

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Viasat, Inc.	)	File No. SAT-MPL-20200526-00056
	)	Call Sign S2985
Application to Modify Market Access	)	
Grant for the Viasat NGSO Satellite System	)	

**REPLY OF O3B LIMITED**

Of Counsel  
Karis A. Hastings  
SatCom Law LLC  
1317 F Street, N.W., Suite 400  
Washington, DC 20004  
[karis@satcomlaw.com](mailto:karis@satcomlaw.com)

Suzanne Malloy  
Vice President, Legal and Regulatory  
Noah Cherry  
Senior Legal and Regulatory Counsel  
O3b Limited  
1129 20th Street, NW, Suite 1000  
Washington, DC 20036

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## SUMMARY

The nearly 60 pages of argumentation Viasat submitted in an attempt to defend its Modification do not change the fact that it is an entirely new constellation that belongs in the May 2020 processing round. Any other outcome would violate Commission precedent, harm O3b, and undercut the processing round framework by encouraging parties with no concrete service plans to file placeholder applications.

Viasat's efforts to evade the plain language of the Commission's 2017 Ka-band NGSO decision, which dictates that modifications to add satellites are subject to the same case-by-case treatment prescribed for new system applications, are wholly unconvincing. The Viasat suggestion that the language can be ignored because it appears in a footnote is unsupported and irrational. Viasat's alternate claim that the Commission meant to cover only situations where an operator seeks to add back satellites after missing a milestone cannot be squared with the footnote's text. And Viasat certainly never explains why its request to completely overhaul its original, unbuilt system, increasing the number of satellites by a factor of fourteen and changing every other orbital parameter, should be treated more favorably than a proposal by an operating system to restore authority for satellites not deployed in time to meet a milestone.

Viasat's heavy reliance on decades-old precedent involving Teledesic is also misplaced. Contrary to Viasat's claims, the International Bureau's grant of a modification to substantially decrease the number of Teledesic satellites does not support allowing Viasat to retain its position in processing rounds that closed in 2016. The Bureau granted Teledesic's modification while other applications remained pending but expressly held that Teledesic was required to protect the later-filed systems from interference. The full Commission reached the same conclusion in ruling on a subsequent modification, denying Teledesic's claim to coordination priority over applicants

who had filed in a later processing round. Thus, if the Commission grants Viasat's wish to be treated like Teledesic, the Modification must be relegated to the 2020 round with rights equal to other filers in that round.

Viasat's claims to satisfy the standard set in Teledesic are also flawed, as the record shows that the radical system changes Viasat seeks to make would degrade the interference environment. Viasat's downlinks from a lower altitude would yield increased interference into O3b's earth stations, more than doubling the duration of inline events that would trigger band splitting under Commission rules. Viasat's vague promises to employ mitigation techniques are insufficient to provide the certainty O3b requires to protect the integrity of its services to users.

On the uplink side, the lower Viasat spacecraft would be more vulnerable to interference. Viasat's assertion that it could overcome these effects by maintaining the same uplink power levels is contradicted by data showing Viasat in fact plans to significantly lower those levels. Viasat also ignores the International Bureau's recognition that the band-splitting trigger is based on the interference-to-noise ratio, so the victim system's uplink power level does not play a role.

In addressing the Modification, the Commission must consider not just the immediate harms of allowing Viasat to manipulate the processing round rules, but the signal being sent to future applicants. If Viasat were permitted to retain its position in the 2016 rounds despite wholly revamping its operating parameters, others will be emboldened to engage in similarly speculative attempts to claim broad spectrum rights under a "file now, design later" mentality. In such circumstances, the applicant with the most interfering initial proposal will have the greatest flexibility to make later modifications. These perverse incentives will render processing round deadlines meaningless and undermine Commission policies.

## TABLE OF CONTENTS

SUMMARY .....	i
I. COMMISSION POLICIES REQUIRE THE VIASAT MODIFICATION TO BE INCLUDED IN THE 2020 PROCESSING ROUND .....	2
A. The NGSO Order Expressly Addresses How Modifications to Add Satellites Will Be Treated .....	2
B. Decisions Involving Teledesic Confirm that Requiring Viasat to Share Equally with Other 2020 Round Participants Is Justified .....	6
C. The Modification Would Adversely Affect the Interference Environment .....	10
1. Downlink interference into O3b will increase .....	11
2. Uplink interference into Viasat will increase.....	13
D. Acceptance of Viasat’s Claims Would Undermine the Commission’s Processing Round Regime .....	16
II. CONCLUSION.....	19

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**REPLY OF O3B LIMITED**

O3b Limited (“O3b”) submits this reply regarding the above-referenced application by Viasat, Inc. (“Viasat”) for modification of its authority to serve the United States using a Ka- and V-band non-geostationary satellite orbit (“NGSO”) constellation.<sup>1</sup> As the O3b Petition<sup>2</sup> and submissions by other parties<sup>3</sup> demonstrate, the Commission must reject Viasat’s claim that its wholly redesigned system – with more than fourteen times as many satellites, a huge decrease in altitude, and changes to virtually every other operating parameter – should continue to be treated as part of processing rounds that closed in 2016. Controlling precedent dictates instead that the new Viasat proposal be assigned the same status as other 2020 round applications. Viasat’s systemic alterations will necessarily create more inline events, degrading the NGSO interference environment, and Viasat’s vague promises to ameliorate the resulting harms to other systems are unsupported and unavailing. Allowing Viasat to retain its status in the 2016 round would create

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<sup>1</sup> *Viasat, Inc.*, Call Sign S2985, File No. SAT-MPL-20200526-00056 (“Modification”).

