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

In the Matter of:	)	
	)	
THE BOEING COMPANY	)	IBFS File No. SAT-LOA-20160622-00058
	)	
Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service	)	

REPLY OF CTIA

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REPLY OF CTIA

CTIA hereby files this Reply to the Opposition and Response of The Boeing Company ("Boeing") and the Opposition of the Satellite Industry Association ("SIA") with respect to the above-captioned application.[1] CTIA, with a number of other parties, sought denial of the *Boeing Application* to launch and operate a non-geostationary-satellite orbit ("NGSO") satellite system providing fixed-satellite service ("FSS") in the 37.5-42.5 GHz, 47.2-50.2 GHz, and 50.4-52.4 GHz frequency bands.[2] CTIA argued that that the *Boeing Application* undermined the framework envisioned by the Commission for next-generation ("5G") terrestrial mobile broadband networks; that Boeing's litany of waiver requests effectively sought pre-judgment, by

[1] Opposition and Response of The Boeing Company, IBFS File No. SAT-LOA-20160622-00058 (filed Dec. 12, 2016) ("*Boeing Opposition*"); Opposition of the Satellite Industry Association, IBFS File No. SAT-LOA-20160622-00058 (filed Dec. 12, 2016) ("*SIA Opposition*"); *see also* The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service, IBFS File No. SAT-LOA-20160622-00058 (filed June 22, 2016) ("*Boeing Application*"); *Boeing Application Accepted For Filing In Part IBFS File No. SAT-LOA-20160622-00058; Cut-Off Established For Additional NGSO-Like Satellite Applications Or Petitions For Operations In The 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz And 50.4-51.4 GHz Bands*, Public Notice, 31 FCC Rcd 11957 (2016) ("*Application PN*").

[2] Notably, the FCC has deferred consideration of the request to the extent that it seeks to operate in the 42.0-42.5 GHz and 51.4-52.4 GHz frequency bands. *See Application PN* ¶ 1 & n.3-4.

the International Bureau acting alone, of issues addressed to the full Commission in the ongoing *Spectrum Frontiers* proceeding;[3] and that the *Boeing Application* failed to make any showing of consumer demand or otherwise justify the 10 gigahertz of bandwidth it seeks. The *Boeing Opposition* does not directly address any of the issues raised by CTIA. Instead, Boeing only addresses peripheral issues with little relevance to the core administrative and policy issues implicated by the *Boeing Application*. For these reasons, the *Boeing Application* should be denied.

I. INTRODUCTION AND SUMMARY.

In its Petition to Deny filed against the *Boeing Application*,[4] CTIA argued that Boeing's filing undermined the FCC's ongoing *Spectrum Frontiers* proceeding because it appeared to be an opportunistic attempt to preemptively lay claim to vast amounts of spectrum under consideration for terrestrial mobile use. Specifically, CTIA argued that:

- FSS already has extensive spectrum allocations (more than *five* times the spectrum available for licensed terrestrial mobile services) and Boeing has made no technical showing to demonstrate why the services it proposes cannot be accommodated in existing FSS bands that are not contemplated for terrestrial mobile licensing.[5]

- Boeing failed to justify the large number of waivers it is seeking under the relevant Commission standards, and Boeing's requests impermissibly seek inefficient prejudgment of issues already before the agency.[6]

[3] *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016) ("*Spectrum Frontiers Report and Order and Further Notice*").

[4] Petition to Deny of CTIA, IBFS File No. SAT-LOA-20160622-00058, at 2 (filed Dec. 1, 2016) ("*CTIA Petition*").

[5] *Id*. at 3.

[6] *Id*. at 3-4.

Boeing has not directly addressed any of these issues. Instead of providing actual evidence of consumer demand for its proposed service, it vaguely alludes to closing the broadband divide between urban and rural markets—citing to dated studies of *fixed* broadband services and ignoring mobile carriers' exemplary efforts to reach rural America with advanced services. Boeing fails to identify any actual technical parameters for its system or, more importantly, provide engineering justification for the considerable amount of spectrum it is seeking. Boeing also continues to ignore the FCC's legal standard for waivers and the institutional preference for rulemaking where policies of broad scope are implicated, instead arguing that its positioning of identical issues before the International Bureau "complement" the full FCC's ongoing considerations in the *Spectrum Frontiers* docket. Boeing has also failed to provide any explanation why its *Application* must proceed in parallel, instead of allowing the *Spectrum Frontiers* proceeding to address issues raised by all interested stakeholders. Under these circumstances, the *Boeing Application* should be dismissed.

