Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
O3b Limited	)	Call Sign E100088
Application for Modification of	)	File No. SES-MOD-20190207-00084
Fixed Earth Station in the Fixed-Satellite	)	
Service in Haleiwa, HI	)	
	)	

REPLY TO OPPPOSITION TO PETITION TO DENY

On September 20, 2019, Iridium Constellation LLC ("Iridium") file a petition to deny in part ("Petition") the above-captioned application (the "Application") filed by O3b Limited ("O3b") seeking to modify the license for O3b's Hawaii gateway earth station (the "Hawaii Earth Station"). On October 3, 2019, O3b filed an opposition to Iridium's Petition ("Opposition"). Iridium hereby replies to O3b's Opposition.

I. INTRODUCTION AND SUMMARY

In the Petition, Iridium asked that the Commission deny the portion of O3b's Application proposing to use the 29.1-29.3 GHz and 19.4-19.6 GHz MSS feeder link bands because among other reasons:

(i) O3b has not coordinated its proposed feeder link operations with Iridium's feeder links; and

(ii) there is no evidence that O3b has been authorized to operate or even applied to operate any MSS earth stations, thereby calling into question the ostensible basis for O3b's access to non-geostationary satellite orbit ("NGSO") mobile satellite service ("MSS") feeder link spectrum.

For each of the following reasons, O3b's Opposition fails to cure these deficiencies:

(i) O3b is misreading Sections 25.203(k) and 25.250 of the Commission's rules. Read together, those provisions require O3b to coordinate with Iridium before filing for NGSO MSS feeder link authority. O3b has not done so.

(ii) Even if O3b were permitted to make an interference showing in lieu of prior coordination, the showing in O3b's Opposition is inadequate. O3b relied on "assumed characteristics" instead of real-world data. O3b has no knowledge of the particular characteristics of Iridium's network, which are proprietary and can only be reviewed under appropriate conditions of confidentiality in the course of coordination. In addition, O3b wrongly equated a "loss of spectral efficiency" with a "loss in available capacity." And O3b ignored the impact of cumulative interference from an ever-increasing number of GSO and NGSO systems.

(iii) O3b's request to use MSS feeder link spectrum is premature. O3b has been evasive as to its MSS plans, and it appears O3b lacks authority to operate MSS earth stations. Without MSS earth stations there is no justification for accessing MSS feeder link spectrum. And if O3b were to seek MSS earth station authority, multiple issues would be implicated. Once O3b has a concrete plan for MSS earth stations, it can present it in conjunction with an application for NGSO MSS authority. The Commission then can take a comprehensive look at all interrelated issues.

II. O3b IS MISREADING SECTIONS 25.203(k) AND 25.250 OF THE RULES

Section 25.203(k) of the rules[1] requires that an applicant show either that it will not cause unacceptable interference or that it already has coordinated its proposed operations. If Section 25.203(k) applies here, the Commission must reject out of hand O3b's request for a grant conditioned on future coordination.

O3b questions whether Section 25.203(k) applies in the case of potential interference between two operators' NGSO MSS feeder links. According to O3b,

[1] 47 C.F.R. § 25.203(k).

Section 25.203(k) is limited to interference between parties that operate in different services. The plain language of the rule and Commission precedent refute O3b's contention.

Section 25.203(k) makes no reference to earth stations in different services. Rather, it applies across the board to every "applicant for operation of an earth station … that will operate with a geostationary satellite or non-geostationary satellite in a shared frequency band in which the non-geostationary system is (or is proposed to be) licensed for feeder links."[2] That description fits O3b to a T. Any technical showing under Section 25.203(k), moreover, must take into account "any other satellite network that is authorized to operate in the same frequency band,"[3] without regard to whether the other satellite network is in the same service or a different service.

When the Commission wants a provision to apply only to operations in different services, it knows how to say so. The Commission explicitly limited the reach of other parts of Section 25.203 in this fashion. As O3b acknowledges,[4] Sections 25.203(a) and (b)[5] are restricted to frequency bands that are shared between terrestrial and space services. No such limitation appears in Section 25.203(k).

