advanced NGSO FSS technology enable co-frequency operations and in-line avoidance approaches among NGSO licenses, and negate the need for band segmentation. Mangata Networks will employ the spectrum sharing method adopted by the Commission based on "avoidance of in-line interference events," which was premised on an acknowledgement in the Commission's *NGSO Sharing Order* that co-frequency spectrum sharing between NGSO FSS systems is desirable and achievable.

iii. Consideration of Applications

To the extent necessary, Mangata Networks also seeks a waiver for 25.156(d)(3), which states that NGSO-like satellite systems employing two or more service bands will be treated like separate applications for each service band. Mangata Networks requests its application be considered as a single application to the Commission.

iv. Contingent Waiver of the "Substantially Complete" Standard

Section §25.112(a) of the Commission's rules, 47 C.F.R. § 25.112(a)(1) states that applications will be deemed "unacceptable for filing and will be returned to the applicant" if they, among other potential defects, lack "completeness of answers to questions [or] informational showings." Even in such a case, however, the Commission's rules provide that an application found defective under Section 25.112(a)(1) may be accepted if accompanied by an appropriate waiver request, 47 C.F.R. § 25.112(b)(1).

The specific details of the orbital debris showing are not included in this Application, as they are not yet known with certainty. Nonetheless, Mangata Networks believes that this Application may be considered "substantially complete" under the Commission's standards. Furthermore, it is clear that Mangata Networks has offered a non-frivolous, substantial proposal, and that the omission of this specific detail at this time does not detract from the ability of the Commission or other interested parties to evaluate the proposal on the merits. As mentioned in the Technical Narrative, Mangata Networks will furnish a complete orbital debris assessment once component selection has been completed.

E. Grant of Mangata Networks' PDR is in the Public Interest

Grant of Mangata Networks' PDR is in the public interest because Mangata Networks will provide access to global broadband with a system architecture that efficiently utilizes and shares spectrum and orbital resources. In the Telecommunications Act of 1996,[15] Congress mandated that the Commission establish support mechanisms to ensure the delivery of affordable telecommunications service to all Americans, including low-income consumers, eligible schools and libraries, and rural health care providers.[16] Mangata Networks' System will work to achieve this goal, as it will seamlessly integrate and expand the current coverage maps of existing mobile and Internet Service Providers, improving education and healthcare around the world and fostering economic growth.

IV. REQUEST FOR PERMIT-BUT-DISCLOSE STATUS

Mangata Networks requests that this proceeding be designated "permit-but-disclose" under the Commission's rules controlling *ex parte* presentations.[17] Designation as a "permit-but-disclose" proceeding under Section 1.1206 would serve the public interest by facilitating the development of a complete record upon which a well-reasoned decision can be made.

---

[15] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (Feb. 8, 1996), *codified as amended* in scattered sections of 15 and 47 U.S.C. The 1996 Act amends the Communications Act of 1934, 47 U.S.C. §§ 151 *et seq.*

[16] Congress directed the Commission to devise methods to ensure that "...consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas . . . have access to telecommunications and information services. . . ". 47 U.S.C. § 254(b)(3). Congress also directed the Commission "to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and non-profit elementary and secondary school classrooms, health care providers, and libraries." 47 U.S.C. § 254(h)(2).

[17] 47 C.F.R. § 1.1200 *et seq.*

V. CONCLUSION

As explained above and in the attached materials, Mangata Networks fully satisfies the Commission's requirements for U.S. market access, and complies fully with Part 25 of the Commission's rules. Therefore, Mangata Networks respectfully requests that the Commission issue a Declaratory Ruling authorizing the Mangata Networks System to access the U.S. market.

Respectfully submitted,

MANGATA NETWORKS LLC

By: */s/ Brian Holz*
Brian G. Holz
CEO
Mangata Networks LLC

May 25, 2020