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July 24, 2017

VIA ELECTRONIC SUBMISSION

Mr. Jose Albuquerque
Chief, Satellite Division
International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: O3b Limited Response to Commission Questions
IBFS File No. SAT-AMD-20170301-00026 (Call Sign S2935)

Dear Mr. Albuquerque,

O3b Limited (“O3b”) hereby provides the following supplemental information in response to the letter dated June 22, 2017,¹ regarding the above-referenced O3b application.² The text of the questions in the Commission Letter is provided below (with footnotes omitted), followed by O3b’s response for each question.

1. In accordance with section 25.114(d)(1), applicants are requested to provide an explanation of the how the uplink frequency bands would be connected to the downlink frequency bands on their proposed satellite system. To better understand the beam and channel connections on O3b’s satellite system, please supplement O3b’s application with as showing (*e.g.* a strapping table, chart or spreadsheet) that clearly represents this information.

The O3bN satellites that will operate in V-band spectrum will employ a digital channelizer and therefore will not have a fixed channel plan. Instead, any uplink channel on these satellites can be strapped with any downlink channel in segments as narrow as 5 MHz. It is therefore not possible to illustrate a strapping plan for these O3b satellites.

¹ Letter of Jose P. Albuquerque, Chief, Satellite Division, International Bureau, Federal Communications Commission, to Karis Hastings, Counsel to O3b Limited, dated June 22, 2017 in IBFS File No. SAT-AMD-20170301-00026 (the “Commission Letter”).

² Amendment of O3b Limited, Call Sign S2935, IBFS File No. File No. SAT-AMD-20170301-00026 (Mar. 1, 2017) (“O3b March Amendment”).

2. The “T[X]_beams.pdf” file attached to the Schedule S form contains an antenna gain contour diagram of a receive beam rather than a transmit beam. Please provide the appropriate transmit antenna gain contour diagram to replace the file labeled “T[X]_beams.pdf.”

The Schedule S submitted with the O3b March Amendment included two attachments designated “TX_beams.pdf,” one associated with the left-hand polarized beam TL1, and the other associated with the right-hand polarized beam TR1. These two beams use only Ka-band spectrum, not V-band spectrum.

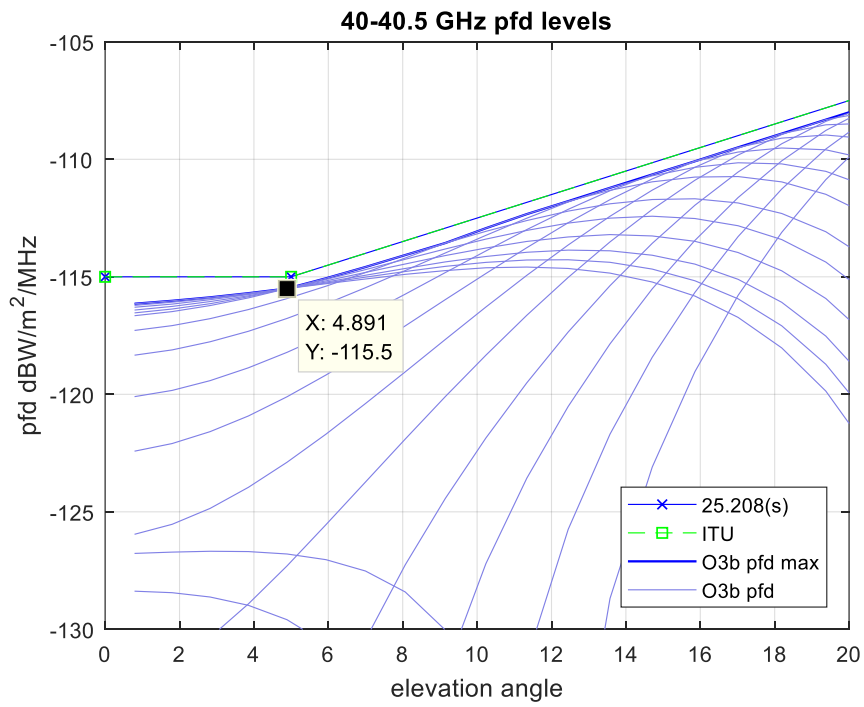
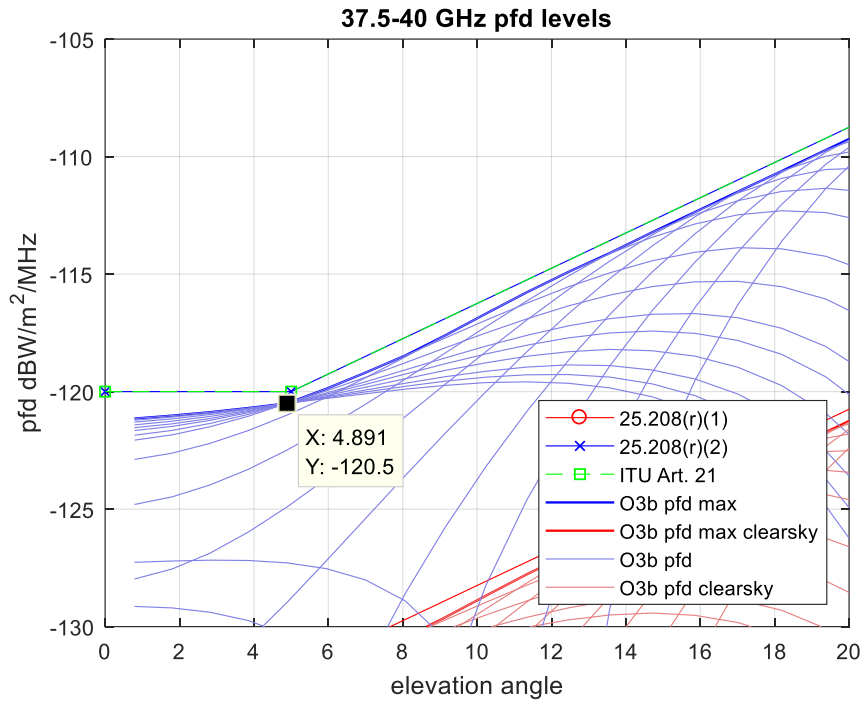
The attachments, which were included with the Schedule S submissions for both O3b’s November 2016 Amendment³ and the O3b March Amendment, are incorrectly labeled with titles indicating that they depict receive rather than transmit beam contours. However, the contours presented in the attachments are accurate for the Ka-band transmit beams. Correctly labeled antenna gain contour diagrams for the “TX_beam.pdf” attachments for beams TL1 and TR1 are provided in Annex 1, and O3b is separately submitting an erratum to the O3b November Amendment to note the mislabeling of the original attachments and supply the corrected contour maps.