FCC precedent confirms that Section 25.203(k) applies to systems that are in the same service, like Iridium's and O3b's NGSO MSS systems, and that share feeder link

[2] *Id.*
[3] *Id.*
[4] Opposition at 3. n.9.
[5] 47 C.F.R. §§ 25.203(a) and 25.203(b).

spectrum. In *Verestar*,[6] when an NGSO MSS applicant sought to operate feeder links on frequencies that Globalstar's NGSO MSS network also employed, the International Bureau applied Section 25.203(k).[7]

O3b's reliance on Section 25.250[8] of the rules also is misplaced. O3b reads Section 25.250 as permitting coordination to be completed at any time, rather than in advance of filing for an earth station license.[9] But Section 25.250 must be read in conjunction with Section 25.203, which Section 25.250 explicitly references. And Section 25.203(k) requires that an applicant relying on coordination certify to the existence of "established coordination agreements." The possibility of future coordination is insufficient.

Commission precedent confirms this interpretation. When it adopted Section 25.250, the Commission explicitly stated that prior coordination is required. It held that "any NGSO/MSS system requesting use of … NGSO/MSS feeder link earth stations will be required to coordinate its proposed site and frequency usage with existing licensees as well as with previously filed applicants in the band *prior* to filing an earth station application."[10]

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[6] *Verestar, Request for Expedited Special Temporary Authority for the Brewster Earth Stations to Support In-Orbit and Integration System Tests with the ICO F-2 Satellite*, Order and Authorization,16 FCC Rcd 9575 (IB 2001) ("*Verestar*").
[7] *Verestar*, 16 FCC Rcd at 9577.
[8] 47 C.F.R. § 25.250.
[9] Opposition at 4.
[10] *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, CC Docket No. 92-297, First Report and Order and Fourth Notice of Proposed Rulemaking*, 11 FCC Rcd 19005, ¶66 (1996) (emphasis added).

Section 25.250 is relevant in another respect. Although Section 25.203(k) as a general matter permits an applicant either to show it has coordinated or to make an interference showing, Section 25.250(b) makes coordination mandatory when earth stations are separated by 800 km or less. Since O3b's Hawaii earth station is only 17 km from Iridium's, O3b must coordinate.

In sum, O3b has misread Sections 25.203(k) and 25.250 of the rules. The wording of Section 25.203(k), the reference in Section 25.250 to Section 25.203, and FCC precedent all confirm that O3b must coordinate its feeder link operations with Iridium before filing an application. Even if O3b were permitted to make an interference showing in lieu of prior coordination, moreover, for the reasons stated in the section that follows O3b's showing is inadequate.

III. O3b's INTERFERENCE ANALYSIS IS INADEQUATE

O3b claims that the interference from its operations will have only "a negligible impact on overall performance for Iridium."[11] This claim, however, does not withstand scrutiny.

O3b acknowledges it did not use "real-world data regarding the Iridium system."[12] Rather, it relied on "assumed characteristics."[13] A hypothetical analysis is no substitute for the actual operating conditions that would be taken into account in coordination.

[11] Opposition at 5.
[12] *Id*. at 6.
[13] *Id*. at 6.

O3b's approach underscores the need for an exchange of technical information between operators. O3b has no knowledge of the particular characteristics of Iridium's network. This information is proprietary and can only be reviewed under appropriate conditions of confidentiality in the course of coordination. Although each coordination is fact specific, in Iridium's experience separation distances of hundreds of kilometers typically are required to ensure compatibility. O3b's proposal for a separation of 17 km falls well short of this standard.

O3b compounded these errors with other methodological flaws. It equated a "loss of spectral efficiency" with a "loss in available capacity."[14] While that assumption might be appropriate for interference to service links or to gateway links for systems such as O3b's that have multiple gateway sites within the satellite footprint, the stakes for Iridium are far higher. O3b would be interfering with Iridium's feeder links, not its service links. These feeder links support 100 percent of Iridium's traffic, and Iridium also uses the feeder links to control its satellites. Interference to Iridium's feeder links could impair a large percentage of Iridium's global traffic (currently over 1.25M subscribers and growing) and could impact TT&C operations, endangering the physical safety of Iridium and other space assets in low-earth orbit.

[14] *Id.* at 3.

In addition, O3b ignored the impact of cumulative interference. O3b is not the only potential source of interference to Iridium's feeder links. Iridium must apportion interference among an ever-increasing number of GSO and NGSO systems.[15]

Iridium reiterates that it stands ready to coordinate in good faith. That said, O3b's choice of location, 17 km from an Iridium feeder link earth station, remains a significant concern. These matters are best explored in coordination, based on real world data, system-specific protection criteria, and a complete interference picture.

