

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

In the Matter of )  
 )  
 )  
**O3b Limited** ) File No. SAT-AMD-20171109-00154  
 )  
Amendment to Pending Applications for )  
U.S. Market Access for the O3b Medium )  
Earth Orbit Satellite System )

**REPLY TO OPPOSITION TO PETITION TO DENY  
OR REMOVE FROM PROCESSING ROUND**

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On December 26, 2017, Iridium Constellation LLC (“Iridium”) filed a Petition to Deny or Remove from Processing Round (“Petition”) with respect to the above-captioned amendment (“Amendment”) filed by O3b Limited (“O3b”). On January 10, 2018, O3b filed an Opposition to Iridium’s Petition.<sup>1</sup> Iridium hereby replies to O3b’s Opposition.

**IV. INTRODUCTION AND SUMMARY**

O3b has filed an application (the “Application”) seeking to add satellites and frequencies to its grant of U.S. market access for its non-geostationary satellite orbit (“NGSO”), Fixed-Satellite Service (“FSS”) system. In its Amendment to the Application, O3b proposes to add a mobile satellite service (“MSS”) designation to its requested use of the 19.7-20.2 GHz and 29.5-30.0 GHz bands for FSS.

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<sup>1</sup> See O3b Limited Opposition to Petition to Deny or Remove from Processing Round, SAT-AMD-20171109-00154, Jan. 10, 2018 (“O3b Opposition”).

Based on this change, O3b seeks to upgrade the status of its proposed operations in the 29.1-29.5 GHz and 19.3-19.7 GHz bands, which under the Commission's band plan are designated as co-primary for NGSO MSS feeder links. Under O3b's original proposal, it only could have operated feeder links in the 29.1-29.5 GHz and 19.3-19.7 GHz bands on a non-conforming basis, since the feeder links would have been supporting FSS operations, but not MSS operations, in the 19.7-20.2 GHz and 29.5-30.0 GHz bands. Under O3b's amended proposal, which includes its request to add an MSS designation for its proposed operations in the 19.7-20.2 GHz and 29.5-30.0 GHz bands, O3b claims it should be permitted to operate feeder links in the 29.1-29.5 GHz and 19.3-19.7 GHz bands on a co-primary basis. O3b's Amendment was accepted for filing as part of the Commission's NGSO processing round.<sup>2</sup>

The Amendment is a major amendment, because upgrading O3b's feeder link band operations from non-conforming to co-primary increases the potential for interference. A co-primary use, which is entitled to share with other primary users on a co-equal basis, has greater interference potential than a non-conforming use, which is not permitted to cause harmful interference and must accept harmful interference. O3b's own statements and the Commission's precedents confirm this. Because O3b Application is the subject of a major amendment, the Application is no longer eligible to be considered in the current processing round.

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<sup>2</sup> See *Public Notice, Applications Accepted for Filing, Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 12.75-13.25 GHz, 13.85-14.0 GHz, 18.6-18.8 GHz, 19.3-20.2 GHz, and 29.1-29.5 GHz Bands*, DA 17-524 (May 26, 2017) ("*NGSO Application Public Notice*").

Even if O3b's Amendment were eligible for consideration in the current processing round, it should be denied. O3b's proposal to add an MSS designation for its operations in the 19.7-20.2 GHz and 29.5-30.0 GHz bands is inconsistent with the Commission's band plan, which limits use of the bands to FSS operations, and without an MSS designation there is no basis for permitting access to MSS feeder link spectrum:

- The presence of MSS allocations for the 19.7-20.2 GHz and 29.5-30.0 GHz bands in the U.S. and international allocation tables is irrelevant, because the band plan reflects an express determination by the Commission that these allocations do not apply.
- A waiver of the band plan would be unwarranted, because
  - there are no special circumstances; O3b's proposal is indistinguishable from any other request by an FSS applicant to add an MSS designation; and
  - O3b's assumption that an upgrade would not affect the technical characteristics of its operations is incorrect; adding mobile earth stations as points of communication would dramatically alter the interference profile of the operations.
- The Commission should not squander scarce feeder link spectrum on MSS operations lacking a U.S. component that is consistent with the Commission's band plan.

## V. DISCUSSION

### A. O3b's Amendment is a Major Amendment

Under Section 25.116(b)(1) of the Commission's rules, an amendment to a space station application is classified as "major" if it "increases the potential for interference."<sup>3</sup>

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<sup>3</sup> 47 C.F.R. § 25.116(b)(1).

