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

In the Matter of	)	
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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
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COMMENTS OF COMPETITIVE CARRIERS ASSOCIATION

Competitive Carriers Association ("CCA")[1] respectfully submits these comments responding to the *Public Notice* regarding the Boeing Company's ("Boeing") Application to operate a non-geostationary satellite orbit ("NGSO") fixed satellite service ("FSS") system in the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz bands.[2] CCA is concerned granting Boeing's

[1] CCA is the nation's leading association for competitive wireless providers and stakeholders across the United States. CCA's membership includes nearly 100 competitive wireless providers ranging from small, rural carriers serving fewer than 5,000 customers to regional and national providers serving millions of customers. CCA also represents approximately 200 associate members including vendors and suppliers that provide products and services throughout the mobile communications supply chain.

[2] *See Satellite Policy Branch Information; Boeing Application Accepted for Filing in Part; Cut-Of 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, IBFS File No. SAT-LOA-20160622-00058 (filed Nov. 1, 2016) ("*Public Notice*"); *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*" or the "*Application*"); *Public Notice* at 1, fn. 3-4 (noting that the Commission has deferred consideration of Boeing's request to operate in the 42.0-42.5 GHz and 51.4-52.4 GHz, as the *Spectrum Frontiers Report & Order* declined to adopt an FSS allocation in the 42.0-42.5 GHz band and is in the process of considering whether to authorize fixed or mobile operations in that band, and requisite permissions from the International Telecommunication Union and Commission to operate in the 51.4-52.4 GHz band are still pending). Boeing has separately petitioned for authorization to operate FSS services in the 50.4-52.4 GHz band. That Petition, like the *Application*, should be denied until rules for 50.4-52.4 GHz band spectrum are established in the *Spectrum Frontiers* proceeding. *See*

request would allow satellite users to foreclose or limit mobile terrestrial use in this key spectrum slated to support Fifth-Generation ("5G") services, which is already undergoing comprehensive review in the *Spectrum Frontiers* proceeding.[3] The *Spectrum Frontiers* proceeding is the proper regulatory arena to resolve important technology and policy issues for these bands to advance next-generation mobile services in America. The Commission should deny the *Application*; to do otherwise would alter the regulatory and technical climate in key 5G bands identified by the *Application*, and undermine the innovation being discussed in the *Spectrum Frontiers* dockets.

I. INTRODUCTION

CCA urges the Commission to deny the Application, which proposes to examine the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz spectrum bands separately undergoing review in the *Spectrum Frontiers* proceeding. The rules and policies adopted pursuant to the *Spectrum Frontiers* proceeding will serve as the cornerstone for America's foray into widespread "5G" broadband service.[4] Moreover, the *Spectrum Frontiers* proceeding benefits from robust participation by a diverse pool of stakeholders, and therefore is the proper venue for the Commission to resolve pivotal questions regarding best use of this spectrum, and make decisions that will reinforce U.S. mobile leadership. If Boeing wishes to make use of this valuable

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Petition of The Boeing Company for Allocation and Authorization of Additional Spectrum for the Fixed-Satellite Service in the 50.4-51.4 GHz and 51.4-52.4 GHz Bands, RM-11773, at 5-9 (June 22, 2016).

[3] *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report & Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, FCC 16-89 (rel. July 14, 2016) (comprising both the "*Report & Order*" from ¶¶ 17- 368, and the "*Further Notice*" at ¶¶ 369-516); *see also Public Notice* at 1,

[4] *See* Remarks of FCC Chairman Tom Wheeler, "The Future of Wireless: A Vision for U.S. Leadership in a 5G World," National Press Club (June 20, 2016), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0620/DOC-339920A1.pdf.

spectrum, it must do so in the open *Spectrum Frontiers* docket and confront the many standing issues related to these bands.

The Commission should not allow Boeing to effectively "cut the line" by gaining robust access to this important 5G spectrum before the *Spectrum Frontiers* proceeding concludes. Especially of concern to competitive carriers, granting the *Application* might create an early preference for FSS 5G service in key spectrum needed to support 5G networks. Indeed, mobile networks desperately require additional, unique spectrum to satisfy capacity demands arising from increased data use and continually advancing networks that will incorporate widespread use of the Internet of Things ("IoT"). Accordingly, CCA requests that the Commission deny the *Application*.

II. THIS SPECTRUM IS NEEDED TO SUPPORT MOBILE TERRESTRIAL USE

Allowing Boeing freedom to operate a new non-geostationary satellite orbit system in the requested GHz bands would be counterproductive to assuaging the "spectrum crunch." As discussed below, placing the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz spectrum bands at Boeing's disposal could untimely compromise competitive carriers' ability to use those bands for 5G service. As is well established in the *Spectrum Frontiers* proceeding, providing 5G mobile broadband, especially in light of budding IoT capacity demands, will place unprecedented strain on competitive carrier networks.[5] The Commission expressly stated that the purpose of