II. BOEING HAS FAILED TO SUPPORT THE NEED FOR ADDITIONAL SPECTRUM FOR ITS NEW SATELLITE SYSTEM.

CTIA and other parties noted the lack of any demand forecasts within the *Boeing Application* documenting the specific need for its newly proposed satellite system.[7] Under FCC rules, the *Boeing Application* can only be granted if it is shown to be in the public interest[8]—and CTIA noted that the public benefits justifying a vast amount of spectrum to Boeing's near exclusive use should be compelling, documented, and verifiable.[9] As discussed below, however,

[7] *Id*. at 5; Opposition of Fiber Tower, IBFS File No. SAT-LOA-20160622-00058, at 7 (filed Dec. 1, 2016) ("*Fiber Tower Opposition*").

[8] *See, e.g.*, 47 U.S.C. § 303(l) (providing FCC with authority to issue licenses "as public convenience, interest, or necessity requires").

[9] *CTIA Petition* at 5.

Boeing erected a strawman—that terrestrial carriers do not serve rural markets—and then argued, based on the conjecture that its proposed system will satisfy those needs, that the dedication of 10 gigahertz of valuable spectrum to its private interests is warranted.[10] In absence of a robust demand forecast that provides evidence that FSS is required to meet consumer demand, and that the volume of that demand justifies the enormous amount of spectrum it seeks to have licensed, the *Boeing Application* fails to provide even the minimum justification for a public interest finding. As CTIA observes below, the benefits are not evident from the record.

A. Contrary To Boeing's Assertion, The Wireless Industry Has Been And Continues To Be Committed To Providing Wireless Broadband To Rural Areas.

As previously noted, Boeing's core justification for its FSS proposal is that broadband data needs of rural America are not being served.[11] Boeing's argument, however, is contradicted by the Commission's own data on terrestrial mobile coverage and suggests that Boeing has done no meaningful investigation of the market it is purporting to serve. As noted in the *CTIA Petition*, LTE has burst data rates of up to 50 Mbps and, with use of carrier aggregation, peak data rates of up to 300 Mbps *today*.[12] The Commission's most recent coverage findings—a September 2016 report relying on 2016 FCC Form 477s filed for the year ending December 2015—show that 98.7 percent of the U.S. population receives complete LTE coverage.[13] The FCC also found, in its *19th Annual Mobile Competition Report*, issued in September 2016, that 99.7 percent of people living in rural areas had LTE coverage as of the end of 2015, and 98.4

[10] *Boeing Opposition* at 3-6.

[11] *Id*.

[12] *CTIA Petition* at 5-6.

[13] *Working Toward Mobility Fund II: Mobile Broadband Coverage Data and Analysis*, FCC Wireless Telecommunications Bureau, at 12 (Sept. 30, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-341539A1.pdf.

percent of people living in rural areas had access to two or more LTE providers.[14] Boeing's citations purporting to show a coverage gap between urban and rural areas[15] are unpersuasive, as they point to studies for *fixed* broadband services—which do not include mobile broadband like LTE—and were for 2013 and 2014.[16]

Boeing then compounds its mischaracterizations of mobile broadband deployment in rural America by asserting that CTIA and its member companies have stated that terrestrial 5G services would only be deployed in dense/urban areas—a statement that is unsustainable. As an initial matter, Boeing equates 5G solely with millimeter wave band spectrum, when 5G will actually be a network of networks that spans a range of spectrum, including, but not limited to, millimeter wave bands. Millimeter wave spectrum will be particularly useful in high-density areas because it permits deployment of very high capacity networks necessary to serve the demands of large numbers of users within a cell. Thus, while it is correct that deployments of millimeter wave 5G offerings may initially focus on capacity builds to alleviate congestion in

[14] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Nineteenth Report, 31 FCC Rcd 10534, ¶ 42 (2016) ("*19th Annual Mobile Competition Report*").