If O3b's Amendment is classified as major, it cannot be considered in the current processing round.<sup>4</sup>

O3b does not dispute that an amendment is major if it increases the potential for interference. And O3b acknowledges that granting its Amendment would amount to "changing the designation [of its proposed feeder links] from a non-conforming use to a primary use,<sup>5</sup>" which in this case would make O3b co-primary with Iridium. But O3b claims this change will not increase the potential for causing interference because, according to O3b, it "has no effect on the technical operating characteristics" of its system.<sup>6</sup>

O3b's argument conflicts with the plain meaning of the applicable terms. A non-conforming use must not cause harmful interference to authorized users and must accept harmful interference from authorized users.<sup>7</sup> A co-primary use is entitled to share with other primary users on a co-equal basis.<sup>8</sup> By definition, therefore, a co-primary use has more interference potential than a non-conforming use.

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<sup>4</sup> See Iridium Constellation LLC Petition to Deny or Remove from Processing Round, SAT-AMD-20171109-00154, Dec. 26, 2017 ("*Iridium Petition*") at 8.

<sup>5</sup> O3b Opposition at 10.

<sup>6</sup> O3b Opposition at 10.

<sup>7</sup> See, e.g., 47 CFR § 2.105(c); Letter from Jose P. Albuquerque, Chief, Satellite Div., IB and Mark Settle, Chief, Policy & Rules Div, OET to Suzanne Malloy, Vice President, Regulatory Affairs, O3b Limited, dated Jan 29, 2016 re IBFS File No. SES-MS-2015021-00760, DA-99 at 2-3 citing *Contactmeo Communications, LLC, Order and Authorization*, 21 FCC Rcd 4035, 4044 (IB 2006).

<sup>8</sup> See *Amendment of Eligibility Requirements in Part 78 Regarding 12 GHz Cable Television Relay Service*, Memorandum Opinion and Order, FCC 03-61, 18 FCC Rcd 6067 (Mar. 26, 2003) at n. 1; *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use*, Notice of Proposed Rulemaking, 13 FCC Rcd 19923 at n.4 (1998).

A simple example illustrates this principle. If an O3b feeder link earth station were operated on a non-conforming basis, it would have to cease operating if it would interfere with a new Iridium feeder link earth station. The Commission has so held.<sup>9</sup> If the O3b feeder link terminal were operated on a co-primary basis, however, then it would not have to cease operating, even if it had the potential for interfering with Iridium's new earth station. Rather, as the later co-primary entrant, Iridium would be required to coordinate around O3b. That distinction is particularly significant given that feeder link stations may need to be separated by hundreds of kilometers to provide adequate protection.<sup>10</sup>

O3b's own statements reinforce this point. When O3b was proposing to operate on a non-conforming use basis, it committed not to interfere with MSS feeder links or other conforming use services in the band,<sup>11</sup> and it made specific promises as to the steps that it would take to avoid interference with Iridium.<sup>12</sup> Now that it seeks co-primary status, however, O3b commits only to "coordinate with other NGSO MSS operators and make reasonable efforts to identify mutually acceptable locations for feeder link earth station complexes."<sup>13</sup> There is a world of difference between these two

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<sup>9</sup> *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 (IB and OET, March 30, 2015) at ¶ 18; *on reconsideration*, Memorandum Opinion and Order, DA 15-815 (IB, July 14, 2015) at ¶ 5.

<sup>10</sup> As stated in Iridium's Petition, attempting to coordinate feeder link spectrum among NGSO systems raises complications, and at a minimum the geographic isolation required between Iridium's system and co-frequency NGSO systems can involve larger exclusion zones than is required with co-frequency GSO systems. *See* Petition at 7.

<sup>11</sup> *See* Application Narrative at 9.

<sup>12</sup> *See* Application Technical Annex at 22-23.

<sup>13</sup> Amendment at 5.

scenarios, and the Commission has recognized that a duty to coordinate and a duty not to interfere are distinct.<sup>14</sup>

The proof is in the telling. If O3b really believed non-conforming feeder link stations and co-primary feeder link stations are equivalent for interference purposes, it would have no reason to seek a feeder link status upgrade from non-conforming to primary. O3b's actions belie its position.