[5] *See, e.g.*, Comments of T-Mobile, USA, Inc., RM-11773, 3-4 (filed Oct. 17, 2015) (noting that climbing consumer use of data-intensive applications such as video and Internet access "is creating mounting demand for mobile network capacity demand that is outpacing available spectrum"); *see also* Comments of CTIA—The Wireless Association, GN Docket No. 14-177, *et. al.*, 4-5 (filed Sep. 30, 2016) ("CTIA Further Notice Comments"); Ericsson, Mobility Report: On the Pulse of the Networked Society (Nov. 2015), *available at* http://www.ericsson.com/res/docs/2015/mobility-report/ericsson-mobility-report-nov-2015.pdf (estimating a ten-fold increase in mobile data traffic by the end of 2021, anticipating that 90% of mobile data traffic will be from smartphones); Comments of Consumer Technology Association,

unleashing 24 GHz and above spectrum is to ease scarcity of exclusively licensed, flexible use spectrum for rapid 5G deployment.[6] The amount of 5G spectrum that will be made available for exclusive licensed use is already lower than expected.[7] For the U.S. to lead 5G developments, the Commission must provide competitive carriers enough spectrum to adequately contend with technology and capacity challenges.

III. BOEING'S APPLICATION IS UNTIMELY CONSIDERING THE ONGOING *SPECTRUM FRONTIERS* PROCEEDING

a. 37.5-40 & 40-42 GHz Band

The Commission in the *Report & Order* limited satellite use in the 37.5-42 GHz band, designating much of this spectrum for terrestrial operations on a primary basis;[8] in the *Further Notice* the Commission sought comment on appropriate power flux density ("PFD") limits within the 37.5-40 GHz band.[9] Since the *Boeing Application* includes a request to relax existing PFD limits within the 37.5-42 GHz band,[10] Boeing has put the Commission in the untenable

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GN Docket No. 14-177, *et. al.*, 3-4 (filed Sep. 30, 2016); Spectrum Crunch, Federal Communications Commission, *available at* https://www.fcc.gov/general/spectrum-crunch.

[6] *See Further Notice* at ¶ 376.

[7] Comments of Competitive Carriers Association, GN Docket No. 14-177, *et. al.*, 13 (filed Sep. 30, 2016).

[8] *See Further Notice* at ¶76 (authorizing mobile in the 38.6-40 GHz band ["39 GHz band"], and authorizing both fixed and mobile rights to incumbent licensees, while explaining that satellite must "cooperate with new mobile services in these bands to reduce interference and improve service"); *id.* at ¶ 75 (noting there are no commercial satellite operations in the 37.5-40 GHz band); *Report & Order* at ¶103, 105 (with respect to the 37 GHz band [37-38.6 GHz], the Commission in the *Report & Order* allocated the entire 37 GHz band is allocated to the fixed and mobile services on a primary basis for Federal and non-Federal use, with limited Federal satellite permissions).

[9] *See Further Notice* at ¶499.

[10] *See Boeing Application*, Narrative Attachment, at 17-18.

position of revisiting an issue already decided in the *Report & Order*, and prematurely addressing an issue on which the Commission rightly sought additional comment in the *Further Notice.* Competitive carriers and others on record question whether PDF limits can be raised in this band without materially impairing mobile 5G services.[11] It would be counterproductive to the Commission's 5G efforts to, as requested by Boeing, waive PDF limits in the 37.5-42 GHz band without resolving this technical issue in the *Spectrum Frontiers* proceeding,[12] especially considering reply comments to the *Further Notice* were due recently in late October. The Commission should allow this issue to bear out in the *Spectrum Frontiers* proceeding, in which these technical issues have been teed-up. Since Boeing's request regarding the 37.5-42 GHz band is at odds with the *Spectrum Frontiers Report & Order* and touches issues left unresolved in the *Further Notice*, the Application should not be granted, at least not at this time.

b. 40-42 GHz

Similarly, granting the *Application* would truncate discussion of the 40-42 GHz band in

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[11] *See, e.g.*, Reply Comments of T-Mobile. USA, Inc., GN Docket No. 14-177, *et. al.*, 15 (filed Oct. 31, 2016) ("T-Mobile Further Notice Reply Comments"); Comments of Straight Path, GN Docket No. 14-177, *et. al.*, 14 (filed Sep. 30, 2016) ("Increasing the PFD limit [in the 39 GHz band] further will more severely impact the 5G user experience and the economic prospect of providing 5G services to the American public") ("Straight Path Further Notice Comments"); Comments of FiberTower Spectrum Holdings, LLC, GN Docket No. 14-177, *et al*., 4-5 (filed Sept. 30, 2016) ("The ultra-low latency requirements and the relative brittleness of digital signals in the mmW bands, combined with the need to densely deploy terrestrial mmW services for both backhaul and broadband access, leave no room for increased satellite power levels or increased satellite earth stations/terminals outside of the existing rule structure [in the 39 GHz band] . . . In fact, UMFUS operations may require more robust protections from FSS interference than those currently in place").