[15] *Boeing Opposition* at 4 (*citing International Comparison Requirements Pursuant to the Broadband Data Improvement Act International Broadband Data Report*, Fifth Report, 31 FCC Rcd 2667, ¶ 19 (2016) ("*BDIA Report*").

[16] The *BDIA Report*, referenced by Boeing, cites that "[b]etween December *2013* and December *2014*," there was a significant increase in high-speed broadband coverage for U.S. households—going from 93 to 96 percent for non-rural households and 45 to 58 percent for rural households. *BDIA Report* ¶ 19 (emphasis added). The report, incidentally, notes that "the gap between rural and non-rural high-speed fixed broadband coverage is smaller in the United States than it is in Europe and the absolute level of coverage of high-speed broadband is higher in the United States in both rural and non-rural areas" and that "[t]he data also show that the United States has been making faster progress in closing the urban-rural gap for high-speed broadband." *Id*. More importantly, the figures in this section of the *BDIA Report* are sourced from Appendix G, which plainly states that the European data includes only fixed technologies. *Id*. at 184 n.6, 186.

more populated markets, the coverage data aggregated by the Commission shows that terrestrial mobile operators deploy technology throughout the U.S. population in a rapid and comprehensive fashion. Additionally, recent measurement studies conducted by Nokia and others have shown that millimeter wave spectrum performance is extremely effective for rural environments,[17] demonstrating wireless provider interest in utilizing this spectrum in rural markets and the efficacy of the millimeter wave band spectrum to provide service in those areas. Therefore, the Bureau should view skeptically any claim by Boeing that its proposed satellite system will benefit the public interest by serving some undefined area that is purportedly "unserved or underserved by terrestrial providers."[18]

B. Boeing Has Failed To Provide Operational Commitments For Its Proposed Satellite System.

As noted in the *CTIA Petition*, Boeing vaguely asserts without support that the proposed satellite constellation, using 10 gigahertz of millimeter wave spectrum, could exceed a 25 Mbps data rate.[19] Moreover, as CTIA noted, the proposed system would have inherent latency in delivery of service.[20] Each of these technical parameters are less than what is provided with current LTE networks, and the differences will be further exacerbated with the deployment of 5G systems. 5G standards will require data rates well in excess of one Gbps and latency levels of

[17] George R. MacCartney, Jr. et al., *Millimeter Wave Wireless Communications: New Results for Rural Connectivity*, NYU WIRELESS, at 27 (Oct. 27, 2016), http://wireless.engineering.nyu.edu/presentations/Rural-Macrocell-path-loss-NYU-Al-things-cellular-Oct-7-2016.pdf; *see also* Joan Engebretson, *U.S. Cellular 5G Tests Show Technology's Potential for Rural Markets*, TELECOMPETITOR (Oct. 12, 2016), http://www.telecompetitor.com/u-s-cellular-5g-tests-show-technologys-potential-for-rural-markets/.

[18] *Boeing Opposition* at 5.

[19] *CTIA Petition* at 5.

[20] *Id*.

less than one millisecond.[21] Boeing, for its part, suggests its service will achieve data rates of 1/40th of that, although it is unclear whether that data rate will be shared among users in a spot beam or whether that is an effective data rate per subscriber. As unambitious as these data rates are, Boeing fails to justify them at all. The company should provide some technical basis to support the data rate it claims, even if the rate is less than current or planned terrestrial services.

It also appears uncontroverted that Boeing's service will have a latency far in excess of what is required for 5G services—based solely on the round-trip speed-of-light delays and not including any other network latency.[22] Indeed, the Commission's recent *Broadband Report* found that "the higher latencies of satellite-based broadband services may negatively affect the perceived quality of highly interactive applications"[23] and that "due to large differences in latencies of more than a magnitude between satellite and terrestrial technologies, the results for each class of technology are shown in separate charts for scaling purposes."[24] Given that the stated public interest basis for its satellite application is to provide next-generation broadband services, Boeing has failed to demonstrate, with technical rigor, what its product will look like and how it intends to ensure that it can deliver such a product that will meet consumer and industry standards for 5G.

