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January 31, 2018

VIA ELECTRONIC FILING

Jose P. Albuquerque
Chief, Satellite Division
International Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

**Re: The Boeing Company
IBFS File Nos. SAT-LOA-20170301-00028 &
SAT-AMD-20170929-00137
Call Sign S2993**

Dear Jose:

On behalf of The Boeing Company (“Boeing”), we hereby respond to the questions raised in your letter dated November 21, 2017.¹ Concurrent with the filing of this letter, Boeing is submitting an amendment to its pending application to request authority for the use of additional frequencies for inter-satellite links (“ISLs”). Boeing’s amendment also includes a new Schedule S that provides additional technical information for the ISL beams that Boeing seeks to employ with its NGSO satellite system.

1. With regard to Boeing’s use of V-band ISLs, does Boeing propose transmissions between:
 - a. Its individual LEO satellites;
 - b. Its LEO satellites and its own high-altitude NGSO satellites;
 - c. Its LEO satellites and other GSO satellites;
 - d. Its LEO satellites and other NGSO satellites;
 - e. Any other options.

1.a. Boeing herein confirms that it seeks authority to operate ISLs between its individual low Earth orbit (“LEO”) satellites in the V-band frequencies of 47.2-50.2 GHz and 50.4-51.4 GHz. In addition, Boeing is concurrently filing an amendment to its application seeking authority to operate

¹ Letter from Jose P. Albuquerque, Chief, Satellite Division, to Bruce A. Olcott, Jones Day, IBFS File No. IBFS File No. SAT-LOA-20170301-00028 and SAT-AMD-20170929-00137 (Call Sign S2993) (Nov. 21, 2017).

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additional ISLs between its LEO satellites in the 65-71 GHz band. Each of these ISL transmission paths is reflected in the new Schedule S associated with that amendment.

1.b. Boeing continues to request authority to operate ISLs using the V-band between its LEO satellites and its own high-altitude NGSO satellites. The technical specifications of these transmission paths are reflected in Table III-3 on page 23 of Boeing's March 1, 2017 application.

1.c. Boeing continues to request authority to operate ISLs using the V-band between its LEO satellites and satellites in geostationary satellite orbit ("GSO") operated by other operators. The technical specifications of these transmission paths are reflected in Table III-2 on page 22 of Boeing's March 1, 2017 application. Boeing has not yet identified the specific V-band GSO satellites with which Boeing's LEO satellites would communicate. From a technical perspective, all V-band GSO satellites would be capable of receiving signals from Boeing's LEO satellites and would also be capable of transmitting signals to Boeing's LEO satellites (just as those satellites would transmit and receive signals with earth stations on the ground). Once Boeing has identified operators of V-band GSO satellites that are interested in entering into contractual arrangements to support such communications, Boeing and those operators will seek Commission authority for such specific communications to the extent such additional authority is deemed necessary by the Commission.

1.d. Boeing also seeks authority to operate ISLs between its LEO satellites and the satellites of other NGSO constellations operating in the V-band frequencies of 47.2-50.2 GHz and 50.4-51.4 GHz. Boeing has not yet identified the specific V-band NGSO systems with which Boeing's LEO satellites would communicate. Once Boeing has identified operators of V-band NGSO satellites that are interested in entering into contractual arrangements to support such communications, Boeing and those operators will seek Commission authority for such specific communications to the extent such additional authority is deemed necessary by the Commission.

1.e. As noted above, Boeing is concurrently filing an amendment to its application seeking authority to use the 65-71 GHz band to operate additional ISLs between its individual LEO satellites. These ISL transmission paths are reflected in the new Schedule S associated with that amendment.

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2. If Boeing proposes V-band ISL transmissions between any combination of satellites within its own constellation (*i.e.*, LEO to high-altitude NGSO or LEO-to-LEO) please clarify which ISL beams will receive in the 47.2-50.2 GHz and 50.4-51.4 GHz bands, as well as which ISL beams will transmit in the 37.5-42 GHz band. If it is Boeing's intent that fixed-satellite service receiving beams G2L0, G2R0, G3L0, G3R0, L2L0, L2R0, L2L1, L2R1, L3L0, L3R0, L3L1, and L3R0, should also be considered to be operating as inter-satellite service beams, as well as fixed-satellite service transmitting beams G0L0, G0R0, G1L0, G1R0, L0L0, L0R0, L0L1, L0R1, L1L0, L1R0, L1L1, and LRR1, please so state. We note that this is not consistent however, with the service areas entered for each of these beams which is described as "visible Earth above 25 deg elevation angle". Nor is it fully consistent with Boeing's statement in item 6 of its July 25th letter that there are 16 [ISL] beams in total.⁹ Depending upon Boeing's answers above, please consider the need to file an amended Schedule S.

As noted in our response to Question 1, the V-band LEO to LEO ISL beams will operate in the 47.2-50.2 GHz and 50.4-51.4 GHz bands and not in the 37.5-42.0 GHz band. The beams specifically identified in your Question 2 will not be used as LEO to LEO ISL beams. Instead, Boeing will use the following ISL beams for LEO to LEO transmissions:

Frequency Band	ISL Transmit Beams	ISL Receive Beams
47.2-50.2 GHz	X2L1, X2R1	XAL1, XAR1
50.4-51.4 GHz	X3L1, X3R1	XBL1, XBR1
65.0-68.0 GHz	X8L1, X8R1	XCL1, XCR1
68.0-71.0 GHz	X9L1, X9R1	XDL1, XDR1

As noted in the table above, Boeing is adding LEO to LEO ISL links in the 65.0-71.0 GHz band in an amendment being filed concurrently with this letter. The amendment includes a new Schedule S that employs the above-identified ISL beams.

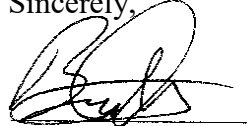
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3. Finally, with regard to Boeing's proposed Ka-band ISLs, based upon our review of the application, we presume that Boeing plans to operate these only between its LEO satellites and other GSO satellites outside of its own constellation. Specifically, Boeing proposes to receive transmissions in the 17.8-19.3 GHz and 19.7-20.2 GHz bands on ISL beams X4L0, X5L0, X4R0 and X5R0, and to transmit to GSO satellites in the 27.5-29.1 GHz and 29.5-30 GHz bands on ISL beams X0L0, X1L0, X0R0 and X1R0. Out of an abundance of caution however, we ask that Boeing confirm that our understanding is correct, and if not, that Boeing please clarify what it intends.

Boeing herein confirms that it is not proposing to operate LEO to LEO ISL links using Ka-band spectrum. As Boeing explained in its March 13, 2017 *ex parte* letter, however, Boeing is proposing to operate ISL links in the Ka-band between its LEO satellites and other satellites in higher orbits, including both GSO and NGSO systems, such as NGSO systems in medium Earth orbit or inclined orbits.

Thank you for your attention to this matter. Please contact the undersigned if you have any questions.

Sincerely,



Bruce A. Olcott
Counsel to The Boeing Company