O3b requests a waiver of the major amendment rule, but it offers no meaningful basis for a waiver. Rather, it merely repeats its position that the changes proposed in its Amendment "do not significantly alter the characteristics of the operations O3b proposes."<sup>15</sup> As shown, that position overlooks the increased potential for interference that would occur if O3b's feeder links were upgraded from non-conforming to co-primary. Accordingly, O3b's waiver request should be denied and its Amendment should be classified as major.

**B. Scarce Feeder Link Spectrum Should Be Not be Squandered on MSS Operations that Are inconsistent with the Commission's Band Plan.**

Even if O3b's Amendment were eligible for consideration in the current processing round, it should be denied because it is inconsistent with the Commission's band plan. O3b seeks access to MSS feeder link spectrum on a primary basis by adding an MSS designation for its proposed operations in the 19.7-20.2 GHz and 29.5-30.0 GHz

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<sup>14</sup> See *In the Matter of Inmarsat Mobile Networks, Inc.; Applications to Modify Licenses for Earth Stations E080059, Paumalu, Hawaii and KA 25, Paumalu, Hawaii; Petition for Clarification or Reconsideration*, 30 FCC Rcd 4844, ¶¶ 4-9 (IB 2015).

<sup>15</sup> O3b Opposition at 11.



bands. The Commission's band plan, however, contains no MSS allocation in these bands. Rather, it has designations only for FSS operations.<sup>16</sup>

O3b offers three reasons why it believes it should be permitted to access feeder link spectrum that is dedicated to supporting MSS operations even though its proposed MSS operations would be inconsistent with the band plan. The Commission should reject all of them.

First, O3b attempts to justify operating outside the parameters of the band plan based on MSS allocations for the 19.7-20.2 GHz and 29.5-30.0 GHz bands in the U.S. and international allocation tables.<sup>17</sup> But the band plan reflects an express determination by the Commission to depart from the allocation tables, and that determination must take precedence.<sup>18</sup>

Second, O3b requests a waiver of the band plan. To justify a waiver, O3b would need to show that "special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule."<sup>19</sup> O3b's showing falls short.

O3b's waiver request is premised on a claim that adding an MSS designation to O3b's FSS operations in the 19.7-20.2 GHz and 29.5-30.0 GHz bands would "not change

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<sup>16</sup> See Iridium Petition at 4.

<sup>17</sup> See O3b Opposition at 7.

<sup>18</sup> O3b also suggests that independently of its proposal to provide MSS in the 19.7-20.2 GHz and 29.5-30.0 GHz bands, it uses U.S. earth stations as a hub for MSS on other, unspecified frequencies that could support granting it access to NGSO MSS feeder link spectrum. See O3b Opposition at 9. There is no basis for this statement. A review of O3b's U.S. earth station licenses shows they all are FSS licenses, not MSS licenses. O3b may have in mind its authority to communicate with maritime vessels on a non-conforming basis. But any such authority is for FSS operations, not MSS operations.

<sup>19</sup> *Boeing Company, Order and Authorization*, 16 FCC Rcd 5864, at ¶ 8 (IB and OET 2001).

the technical characteristics of the operations described in O3b's FSS applications."<sup>20</sup> Even if that claim were true, it would not constitute a "special circumstance." Rather, it would render O3b's proposal indistinguishable from any other request by an FSS applicant to add an MSS designation. But in fact, O3b's claim is incorrect; adding an MSS designation would cause a significant change in the technical characteristics of O3b's operations. Because of the added designation, O3b would be communicating with mobile earth stations rather than just with earth stations at fixed locations. And mobile transmissions have dramatically different interference profiles than fixed transmissions.

Finally, assuming O3b is precluded by the band plan from adding an MSS designation for its U.S. operations, O3b seeks to add the MSS designation for operations outside the United States and to operate feeder links in the United States based on its non-U.S. MSS operations.<sup>21</sup> The Commission should not squander spectrum in this fashion. Scarce U.S. feeder link spectrum should be devoted to supporting MSS operations that, unlike O3b's proposed operations, have a U.S. component that is consistent with the Commission's band plan.

There is good reason to act conservatively. The amount of available NGSO MSS feeder link spectrum in the Ka-band is fixed, but demand for the spectrum is growing. We live in a broadband world, and Iridium's customers have increasing throughput requirements. These requirements are prompting Iridium to evaluate the prospects for

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<sup>20</sup> O3b Opposition at 8.