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[21] Thomas Sawanobori and Paul Anuszkiewicz, *High Band Spectrum: The Key to Unlocking the Next Generation of Wireless*, CTIA, at 3 (rel. June 13, 2016); http://www.ctia.org/docs/default-source/default-document-library/5g-high-band-white-paper.pdf.

[22] *CTIA Petition* at 5.

[23] *2016 Measuring Broadband America Fixed Broadband Report: A Report on Consumer Fixed Broadband Performance in the United States*, FCC Office of Engineering and Technology and Office of Strategic Planning and Policy Analysis, at 21 (rel. Dec. 1, 2016) ("*Broadband Report*").

[24] *Id*. at 46.

The *Boeing Opposition* fails to address these relevant details for the company's satellite system. Nowhere is there a declaration or affidavit explaining the technical parameters of the system, nor is there any discussion of the actual data and latency rates that will be provided to FSS customers. If Boeing's position is that its proposed system will serve a market need, Boeing should be required to document the parameters of the product that it intends to offer and the expected market demand for that product. Because satellite applications are not issued through competitive bidding, the Commission has rightly required significant public interest showings that include critical details about a proposed system prior to grant of an application.[25] In such respects, the applicant's broadband product would seem to be defined—at a minimum—by the average and peak data rates provided to end users, the expected latency for the service, the pricing of the service, whether the service is subject to limitations in terms of use, and the equipment requirements to use the service. These facts should be supported in a formal declaration or affidavit by Boeing to ensure the accuracy of the attestation. Only with such information would it be possible to determine whether the proposed service justifies licensing—much less the licensing of 10 gigahertz of spectrum.

C. Contrary to Boeing's Assertion, An Allocation Does Not Dictate Any Presumed Or Expected Rights For Licensing.

Boeing's other fundamental argument to support its *Application* is that the spectrum is and has been a longstanding part of the existing FSS allocation and therefore there was an expectation that the spectrum should not only be licensed to FSS, but licensed in a manner that confers superior rights to all other users.[26] This argument suggests that the Commission has no power either to: (1) change an allocation decision; or (2) adopt service rules that preclude use

[25] *See, e.g.*, 47 C.F.R. § 25.114(d)(6).

[26] *Boeing Opposition* at 6.

that has been allocated. The Table of Allocations has an extensive set of allocations that are not "reservations" for future spectrum use, but are instead placeholders for future spectrum planning. For Boeing—or the satellite industry generally—to suggest that allocation decisions made decades ago are immutable, regardless of changes in technology and public need, is illogical.

The entire point of the *Spectrum Frontiers* proceeding, in fact, is to reexamine prior allocations in view of today's technology and consumer needs.[27] If Boeing's argument were valid, a terrestrial proponent could simply assert that spectrum allocations mean that any fixed or mobile primary allocation would be "reserved" for terrestrial purposes. Fundamentally, the *Spectrum Frontiers* proceeding has teed up the spectrum bands of interest in the *Boeing Application* to seek comment on their future use. That, as discussed in more detail below, remains the appropriate forum for discussing service and technical rules for the millimeter wave bands.

III. THE SPECTRUM FRONTIERS PROCEEDING IS THE PROPER VENUE FOR REACHING DECISIONS ON USE OF THE MILLIMETER WAVE BANDS.

A. Boeing Should Submit All Technical Information Into The *Spectrum Frontiers* Docket.

In its *Opposition*, Boeing admits that its *Application* should be considered as "a part of the ongoing *Spectrum Frontiers* proceeding."[28] However, it then goes through a tortured argument as to why its *Application* should be considered in "parallel" to the proceeding.[29] Boeing suggests, in fact, that its *Application* benefits the *Spectrum Frontiers* proceeding in that it provides a concrete example of the potential FSS uses of these bands.[30] None of these arguments

[27] *Spectrum Frontiers Report and Order and Further Notice* ¶¶ 1-3.