<sup>2</sup> Petition to Deny or Condition of O3b Limited, Call Sign S2985, File No. SAT-MPL-20200526-00056, filed Aug. 31, 2020 (“O3b Petition”).

<sup>3</sup> See Petition to Deny or Defer of Space Explorations Holdings, LLC, File No. SAT-MPL-20200526-00056, filed Aug. 31, 2020 (“SpaceX Petition”); Petition to Deny or Defer Consideration of Telesat Canada, File No. SAT-MPL-20200526-00056, filed Aug. 31, 2020 (“Telesat Petition”); Comments of Kuiper Systems LLC, Call Sign S2985, File No. SAT-MPL-20200526-00056, filed Aug. 31, 2020 (“Kuiper Comments”); Comments of The Boeing Company, File No. SAT-MPL-20200526-00056, filed Aug. 31, 2020 (“Boeing Comments”).

perverse incentives for other parties to similarly game the system by submitting strawman applications – the more interfering, the better – that serve no purpose but to establish the filer’s priority over later-submitted proposals while allowing maximum flexibility to subsequently modify the request and claim that the redesign is within the “technical envelope” of the original proposal.

The gaps and internal contradictions in the Modification justify outright denial of the application. At a minimum, however, the Commission must reject Viasat’s attempt to avoid the regulatory consequences of its complete system overhaul and address the Modification as part of the 2020 processing round.

**I. COMMISSION POLICIES REQUIRE THE VIASAT MODIFICATION TO BE INCLUDED IN THE 2020 PROCESSING ROUND**

Viasat’s insistence that the Modification it filed on the May 26 cut-off date for the 2020 processing round – despite bearing no meaningful resemblance to the system the Commission had just authorized in April – is eligible to keep its place in processing rounds that closed in 2016 defies both precedent and logic. To preserve the integrity of the processing round framework, if the Commission grants the Modification, it must require Viasat to protect O3b and other NGSO systems authorized as part of the 2016 rounds and specify that the completely revamped Viasat proposal will be treated on a par with other 2020 round applications.

**A. The NGSO Order Expressly Addresses How Modifications to Add Satellites Will Be Treated**

As the O3b Petition emphasizes, Viasat’s “change from 20 to 288 satellites, standing alone, disqualifies the Modification from consideration as part of the 2016 processing rounds

under relevant Commission precedent.”<sup>4</sup> Specifically, in its 2017 NGSO Order that updated the regulatory regime for intersystem sharing, the Commission expressly determined that requests by processing round participants “at any time to deploy additional satellites” after the round closed would be considered on a “case-by-case basis”<sup>5</sup> – the same approach specified for addressing new entrants.<sup>6</sup> This common-sense determination is consistent with prior Commission observations that adding satellites to an NGSO system complicates spectrum sharing – that “other things being equal, NGSO licensees can more easily coordinate with an NGSO constellation that has 30 satellites instead of 288.”<sup>7</sup> The International Bureau has similarly recognized that adding satellites directly affects “the number of spatial configurations that have the potential for generating interference” between the applicant and other NGSO systems, making it a key consideration in determining whether a modification would serve the public interest.<sup>8</sup>

In attempting to evade the plain meaning of the Commission’s dictates in the NGSO Order, Viasat first absurdly suggests that the mere fact that the statement appeared in a footnote means it can be disregarded.<sup>9</sup> Specifically, Viasat argues that the relevant footnote “did not overturn the Commission’s longstanding, holistic approach to modification applications under

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<sup>4</sup> O3b Petition at 4.

<sup>5</sup> *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 7809 (2017) (“NGSO Order”) at 7831, n.150.

<sup>6</sup> *See id.* at 7829, ¶ 61.

<sup>7</sup> *Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-Band*, Report and Order, 18 FCC Rcd 14708 (2003) (“2003 Ka-band Sharing Order”) at 14717, ¶ 26.

<sup>8</sup> *Space Exploration Holdings, LLC*, Order and Authorization, 34 FCC Rcd 2526 (IB 2019) (“SpaceX First Modification Order”) at 2530, ¶ 11.

<sup>9</sup> Viasat Opposition at 17.