<sup>21</sup> See O3b Opposition at 9.

expanding its feeder link network in the United States. Iridium already has activated one new feeder link earth terminal, in Tobyhanna, PA.<sup>22</sup>

At the same time Iridium's needs are expanding, its feeder link operations are facing pressures from new users and uses. Until recently, only a small number of GSO systems used the shared portion of Iridium's feeder link band, and their use was confined to a limited number of gateway earth stations. But it is becoming increasingly common for GSO operators to include these frequencies on new satellites, and more and more Iridium is being met with requests to coordinate not only GSO gateway earth stations but also large numbers of GSO user terminals. These pressures are compounded by GSO proposals to use the frequencies to serve earth stations in motion<sup>23</sup> and by proposals from several applicants in the current NGSO processing round, including O3b, to use the feeder link frequencies for their systems.<sup>24</sup>

O3b characterizes these feeder link frequencies as "underutilized," but that is misleading. The citation O3b provides refers to the part of the feeder link band Iridium does NOT use (*i.e.*, the 19.3-19.4, 19.6-19.7, and 29.3-29.5 GHz bands), which the Commission recently made available, in its NGSO rulemaking, for FSS operations.<sup>25</sup> The part of the band Iridium does use (*i.e.*, the 19.4-19.6 and 29.1-29.3 GHz bands) is in a

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<sup>22</sup> See General Dynamics Satellite Communication Services, Call Sign E1060138, IBFS File No. SES-LIC-20160722-00673.

<sup>23</sup> See *Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service*, Notice of Proposed Rulemaking, IB Docket No. 17-95, FCC 17-56 at ¶¶53, 54 (2017).

<sup>24</sup> See *NGSO Application Public Notice*.

<sup>25</sup> See *NGSO Report and Order* at ¶¶ 17-20.

different category, and in the same rulemaking the Commission rejected proposals to make those frequencies available for FSS operations, too.<sup>26</sup>

In sum, O3b's proposal to add an MSS designation for its proposed operations in the 19.7-20.2 GHz and 29.5-30.0 GHz is inconsistent with the Commission's band plan, and there is no basis for departing from the band plan. Absent an MSS designation, O3b's request for access to feeder link spectrum that is dedicated to supporting MSS operations should be rejected.

### **C. Iridium Is a "Party in Interest" in this Proceeding**

Iridium agrees with O3b that "[t]o establish standing as a party in interest, a petitioner must allege facts sufficient to demonstrate that grant of the application would cause the petitioner to suffer a direct injury."<sup>27</sup> Notwithstanding O3b's protestations,<sup>28</sup> Iridium plainly satisfies this standard.

If O3b is permitted to add an MSS designation for its 19.7-20.2 GHz and 29.5-30.0 GHz band operations and thereby is allowed to upgrade its feeder links to co-primary status, Iridium will suffer multiple direct injuries. It will lose its automatic right to shut down O3b feeder link earth stations that would cause Iridium harmful interference. It also will lose its right to locate new feeder link terminals in areas occupied by O3b. And it will have to devote resources to coordinating with co-primary O3b feeder link stations that otherwise would have been non-conforming and not entitled to coordination.

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<sup>26</sup> *Id.* at ¶20.

<sup>27</sup> O3b Opposition at n. 7 (citations omitted).

<sup>28</sup> *See* O3b Opposition at 2, 4.

By any standard, these considerations make Iridium a party in interest in this matter.<sup>29</sup>

## VI. CONCLUSION

In view of the forgoing, the Commission should deny O3b's application as amended or remove it from the current processing round.

Respectfully submitted,

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<sup>29</sup> As for O3b's complaint that Iridium only has an interest in the 29.1-29.3 GHz and 19.4-19.6 GHz segments of these bands (*see* O3b Opposition at 4-5), Iridium's Petition addressed what O3b requested in its Amendment, *i.e.*, the full band. But Iridium would have no objection if its Petition were viewed as limited for feeder link purposes to O3b's proposed use of 29.1-29.3 GHz and 19.4-19.6 GHz. Also, there is no basis for O3b's claim, *see* O3b Opposition at 11, that only participants in a processing round may object to proposals that would subject them to interference.

## CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **REPLY TO OPPOSITION TO PETITION TO DENY OR REMOVE FROM PROCESSING ROUND** was sent by electronic delivery, this 23<sup>rd</sup> day of January, 2018, to:

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