IV. O3b's REQUEST TO USE MSS FEEDER LINK SPECTRUM IS PREMATURE AND RAISES UNRESOLVED ISSUES

O3b seeks to operate feeder links in the 29.1-29.3 GHz and 19.4-19.6 GHz bands. The only feeder links permitted in these bands are NGSO ***MSS*** feeder links.[16] O3b must not use these bands to support its NGSO ***FSS*** operations.

Given these circumstances, O3b's request to access the 29.1-29.3 GHz and 19.4-19.6 GHz bands is premature. There is no evidence O3b has authority to operate MSS earth stations. Absent MSS earth stations, there can be no MSS communications. And absent MSS communications, there is no basis for granting a license for an earth station whose sole purpose would be to support such communications.

O3b appears to acknowledge it lacks MSS earth station authority. But it suggests it "might never need to seek a Commission license for MSS terminals" because its

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[15] *See Inmarsat Mobile Networks, Inc., Application to Operate a Fixed-Satellite Service Gateway Earth Station Facility in Lino Lakes, Minnesota with the Inmarsat-5 F2 Space Station, Order and Authorization and Declaratory Ruling*, DA 15-392 at ¶ 18 (IB and OET, rel. Mar 30, 2015).

[16] *See* Petition at 5.

Alaska gateway might communicate exclusively with non-U.S. licensed MSS earth stations.[17]

O3b's response raises additional questions. If O3b never will operate MSS earth stations in the United States, why did it take up the Commission's time with a U.S. market access application that sought MSS authority for the 19.7-20.2 and 29.5-30 GHz bands? And should the Commission even be granting access to 29.1-29.3 and 19.4-19.6 GHz spectrum, in which there is increasing U.S. interest, for a feeder link earth station that will not communicate with MSS earth stations anywhere in the United States?

If O3b will be applying for MSS earth station licenses in the United States, on the other hand, then a different set of issues will be implicated. To the best of Iridium's knowledge, the FCC never has issued MSS earth station licenses in the 19.7-20.2 and 29.5-30 GHz bands. In fact, the Commission has not even adopted service rules for MSS earth stations in these bands. Any O3b application to operate MSS earth stations in the band, therefore, would raise issues of first impression and would require careful scrutiny. Among other things, O3b would need to show how its network could distinguish between MSS and FSS traffic, given that FSS traffic could not be supported by MSS feeder links in the 29.1-29.3 and 19.4-19.6 GHz bands.

In short, there are too many uncertainties at this stage to be taking up O3b's NGSO MSS feeder link proposal. O3b seeks to use feeder link bands that are dedicated to supporting MSS communications, but it lacks MSS earth station authority and has no

[17] *Id*. at 7.

identifiable plan for securing that authority. Any effort by O3b to obtain such authority, moreover, would raise additional issues.

O3b needs to proceed in an orderly fashion. O3b should not be drawing on the Commission's scarce resources with an application for operations that may never come to pass. And it should not be asking Iridium to coordinate based on hypothetical prospects.

Once O3b has a concrete plan for MSS earth stations, it can present it in conjunction with an application for NGSO MSS authority. The Commission then can take a comprehensive look at all interrelated issues. Until that time, action on O3b's application would be premature.[18]

[18] O3b's reliance on the fact it has been granted U.S. gateway earth station licenses in Ka-band FSS bands before it applied for user terminal licenses, *id*. at 7, is misplaced. The legal status of user terminals in those cases was well established. There were no issues as to the absence of service rules, the intermixture of FSS and MSS services that are subject to different requirements, and the use of U.S. feeder link spectrum to support only non-U.S. licensed earth stations.

V. CONCLUSION

In view of the forgoing and the showings in Iridium's Petition, the Commission should deny without prejudice the portion of O3b's Application that proposes to use the 29.1-29.3 GHz and 19.4-19.6 GHz bands for NGSO MSS feeder links.

Respectfully submitted,

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October 16, 2019

DECLARATION OF MAUREEN C. MCLAUGHLIN

1. I am Vice President Public Policy for Iridium Constellation LLC.

2. I have reviewed the foregoing Reply to Opposition to Petition to Deny. All statements made therein are true and correct to the best of my knowledge, information, and belief.

I declare under penalty of perjury that the foregoing is true and correct.

By: /s/Maureen C. McLaughlin

Date: October 16, 2019

CERTIFICATE OF SERVICE

I hereby certify that on October 16, 2019, a copy of the foregoing Reply to Opposition to Petition to Deny was sent via email to the following:

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