*Teledesic*”<sup>10</sup> because “the Commission does not make major policy decisions in footnotes.”<sup>11</sup> In support of this questionable assertion, Viasat cites a decision indicating that administrative agencies do not “hide elephants in mouseholes.”<sup>12</sup>

Viasat’s strained comparison is wholly inapt. To begin with, the language in footnote 150 of the NGSO Order regarding how modifications seeking to add satellites will be treated is decidedly not an “elephant.” The Commission was not “overturning” the 1999 *Teledesic* decision.<sup>13</sup> Leaving aside the fact that *Teledesic* was an International Bureau order that cannot bind the full Commission,<sup>14</sup> the decision involved a modification seeking a significant decrease in satellites, from 840 to 288,<sup>15</sup> not the scenario discussed in footnote 150 involving a request to add satellites to an authorized constellation.

Nor can a footnote to a Commission decision be considered a “mousehole.” In the decision from which the “mousehole” quote was taken, the Supreme Court was illustrating the concept that Congress “does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions.”<sup>16</sup> There is nothing vague about the Commission’s expression of intent regarding how post-processing round proposals to add satellites will be treated, and a

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<sup>10</sup> *Id.* (footnote omitted).

<sup>11</sup> *Id.*

<sup>12</sup> *Id.* at 17 & n. 65, citing *Ryder v. Union Pac. R.R.*, 945 F.3d 194, 203 (5th Cir. 2019), which was quoting *Whitman v. Am. Trucking Ass’ns, Inc.*, 531 U.S. 457, 468 (2001) (“Whitman”).

<sup>13</sup> *Teledesic LLC*, Order and Authorization, 14 FCC Rcd 2261 (IB 1999) (“*Teledesic*”).

<sup>14</sup> See *Kuiper Systems LLC*, Order and Authorization, FCC 20-102 (rel. July 30, 2020) (“*Kuiper*”) at ¶ 44.

<sup>15</sup> See *Teledesic*, 14 FCC Rcd at 2262, ¶ 3.

<sup>16</sup> *Whitman*, 531 U.S. at 468.



footnote appended to a discussion of these issues cannot fairly be considered “ancillary.” The Commission must reject Viasat’s bid to rewrite the NGSO Order by excising footnote 150.

As a back-up, Viasat claims that footnote 150 was discussing a “fundamentally different situation” than the one presented here – specifically, a scenario “in which a party seeks a modification to ‘add back’ satellites eliminated from its authorization” for failure to meet the relevant milestones.<sup>17</sup> Nothing in the Commission’s language supports Viasat’s narrow reading of the footnote,<sup>18</sup> but in any event the factual variations Viasat highlights do not support its position, they undercut it.

As the O3b Petition emphasizes, “there is certainly no reason why the Commission should treat Viasat’s request to radically change a system for which it just received authority and has yet to deploy a single satellite more favorably than a filing by an operator that is actively building out its constellation and determines it needs to add satellites to meet evolving demand.”<sup>19</sup> Viasat’s attempt to make a virtue out of the nascent stage of its system design<sup>20</sup> does not withstand scrutiny, as the critical objective of the Commission’s processing round framework is providing certainty to other round participants regarding the environment in which they will operate.<sup>21</sup> From the perspective of those parties, a request by an operator that has deployed a portion of its authorized spacecraft to “add back” satellites included in the original authorization

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<sup>17</sup> Viasat Opposition at 17.

<sup>18</sup> To the contrary, the text explicitly addressed proposals for more satellites filed “at any time.” NGSO Order, 32 FCC Rcd at 7831, n.150.

<sup>19</sup> O3b Petition at 4.

<sup>20</sup> Viasat Opposition at 18 (highlighting that the Modification’s changes are being “made before a system even has been deployed”).

<sup>21</sup> NGSO Order, 32 FCC Rcd at 7829, ¶ 61 (processing rounds are intended to give participants certainty with respect to the sharing environment, and consideration of subsequent applications must take into account “the need to protect existing expectations and investments”).

but not yet launched would represent a much less drastic change in the expected sharing environment than the 180-degree system redesign requested by Viasat here, which involves not just a fourteen-fold increase in satellites, but alterations in every other orbital parameter. The Commission must not reward Viasat for completely changing its mind before making any progress towards providing service.<sup>22</sup>

The NGSO Order establishes that adding satellites to an authorized system – much less doing a complete overhaul as proposed by Viasat here – triggers the same type of case-by-case analysis designated for new entrants. The Commission recently applied that approach to the Kuiper application for a new NGSO license, determining that the constellation would be required to protect systems authorized in the 2016 processing rounds and would share spectrum on an equal basis with other applications filed by the May 26, 2020 cut-off date.<sup>23</sup> The Viasat Modification must receive the same treatment and conditions.

**B. Decisions Involving Teledesic Confirm that Requiring Viasat to Share Equally with Other 2020 Round Participants Is Justified**

In both its Modification and Opposition, Viasat relies heavily on the International Bureau’s 1999 Teledesic licensing decision, alleging that it supports allowing Viasat to retain its position in the 2016 processing rounds notwithstanding the radical system changes proposed,<sup>24</sup> but this reliance is wholly misplaced. Instead, arguments in this proceeding from Viasat, and admittedly O3b as well, have ignored a critical aspect of the case law regarding the Teledesic

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<sup>22</sup> Indeed, as discussed in the following section, the Commission has concluded that an operator that has not begun deploying can reasonably be expected to accommodate later applicants.