[28] *Boeing Opposition* at 10.

[29] *Id*. at 11.

[30] *Id*. at 12.

addresses the potential for the *Boeing Application* to pre-judge, or even undercut or undermine, decisions that are before the full Commission for resolution in the *Spectrum Frontiers* proceeding.

Fundamentally, CTIA believes that any technical information concerning sharing and use of the millimeter wave spectrum is properly addressed by the full Commission in the *Spectrum Frontiers* docket rather than through the expedient of a party-specific application to an individual Bureau. The potential for sharing between FSS and terrestrial mobile services, the relative markets for such services, and the spectrum needs of each service are precisely the types of broad-based inter-industry issues that should be fully aired in the context of notice and comment rulemaking by the FCC under the Administrative Procedures Act ("APA").[31] Boeing's protestations that relief might be constructed in a manner that does no harm to the *Spectrum Frontiers* proceeding misses the point—it is antithetical to the APA to force parties to address individualized requests that may or may not be consistent with ultimately adopted rules when there is a rulemaking proceeding already underway to address those matters. Forcing CTIA, and the wireless industry generally, to adjudicate the same technical, sharing, public interest, and demand questions in the context of a dozen satellite applications instead of in a single rulemaking—and forcing regulatory proceedings and reviews the full Commission is likely to ultimately have to resolve—is administratively inefficient and undercuts the purpose of adopting regulations of broad applicability.

[31] *See, e.g., City of Arlington v. FCC*, 668 F.3d 229, 242 (5th Cir. 2012) ("Adjudications typically resolve disputes among specific individuals in specific cases, whereas rulemaking affects the rights of broad classes of unspecified individuals.") (citing *Yesler Terrace Cmty. Council v. 51 Cisneros*, 37 F.3d 442, 448 (9th Cir. 1994)) (affirmed, 133 S.Ct. 1863 (2013)).

Instead of arguing that individualized adjudication of the *Boeing Application* is somehow consistent with administrative efficiency and the preference for rulemaking over adjudication, Boeing instead argues that its *Application* is not intended as an alternative forum to the *Spectrum Frontiers* proceeding, but instead is "complementary."[32] In effect, Boeing seems to be suggesting that the application process can provide information that is not being presented in the rulemaking docket and therefore will benefit the Commission's deliberations on the merits.[33] Unfortunately, the implication that there is *any* technical, operational, or policy information in the *Boeing Application* that could not have been submitted by the company directly in the *Spectrum Frontiers* docket is not supportable. Moreover, the notion that information in a separately docketed, party-specific adjudicatory proceeding—data that has not been made part of the *Spectrum Frontiers* record—could form a basis for decisions made in the *Spectrum Frontiers* proceeding undermines the principles of reasoned decision-making on the record underlying the APA and mandated by the FCC's own rules.[34] Thus, the idea that the *Boeing Application* is a complement to the *Spectrum Frontiers* proceeding misapprehends basic principles of administrative law and process.

CTIA does agree that the requests made by Boeing are inextricably connected with the issues in the *Spectrum Frontiers* proceeding. And there is no reason that Boeing is precluded from providing all information that it has provided with its *Application* into the record of the

[32] *Boeing Opposition* at 11.

[33] *Id*. at 12 ("A major benefit of the International Bureau's concurrent review of Boeing's Application is that it provides the Commission with a concrete, closely-examined demonstration of the technical aspects and public interest benefits of mmW satellite systems that the satellite industry is urging the Commission to authorize.").

[34] *See, e.g.*, 47 C.F.R. § 1.425 ("The Commission will consider *all relevant comments and material of record* before taking final action in a rulemaking proceeding and will issue a decision incorporating its finding and a brief statement of the reasons therefor.") (emphasis added).

Spectrum Frontiers docket. Indeed, no point is served by a "complementary" proceeding when one proceeding will—and should—suffice. Decisions about use of the particular spectrum bands, including the 40-42 GHz band, should be vetted and decided at the full Commission level, not as part of an International Bureau licensing action. It would severely undermine the rulemaking process for the International Bureau to take action under delegated authority while the Commission has yet to determine the use of the spectrum and the sharing criteria associated with the bands. In contrast, allowing the completion of the rulemaking proceeding prior to accepting any satellite applications would not be prejudicial to Boeing or any of the satellite proponents.