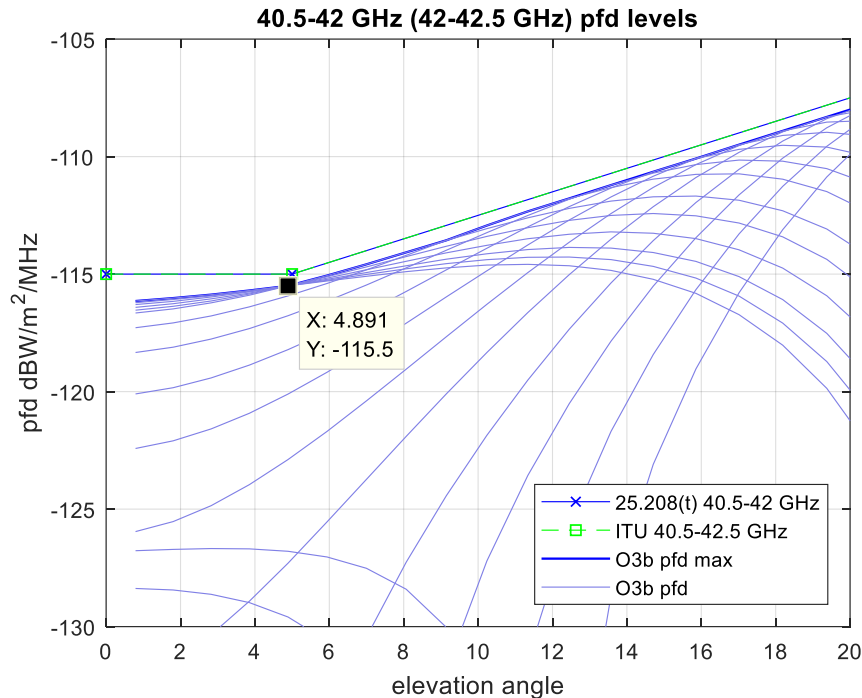
The antenna gain contour diagrams for O3b’s V-band transmit beams are found in attachments to the Schedule S for the O3b March Amendment designated “V_TXbeams.pdf,” and are associated with beams VTR1, VTL1, VTR2, and VTL2. These V-band diagrams are correctly labeled as providing transmit beam information.

3. In reviewing the PFD analysis provided in Attachment A (pgs. 5-9), and running the calculations O3b presented to justify compliance with the PFD limits of section 25.208, we were unable to replicate the PFD values derived in O3b’s analysis or listed in the Schedule S form. In particular, please explain how the PFD values of $-120.5 \text{ dBW/m}^2/\text{MHz}$ and $-115.5 \text{ dBW/m}^2/\text{MHz}$, mentioned [in] Attachment A (page 8), were derived.