<sup>23</sup> See Kuiper at ¶¶ 2, 59(a), 59(b).

<sup>24</sup> See, e.g., Modification, Exhibit A at 2-4; Viasat Opposition at ii (claiming that if a modification meets the Teledesic standard, “the Commission allows the NGSO FSS system to maintain its relative spectrum-sharing status vis-à-vis other NGSO FSS systems authorized in the same round”).

system – the fact that the Commission denied Teledesic any coordination priority with respect to later-filed systems. As a result, even if the Commission determines that the Modification meets the standards set forth in the Teledesic precedent, the Commission still must include the Modification in the 2020 processing round.

The 1999 Bureau decision considered Teledesic’s request to modify the system licensed pursuant to an initial Ka-band processing round conducted in 1994, in which Teledesic was the only NGSO applicant.<sup>25</sup> The Commission subsequently opened another filing window that yielded six new Ka-band NGSO proposals,<sup>26</sup> but of these six, only the Motorola Celestri application was filed before Teledesic submitted its modification.<sup>27</sup> Based on claims of date priority, Teledesic argued that its modification should be evaluated only by reference to its impact on Motorola’s proposed system, ignoring any effect on the other second round proposals.<sup>28</sup> The International Bureau explicitly rejected that request, determining that it would “evaluate Teledesic’s proposed modifications with respect to all pending NGSO FSS applications.”<sup>29</sup>

The Bureau’s substantive evaluation of the Teledesic filing was consistent with this approach. In determining that the modification did not need to be considered as newly filed, the Bureau emphasized that it was “not allowing Teledesic to make any changes that will significantly increase *interference potential to future systems*.”<sup>30</sup> Because Teledesic was

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<sup>25</sup> Teledesic, 14 FCC Rcd at 2262, ¶ 2.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.* at 2264, ¶ 6.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.* at 2265, ¶ 7.

<sup>30</sup> *Id.* at 2267, ¶ 12 (emphasis added).

decreasing the number of satellites and not changing its proposed minimum elevation angle, the Bureau concluded that the planned changes in the constellation's orbital parameters would not increase the number of active visible satellites, supporting a finding that the modification would "not create any significant interference problems to other systems or make sharing with other NGSO FSS systems in the Ka-band significantly more difficult."<sup>31</sup> In response to concerns that a proposed increase in uplink power density could require second-round systems to reduce their system capacity, the Bureau noted that at such time as Teledesic filed earth station applications, they would be granted "only to the extent that the change presents no significant interference problems to second round systems."<sup>32</sup>

Thus, contrary to the suggestions by Viasat, the Bureau's Teledesic decision does not support either evaluating the Modification only with respect to its effect on 2016 round NGSO systems<sup>33</sup> or allowing Viasat to evade its obligation to share spectrum on equal terms with participants in the 2020 processing round,<sup>34</sup> including O3b.<sup>35</sup> Instead, the only effect of the Bureau's finding that the Teledesic modification did not have to be treated as a new filing was on the decision's timing, as the Bureau decided it would not "defer consideration of the Teledesic modification to the second Ka-band processing round."<sup>36</sup>

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<sup>31</sup> *Id.* ¶ 13.

<sup>32</sup> *Id.* at 2270, ¶ 18.

<sup>33</sup> *See* Viasat Opposition at 21 (arguing that "the *Teledesic* standard does not require Viasat to show that its modified system will protect Kuiper's newly-authorized system").

<sup>34</sup> *See id.* ("because Kuiper's system was granted as part of a later processing round, Kuiper must protect Viasat's system from interference, not vice versa").

<sup>35</sup> *O3b Limited*, Call Sign S2935, File No. SAT-MOD-20200526-00058.

<sup>36</sup> Teledesic, 14 FCC Rcd at 2267, ¶ 12.

Critically, the full Commission similarly held that Teledesic was not entitled to any priority vis-à-vis second round systems in a subsequent decision addressing a modification that sought further reductions in the number of planned satellites – from 288 to 30, almost the exact inverse of the increase Viasat is seeking here.<sup>37</sup> Despite acknowledging that this decrease would make coordination among NGSO systems easier,<sup>38</sup> the Commission rejected Teledesic’s argument that it was entitled to retain “First Round coordination priority over all systems licensed in the Second Round as a matter of law.”<sup>39</sup> Instead, the Commission held that “Teledesic must share the burden of coordination equally with Second Round licensees.”<sup>40</sup>

The Commission’s decision rested on factors that are equally applicable here: the absence of any deployment progress and the finding that “a satellite system with a continually evolving system design is manifestly able to redesign to accommodate intra-service coordination.”<sup>41</sup> The Commission determined that its decision denying Teledesic coordination priority “is equitable and advances the public interest,”<sup>42</sup> explaining that:

Having made such significant revisions to its satellite system since receiving its license, Teledesic is unlikely to suffer any prejudice from its loss of coordination priority over Second Round licensees. We also believe that adopting and enforcing a coordination priority for Teledesic would unfairly prejudice the Second Round licensees.<sup>43</sup>

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<sup>37</sup> See 2003 Ka-band Sharing Order, 18 FCC Rcd at 14716-17, ¶ 25.