B. Boeing's Waivers Should Not Be Used To Prejudge Action By The Full Commission in the *Spectrum Frontiers* Proceeding.

Just as Boeing fails to address why its *Application* is not inconsistent with the pending *Spectrum Frontiers* rulemaking, Boeing also fails to address the legal deficiencies associated with the waivers it seeks. CTIA and other parties raised significant concerns about the innumerable waivers filed as part of the *Boeing Application*[35]—and in particular the waivers "subject to the outcome of the *Spectrum Frontiers* proceeding"—noting that the courts have generally favored the rulemaking process over *ad hoc* adjudication of waiver requests.[36] Boeing's response, once again, is to sidestep the issue by arguing that its waivers do no harm, since they are conditioned on the outcome of the rulemaking, rather than addressing *why* the Commission should provide it with extraordinary relief.[37] The prejudicial impact of waivers is

[35] *CTIA Petition* at 10-13; *Fiber Tower Opposition* at 2; Opposition of T-Mobile USA, Inc., IBFS File No. SAT-LOA-20160622-00058, at 12-13 (filed Dec. 1, 2016); Opposition of 5G Americas, IBFS File No. SAT-LOA-20160622-00058, at 13-14 (filed Dec. 1, 2016).

[36] *CTIA Petition* at 12.

[37] *Boeing Opposition* at 24-27.

precisely why there are legal standards associated with the grant of a waiver, standards Boeing has made no attempt to satisfy.

Boeing's argument that the waivers beneficially facilitate parallel proceedings is also internally inconsistent. In particular, Boeing provided no evidence of any pressing need or milestone that compels action on the *Boeing Application* in advance of the completion of the rulemaking. Instead, Boeing observes that "the *Spectrum Frontiers* proceeding has been moving very quickly."[38] Particularly given the pace at which the *Spectrum Frontiers* proceeding is moving, it is altogether appropriate for the International Bureau to await the outcome of the rulemaking process before it addresses the case-specific waivers that Boeing requests.

IV. SIA'S EXAMPLES PROVIDE CONCRETE EVIDENCE FOR DENYING THE *BOEING APPLICATION*.

In addition to Boeing, SIA filed an opposition to the procedural objections raised by terrestrial wireless entities.[39] SIA argues that satellite applications should be granted, prior to final Commission action on service rules governing the constellation, so long as the satellite application meets the procedural requirements for filing an application and the applicant has indicated a willingness to accept a license grant conditioned on the outcome of the relevant proceedings.[40] However, the precedents that SIA cites demonstrate the detrimental effects of acting upon a satellite application prior to the completion of a rulemaking. In particular, SIA cites to satellite application processing rounds in 1995 and 1999 that were completed during the

[38] *Id*. at 13.

[39] *SIA Opposition* at 1.

[40] *Id*. at 3.

pendency of a rulemaking process.[41] The end result of both of those satellite application processes were failed satellite systems that were never launched or deployed.

The 1995 processing round led to a grant of satellite applications to a number of parties, including Teledesic Corp.[42] Teledesic surrendered its license without constructing the granted satellite system and the remaining parties withdrew their applications without action.[43] The 1999 satellite processing round led to the grant of an application to Skybridge L.L.C. and no other parties because the remaining requests were withdrawn.[44] Importantly, this application was not granted until the completion of the underlying rulemaking process—with the grant occurring in July 2005,[45] while the underlying rulemaking decision was issued in 2000.[46] Indeed, when the

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[41] *Id*. at 4.