The PFD values of $-120.5 \text{ dBW/m}^2/\text{MHz}$ and $-115.5 \text{ dBW/m}^2/\text{MHz}$ are extracted from the graphs in Figure A.8-1 of Attachment A at approximately the 5° elevation angle. If we adjust the axis limits to zoom in on the $0-5^\circ$ elevation angles, it becomes more clear how these values were determined. The following graphs illustrate the PFD analysis done in Attachment A but focused on $0-5^\circ$ elevation angles and highlighting the nearest data point having the highest PFD in this angular range for any possible beam pointing.

³ Amendment of O3b Limited, Call Sign S2935, IBFS File No. SAT-AMD-20161115-00116 (Nov. 15, 2016) (“O3b November Amendment”).





The reason the exact angle of 5° of elevation is not shown (4.891° is shown instead) is due to a conversion issue between the antenna pattern program and the PFD plotting software used.

4. O3b seeks U.S. market access to operate in the 42.0-42.5 GHz band. Even though there are no domestic PFD limits in this band in section 25.208 of the Commission's rules, operations in this band are subject to the international PFD limits provided in Article 21 of the ITU Radio Regulations. Please provide the appropriate PFD analysis, as well as detailed calculations, to justify compliance with PFD limits of Article 21.

As stated in Attachment A on page 9, the Article 21 limits in the 42-42.5 GHz frequency range are the same as those in the 40.5-42 GHz frequency range. O3b will operate the satellites in the same way across the entire 40.5-42.5 GHz frequency range. Accordingly, since the PFD limits are the same throughout this spectrum, the PFD demonstration provided for 40.5-42 GHz is applicable to the 42-42.5 GHz frequencies. *See* above graph titled "40.5-42 GHz (42-42.5 GHz) pfd levels" for the PFD demonstration for the entire 40.5-42.5 GHz frequency range.

5. The Schedule S information in the amendment application indicates that O3b's satellites will be operating in the 50.2-50.4 GHz band. However, use of this band is not mentioned in the Amendment or its Attachment A. Please clarify this discrepancy and correct the narrative or the Schedule S accordingly.

O3b did mention this band in Attachment A. Specifically, Section A.13 on page 14 of Attachment A, "Schedule S Notes," states under item d) that:

The VR01 channel has the ability to receive across the entire frequency range of 47.5-51.4 GHz as listed in the Schedule S.

However, the associated transmitting earth stations will not transmit in the band 50.2-50.4 GHz in order to protect the passive systems operating in this band.

O3b included the 50.2-50.4 GHz band in the Schedule S in order to accurately show the satellites' capabilities and to permit a more simplified representation of the frequencies in Schedule S. The above statement was meant to make clear, however, that O3b does not plan to operate in the 50.2-50.4 GHz frequency range and is not seeking Commission authority for this band segment.

Thus, the materials submitted with the O3b March Amendment, taken as a whole, correctly describe O3b's plans with respect to use of spectrum in the 47.5-51.4 GHz range. O3b therefore has not prepared a revised Schedule S that notches out the 50.2-50.4 GHz band segment. O3b will nevertheless prepare and submit a new Schedule S if the Satellite Division requests it.

Please let us know if you have any further questions regarding the O3b March Amendment.