<sup>38</sup> *Id.* at 14717, ¶ 26.

<sup>39</sup> *Id.* at 14716, ¶ 24 (footnote omitted).

<sup>40</sup> *Id.* at 14717, ¶ 26.

<sup>41</sup> *Id.* at 14717, ¶ 25.

<sup>42</sup> *Id.* at 14717, ¶ 28.

<sup>43</sup> *Id.*

In short, whether the Viasat Modification meets the standard established in proceedings involving Teledesic is irrelevant to the filing's processing round status. If the Commission applies to the Viasat Modification the same treatment that was accorded to Teledesic – as all Viasat's filings have urged – then Viasat's system must lose any priority over later-filed systems stemming from its original filing in the 2016 processing rounds and be considered only as part of the 2020 processing round on a par with the other participants in that round.

### **C. The Modification Would Adversely Affect the Interference Environment**

The record also directly contradicts Viasat's claims that multiplying its proposed number of satellites by a factor of more than fourteen and significantly lowering the constellation's altitude from medium Earth orbit ("MEO") to low Earth orbit ("LEO") would not result in additional interference to either O3b or Viasat. The O3b Petition provided documentation of both a downlink interference increase to O3b and an uplink interference increase to Viasat.<sup>44</sup> Viasat criticizes O3b and other parties for failing to correctly guess undisclosed parameters of the planned Viasat operations as well as for not taking into account the unspecified measures Viasat asserts it will make to ameliorate any increased interference.<sup>45</sup> But these attacks are unfounded, as data provided by Viasat itself confirms that its Modification would significantly degrade the interference environment.

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<sup>44</sup> O3b Petition at 6-11.

<sup>45</sup> *See, e.g.*, Viasat Opposition at iv (claiming that analyses submitted by other parties "wrongly assume that that eight, or more, Viasat satellites would be active at a given frequency . . . and that the Viasat LEO network always would use the maximum power authorized" and do not "account for Viasat's commitment to undertake operational measures so that its modified system maintains the same expected operating environment with respect to other systems authorized in the same processing rounds").

1. Downlink interference into O3b will increase

First, considering downlink interference from Viasat into O3b, the changes in the Modification would substantially increase the number and duration of inline events that cause the -12.2 dB interference-to-noise (“I/N”) threshold used to trigger band splitting under Section 25.261(c)<sup>46</sup> to be exceeded. In its initial analysis, O3b defined an inline event as a separation angle of less than 5 degrees between an O3b satellite and a Viasat satellite,<sup>47</sup> but as Viasat objects to the use of this simplifying assumption,<sup>48</sup> O3b presents an updated analysis here. The use of the actual separation angle at which the -12.2 dB I/N threshold would be exceeded – 43.1 degrees<sup>49</sup> – produces an increase in duration that is even larger in absolute terms than the values discussed in the O3b Petition.

O3b performed an updated time dynamic simulation of the two constellations to assess the increased number of inline events for pairs of satellites with an off-axis angle less than 43.1 degrees for the original Viasat constellation and the modified Viasat constellation. At a separation angle of 43.1 degrees, the earth station located at 34° N.L., 99° W.L. considered in the

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<sup>46</sup> 47 C.F.R. § 25.261(c).