[42] *Teledesic Corp. Application for Authority to Construct, Launch, and Operate a Low Earth Orbit Satellite System in the Domestic and International Fixed Satellite Service*, Order and Authorization, 12 FCC Rcd 3154 (IB 1997); *GE American Communications, Inc. Application for Authority to Construct, Launch, and Operate a Ka-band Satellite System in the Fixed Satellite Service*, Order and Authorization, 12 FCC Rcd 6475 (IB 1997); *Hughes Communications Galaxy, Inc., Application for Authority to Construct, Launch, and Operate a Ka-band Satellite System in the Fixed-Satellite Service and a Ku-band Broadcast Communications Satellite System*, Order and Authorization, 13 FCC Rcd 1351 (IB 1997).

[43] *See e.g., EchoStar Satellite Corporation, Petition for Rulemaking to Redesignate the 28.6-29.1 GHz (Earth-to-space) and 18.8-19.3 GHz (space-to-Earth) Bands to Allow Geostationary Fixed-Satellite Service Operations on a Co-primary basis*, 29 FCC Rcd 14731, ¶ 4 (2014).

[44] *SkyBridge L.L.C. For Authority to Launch and Operate a Global Network of Low-Earth Orbit Communications Satellites Providing Broadband Services in the Fixed-Satellite Service*, Order and Authorization, DA 05-2037 ¶ 3 (rel. July 18, 2005) ("*Skybridge Order*").

[45] *Id.*

[46] *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-band Frequency Range*, First Report and Order and Further Notice of Proposed Rulemaking, 16 FCC Rcd 4096 (2000). Additional proceedings were completed in 2002 and 2003 to finalize the sharing rules, all prior to the 2005 grant of the Skybridge application. *See In The Matter Of The Establishment Of Policies And Service Rules For The Non-Geostationary Satellite Orbit, Fixed Satellite Service In The Ku-band*, Report and Order and Further Notice of Proposed Rulemaking, 17 FCC Rcd 7841 (2002); *see also Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of*

Commission finally authorized Skybridge in 2005, it noted that it was "now in a position to act on the pending Ku-band NGSO FSS applications" as the rulemaking proceedings were complete.[47] Finally, Skybridge never constructed or deployed its authorized satellite system.[48]

These "examples" make clear that approving a novel satellite system prior to the promulgation of service and technical rules is a path best not followed. Instead, CTIA recommends that the Commission complete its *Spectrum Frontiers* proceeding and adopt service rules for FSS operations prior to consideration of any application for use of the millimeter wave spectrum bands sought by Boeing. This will provide needed certainty for potential applicants—as has been requested by a number of other satellite parties[49]—prior to licensing action by the International Bureau under delegated authority.

NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-band Frequency Range, Third Memorandum Opinion and Order, 18 FCC Rcd 2307 (2003).

[47] *Skybridge Order* ¶ 4.

[48] Tim Fernholz, *Satellite internet is a space business widow-maker – so why does Elon Musk want in?*, QUARTZ (Nov. 19, 2014).

[49] Comments of ViaSat, Inc., IBFS File No. SAT-LOA-20160622-00058, at 2-4 (filed Dec. 1, 2016); Comments of SES S.A. and O3b Limited, IBFS File No. SAT-LOA-20160622-00058, at 1 (filed Dec. 1, 2016); Comments of WorldVu Satellites Limited, d/b/a OneWeb, IBFS File No. SAT-LOA-20160622-00058, at 4-7 (filed Dec. 1, 2016).

V. CONCLUSION.

The *Boeing Opposition* does nothing to challenge CTIA's original criticisms that the *Boeing Application* is a speculative and opportunistic attempt to circumvent the Commission's *Spectrum Frontiers* proceeding. This attempt to undermine decisions by the full Commission should be rejected. Moreover, Boeing has made no effort to justify the use of a massive amount of millimeter wave spectrum or to show why it cannot use some other combination of the 22 gigahertz allocated for FSS between 3 and 80 GHz. The *Boeing Application* should therefore be dismissed.

Respectfully submitted,

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December 19, 2016

CERTIFICATE OF SERVICE

I, Emma Prieskorn, do hereby certify that on this 19th day of December, 2016, I caused a copy of the foregoing Reply to be served via electronic courtesy copy and U.S. Mail on the following: *

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/s/ Emma Prieskorn
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December 19, 2016

* We were unable to serve several parties that filed comments in this proceeding because those parties failed to provide their respective contact information.