Respectfully submitted,

O3b LIMITED

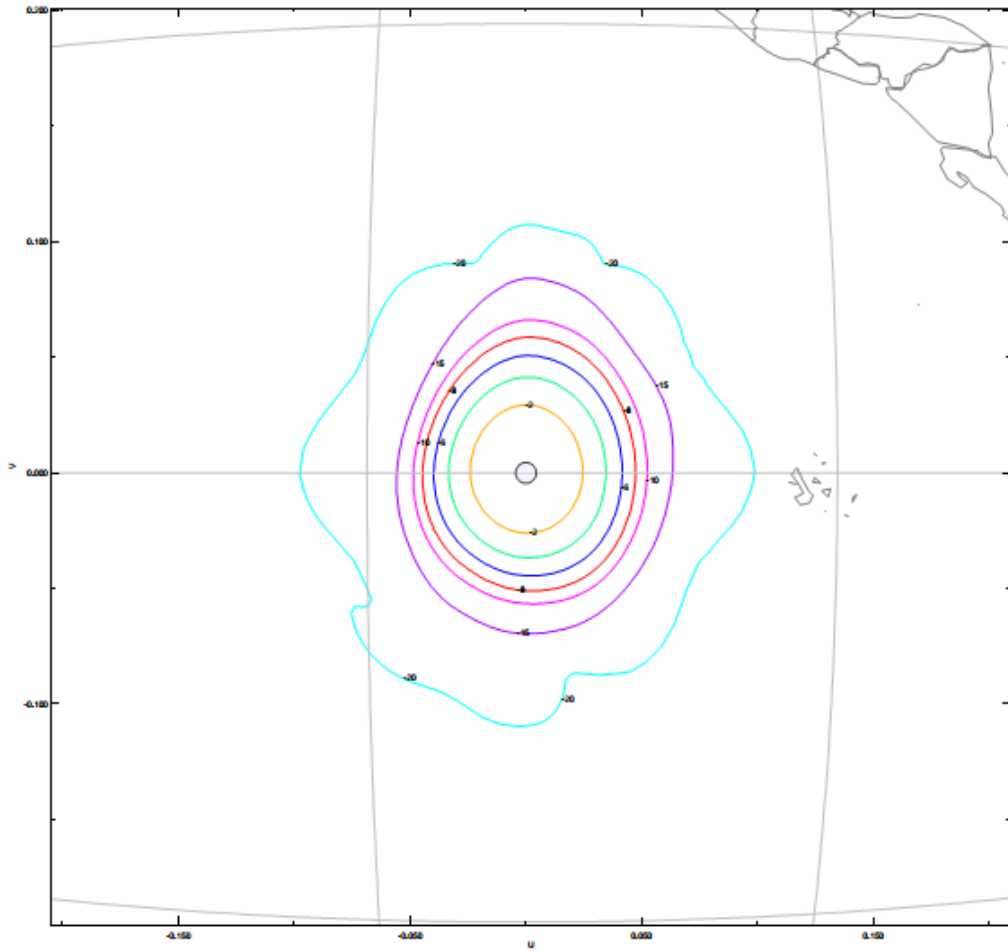
By: */s/ Suzanne Malloy*

Suzanne Malloy

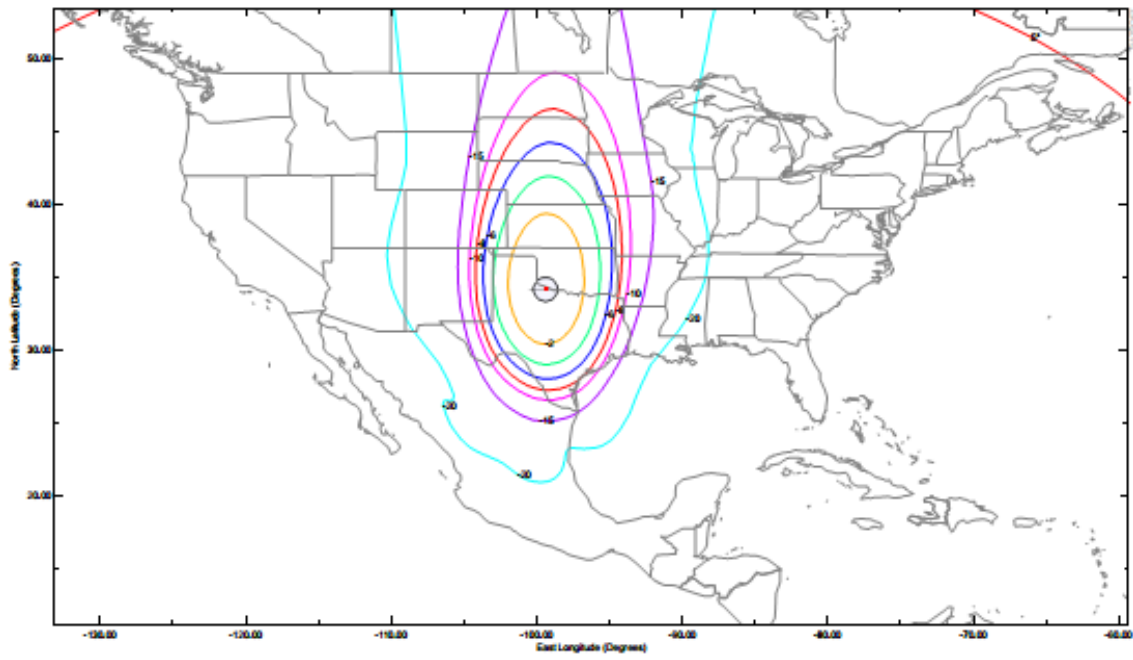
Vice President, Regulatory Affairs

Annex 1 TX_beams.pfd

TX beam at nadir:



TX beam over the US:



CERTIFICATION OF PERSON RESPONSIBLE FOR PREPARING
ENGINEERING INFORMATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this application, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this application and that it is complete and accurate to the best of my knowledge and belief.

/s/Zachary Rosenbaum
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July 24, 2017