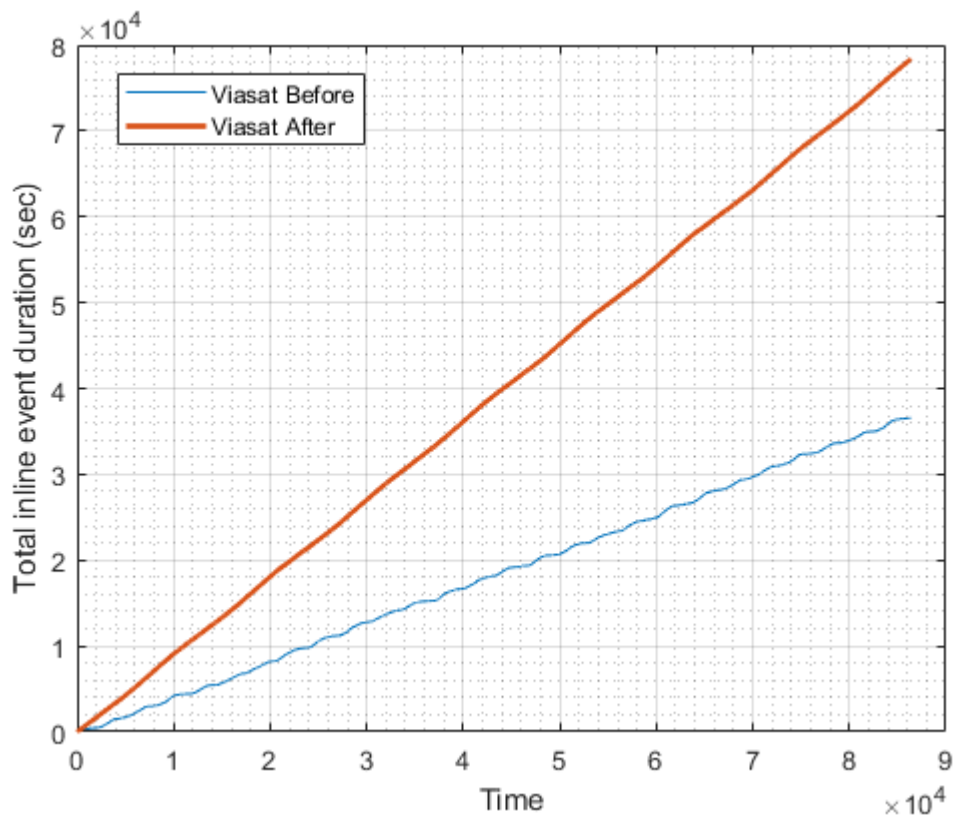
<sup>47</sup> O3b Petition at 7.

<sup>48</sup> Viasat Opposition at 28.

<sup>49</sup> O3b arrived at this value by considering a 0.85 meter O3b terminal with system noise temperature of 100 K tracking a satellite in the O3b satellite system swept across the incident angle of an interfering satellite in the Viasat NGSO satellite system. The maximum e.i.r.p. density values Viasat specified in the Schedule S databases for its authorized and modified constellations are -15.7 dBW/Hz and -31.7 dBW/Hz, respectively. At the shortest distance slant path, with an altitude of 8200 km in the original design and 1300 km in the modified design, the transmitted e.i.r.p. densities from the Viasat satellites produce a power flux-density (“PFD”) on the ground of -105.0 dBW/(m<sup>2</sup>·MHz), equivalent to incident power of -151.95 dBW/MHz. The necessary gain to achieve an I/N of -12.2 dB would be -8.85 dBi, corresponding to an angle of 43.1 degrees based on the typical ITU antenna pattern in S.580-6. As a result, the -12.2 dB I/N value will be exceeded whenever the separation angle between the satellites is 43.1 degrees or less.

O3b Petition would be affected by inline events with the system proposed in the Modification for over 78300 seconds, more than double the roughly 36500 seconds in total duration of inline events with the currently authorized Viasat system.

Assessment of number of inline events for I/N > -12.2 dB



Viasat’s repeated assertions that it will unilaterally act to prevent increased interference to O3b and other NGSO systems carry no weight, particularly given Viasat’s insistence that it need not disclose any specifics about its plans.<sup>50</sup> A list of the mechanisms “available” to Viasat to manage interference to other networks<sup>51</sup> – without detailing the steps that will actually be taken – provides no assurance to O3b that the integrity and reliability of its service to customers

<sup>50</sup> See, e.g., Viasat Opposition at ii (claiming that the Commission provides flexibility for “NGSO FSS operators to employ tools of their choosing to stay within I/N limits to protect other NGSO FSS systems”).

<sup>51</sup> *Id.*



will be protected. The Commission cannot expect O3b to depend on a prospective competitor to make unbiased decisions regarding whether measures to avoid harmful interference to O3b's network are necessary and which measures to employ, especially when the record makes clear that Viasat's views on these matters are far from impartial. The Commission's commitment to providing processing round participants with certainty regarding the operating environment necessary to support facilities investment<sup>52</sup> precludes reliance on Viasat's hand-waving approach to interference prevention.

## 2. Uplink interference into Viasat will increase

Second, the facts show that interference to Viasat – an issue that the Modification did not even mention, despite the International Bureau's emphasis on its significance to evaluating the overall impact of a proposed modification<sup>53</sup> – will also increase substantially due to the lower altitude proposed for the Viasat satellites. Viasat belatedly attempts to address this issue in its Opposition but provides no analysis and contradicts its own prior statements.

The O3b Petition presents the simple fact that by proposing to move its satellites much closer to the Earth without reducing the satellites' sensitivity by a corresponding amount, the Viasat Modification will necessarily result in increased uplink interference from O3b – and other NGSO systems – into the Viasat spacecraft.<sup>54</sup> The Petition includes a cumulative distribution function (“CDF”) that demonstrates significantly higher interference when considering the Viasat system's I/N ratio with and without the changes sought in the Modification.<sup>55</sup>

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<sup>52</sup> See NGSO Order, 32 FCC Rcd at 7829 ¶ 61.

<sup>53</sup> See O3b Petition at 8 & n.17, citing SpaceX First Modification Order, 34 FCC Rcd at 2530, ¶ 11 and 2531, ¶ 14. See also SpaceX Petition at 11; Telesat Petition at 2.

<sup>54</sup> O3b Petition at 9-11; see also SpaceX Petition at 12.

<sup>55</sup> *Id.* at 9-11.

Instead of providing an analysis of its own, Viasat responds by suggesting that the claims of O3b and others are “foreclosed by precedent.”<sup>56</sup> Viasat refers to the First SpaceX Modification Order, in which the International Bureau acknowledged that a proposal to lower the altitude of a portion of the SpaceX authorized fleet could cause it to experience increased uplink interference but indicated that SpaceX could counteract the increase by maintaining the same uplink power levels previously approved for use with the higher altitude.<sup>57</sup> Viasat then asserts that its system will also “be able to offset any additional interference from the transmissions of earth stations communicating with other NGSO FSS systems”<sup>58</sup> because Viasat will operate “within the power density levels already authorized.”<sup>59</sup>

There are several gaping holes in Viasat’s argument. As a threshold matter, the First SpaceX Modification Order explicitly addressed the effects of maintaining the “same” power levels, while Viasat asserts only that it will operate “within” its previously authorized power levels. Moreover, Viasat selectively quotes from its own application: directly after the cited language about operating within the authorized power levels, the Modification states that “because the satellites are located much closer to Earth, less uplink and downlink EIRP density is needed to close the links than before.”<sup>60</sup> Of course, if Viasat lowers its uplink power to reflect the decreased altitude, its system will be more susceptible to interference from O3b.

Information cited in the SpaceX Petition suggests that Viasat plans to do just that. Specifically, SpaceX observes that Viasat’s ITU filings “indicate that earth station EIRP for the

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<sup>56</sup> Viasat Opposition at 35.

<sup>57</sup> *Id.* at 35-36 & nn.136-138, *citing* SpaceX First Modification Order, 34 FCC Rcd at 2531, ¶ 15.

<sup>58</sup> Viasat Opposition at 36.

<sup>59</sup> *Id.* at 36 & n.141, *citing* Modification, Exhibit A, at 4.

<sup>60</sup> Modification, Exhibit A, at 4.

modified LEO system will be approximately 18 dB lower in Ka-band and 13 dB lower in V-band than for the current MEO system, which makes sense given the significantly decreased distance between Viasat’s satellites and the Earth.”<sup>61</sup> Viasat does not dispute this representation – to the contrary, Viasat highlights SpaceX’s conclusion that the power reductions will ensure that SpaceX will not experience higher uplink interference from Viasat as a result of the Modification.<sup>62</sup> In light of this evidence, Viasat’s attempt to convince the Commission of its intent to maintain uplink power at previously authorized levels borders on outright misrepresentation.

Viasat also fails to recognize that on reconsideration in the SpaceX proceeding, the International Bureau conceded that the threshold for band splitting under the rules is based on I/N, a parameter that is independent of uplink power density, meaning that maintaining a constant uplink power will not affect whether the -12.2 dB I/N trigger is exceeded.<sup>63</sup> As a result of this acknowledgement, the Bureau abandoned its prior rationale regarding uplink interference risks and instead relied on a SpaceX dynamic analysis that concluded that the modification would decrease the duration of inline events and the total percentage of time during which a given interference level is exceeded.<sup>64</sup> The Bureau’s complete shift in reasoning directly undercuts the Viasat claims, especially Viasat’s assertion that the Bureau did not overturn its original determination on the uplink interference issue.<sup>65</sup> And Viasat proffers no evidence

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<sup>61</sup> SpaceX Petition at 14.

<sup>62</sup> Viasat Opposition at 30 & n.113.

<sup>63</sup> *Space Exploration Holdings, LLC*, Memorandum Opinion and Order, DA 20-588 (IB rel. June 4, 2020) (“SpaceX Reconsideration Order”) at ¶ 9.

<sup>64</sup> *Id.* at ¶ 11.

<sup>65</sup> Viasat Opposition at 36 n.138.

comparable to the analysis cited in the SpaceX Reconsideration Order that would support a finding that the duration and likelihood of uplink interference events would be lessened with the changes sought in the Modification.

As the O3b Petition emphasizes, the implications of changes that make the applicant's system more susceptible to interference are highly significant in the NGSO sharing context because an exceedance of the I/N threshold for either party to an inline event triggers band-splitting. "Viasat proposals that make it more vulnerable to interference can translate directly into depriving other NGSO operators of access to the full available spectrum – a result that cannot be reconciled with the Commission's policies for fair treatment of competing NGSO operators."<sup>66</sup> Viasat's complete disregard of these issues initially is not cured by the Opposition, with its misleading and internally inconsistent characterizations of the facts and law. This record prevents the Commission from concluding that grant of the Modification would serve the public interest.

**D. Acceptance of Viasat's Claims Would Undermine the Commission's Processing Round Regime**

The Commission cannot countenance Viasat's blatant efforts to manipulate regulatory policies to its advantage. If Viasat succeeds with this attempt to game the processing round system, the Commission can be sure others will eagerly follow the same path, fundamentally undermining the Commission's public interest goals.

The sequence of events surrounding the Modification is highly revealing. Viasat's pivot from the 20-satellite MEO system the Commission authorized in April to filing for a 288-satellite

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<sup>66</sup> O3b Petition at 11. *See also* SpaceX Petition at 12 ("Because other NGSO FSS operators will be required to split spectrum with Viasat's modified system at a specified interference level, their systems could be adversely affected by Viasat's own susceptibility to interference.").

LEO system in May raises significant questions regarding whether Viasat ever had concrete deployment plans for its original proposal. Moreover, Viasat's claims that the Modification it filed on the due date for the 2020 processing round should nevertheless be considered as part of rounds that closed in 2016 rest on a paradoxical argument. Specifically, to support staying in the 2016 rounds, Viasat must agree to operate on a non-interference basis to other 2016 round participants – yielding the same status vis-à-vis those participants that Viasat would have if its system were deferred to the 2020 round.<sup>67</sup> The important difference, though, is Viasat's position relative to other filers in the 2020 round. If Viasat can manage to retain its hold on 2016 round status, even if it must protect all other 2016 systems, it can still avoid obligations to share spectrum equally with other applicants included in the 2020 round. Of course, such a result would be demonstrably unfair to O3b and other 2020 round filers.

Moreover, this outcome would set a disastrous precedent, encouraging any future applicant faced with a processing round deadline but lacking a substantive plan to submit a speculative placeholder application. Once the filer's position in the processing round was established, the filer would have the flexibility to modify its system and retain its status in the round by claiming that its redesigned proposal was within the “technical envelope” of the original application, as Viasat does here.<sup>68</sup> In order to maximize that future flexibility, the filer

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<sup>67</sup> See SpaceX Petition at ii (“the only way Viasat's proposed modification would not substantially worsen other NGSO systems' ability to use shared spectrum is if Viasat were to take full responsibility for avoiding interference, which would be precisely the result of properly relegating Viasat's application to a new processing round”).

<sup>68</sup> Viasat Opposition at 10 (suggesting that it is appropriate for an operator to be allowed “to modify its system and preserve its processing round status where, as here, that modification is within the NGSO FSS technical envelope and operating environment established in that prior processing round”).

would have every incentive to make the initial “envelope” as large as possible by proposing a highly interfering system.

In other proceedings, Viasat has urged the Commission to be mindful of the message its decisions send to other parties,<sup>69</sup> and a similar awareness of the likely consequences of Commission action is necessary here. The Commission’s policies against speculation and spectrum warehousing and in favor of promoting prompt deployment of satellite networks to provide service to customers<sup>70</sup> will be directly undermined if parties that lack concrete plans for NGSO operations can buy time by putting in applications intended only to establish processing round rights and stake out the widest possible spectrum claim. While modest technological adjustments to an authorized system are to be expected, allowing parties to propose wholly different network designs without loss of processing round status is an invitation to abuse. To prevent opening that door, the Commission must reject Viasat’s request that the Modification remain part of the 2016 processing rounds and instead include the application in the 2020 round.

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<sup>69</sup> *See, e.g.*, Reply of Viasat, Inc., Call Signs S2983 and S3028, File No. SAT-MOD-20200417-00037, filed Aug. 7, 2020, at iv.

<sup>70</sup> NGSO Order, 32 FCC Rcd at 7829, ¶¶ 1, 62.

## II. CONCLUSION

For the foregoing reasons and those set forth in the O3b Petition, the Commission should deny the Viasat Modification or at a minimum include the application in the 2020 processing round.

Respectfully submitted,

*/s/ Suzanne Malloy*

Vice President, Legal and Regulatory

Noah Cherry

Senior Legal and Regulatory Counsel

O3b Limited

1129 20th Street, NW, Suite 1000

Washington, DC 20036

Of Counsel

Karis A. Hastings

SatCom Law LLC

1317 F Street, N.W., Suite 400

Washington, D.C. 20004

[karis@satcomlaw.com](mailto:karis@satcomlaw.com)

September 25, 2020

## AFFIDAVIT

1. I am Vice President, Regulatory for O3b Limited.
2. I have reviewed the foregoing Reply of O3b Limited. 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/ Suzanne Malloy

Date: September 25, 2020



CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of September 2020, I caused to be served a true and correct copy of the foregoing "Reply of O3b Limited" on the following:

Mr. Daryl T. Hunter P.E.  
Viasat, Inc.  
6155 El Camino Real  
Carlsbad, CA 92009  
daryl.hunter@viasat.com

John P. Janka  
Viasat, Inc.  
901 K Street, NW, Suite 400  
Washington, DC 20001  
john.janka@viasat.com

/s/ \_\_\_\_\_  
Suzanne Malloy