[12] CCA notes the Commission's own statement that the record, at the time of the *Report & Order*, was not "sufficient for [the Commission] to conclude that authorizing satellites to operate at the higher PFD of -105 dBW/m2/MHz would be consistent with terrestrial use of the 37.5-40 GHz band." *Further Notice* at ¶ 497. The Commission further called for "detailed technical studies," and emphasized that the "burden is on FSS interests to show that the higher PFD level is consistent with terrestrial use." *Id.* at ¶ 499.

the *Spectrum Frontiers* proceeding. Several parties, including T-Mobile, asked the Commission to consider the potential use of this band for terrestrial operations,[13] and the *Report & Order* does not adopt FSS downlink operation in this band. Accordingly, Commission action on the Application is premature until it decides how this band is best utilized in the context of the *Spectrum Frontiers* proceeding.

c. 47.2-50.2 GHz.

In the *Further Notice*, the Commission proposed to designate the 47.2-50.2 GHz band for fixed and mobile use.[14] The Commission also is exploring whether to permit shared use of the band between FSS and terrestrial operations.[15] Granting the *Application* could preempt the innovations being contemplated in the *Spectrum Frontiers* proceeding and would effectively allow Boeing to reap the benefits of this promising spectrum without addressing important concerns regarding sharing and priority raised in the *Further Notice*, at the expense of consumer-desired 5G services. As indicated by the *Further Notice*, the Commission appears to be operating under the assumption that "there are currently no authorized Federal or non-Federal operations in the 48.2-50.2 GHz band but that there may be future Federal operations in that

[13] *See* T-Mobile Further Notice Reply Comments at 10; *see also* CTIA Further Notice Comments at 13 ("[T]he Commission should consider reallocating the entire 40- 42.5 GHz band for mobile uses rather than focusing solely on the 42-42.5 GHz band."); Comments of Ericsson, GN Docket No. 14-177, *et al*., at 11 (filed Sept. 30, 2016) ("Ericsson also recommends expanding the 42.0–42.5 GHz band, to include the 40.0–42.0 GHz band and the 42.5–43.5 GHz band for a 3.5-GHz-wide band spanning 40.0–43.5 GHz[.]"); Comments of Huawei Technologies, Inc. (USA) and Huawei Technologies Co., Ltd., GN Docket No. 14-177, *et al*., 6 (filed Sept. 30, 2016) ("Huawei would recommend, however, for the proposed 42 GHz band that the Commission extend the applicable frequency bands from 42-42.5 GHz to 40-42.5 GHz band for UMFUS."); Straight Path Further Notice Comments at 5-6 ("Straight Path . . . urges the Commission to authorize mobile operations in the 40-42 GHz band.").

[14] *Further Notice* at ¶ 410.

[15] *Id.* at ¶ 413.

band," and therefore various use and sharing scenarios between UMFUs, non-Federal FSS, and Federal users are possible.[16] For example, in the *Further Notice*, the Commission indicates it is open to various sharing mechanisms within the 47.2-50.2 GHz band—including a scenario where UMFUS and FSS licensees have priority in certain band segments—and intends to seek input from NTIA and other Federal agencies.[17] Conversely, Boeing is requesting what amounts to priority use of this spectrum. Boeing has discussed the necessity of "largely unfettered access" to the 47.2-48.2 GHz band,[18] and the *Application* indicates Boeing needs access to the 47.2-50.2 GHz band for FSS uplink; [19] this will severely limit sharing or primary use by competitive carriers.[20] Worse, Boeing has admitted on record that their proposed use for 47.2-50.2 GHz would render sharing possible "if UMFUS [is] located indoors or allowed outdoors on an opportunistic secondary basis."[21] As noted earlier, the *Spectrum Frontiers* proceeding is still in early stages, and it is far too soon to decide relegating flexible use licensees to such limited use in this band is in the public interest. The Commission, competitive carriers and potentially Federal users apparently have big plans for this spectrum, and foreclosing discussion by granting

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[16] *Id.* at ¶ 416.

[17] *Id.* at ¶¶ 414-415.

[18] What's more, Boeing admits that the "large numbers of two-way end user terminals at homes and offices throughout the country" will make "very unlikely" that "there would be significant usable 'white spaces' between adjacent satellite end user terminals within which mobile devices of other communications services could consistently operate." Reply Comments of the Boeing Company, Docket No. 14-177, *et.al.*, 15 (filed Oct. 31, 2016).

[19] *Boeing Application*, Narrative Attachment, at 60.

[20] *See, e.g.*, T-Mobile Further Notice Reply Comments at 18-19.

[21] *Ex Parte* Letter from Bruce A. Olcott, Counsel to The Boeing Company, to Marlene H. Dortch, Secretary, FCC, Docket No. 14-177, *et al.*, Slide 6 (filed Oct. 11, 2016).

the *Application* would discourage discovery of its best use and delay mobile innovation. The Commission should not grant the *Application* before it concludes the *Spectrum Frontiers* proceeding.

d. 50.4-51.4 GHz.

The Commission proposed to authorize fixed and mobile operations in the 50.4-51.4 band, up to 52.6 GHz.[22] Again, granting the *Application* would prejudice potential mobile use of the band as the Commission has proposed, and may hamper the Commission's ability to make the whole 50.4-51.4 GHz band available for mobile and fixed operations. The Commission has not yet resolved the technical challenges it foresees within this spectrum, such as "protection of passive services in the adjacent 50.2-50.4 GHz and 52.6-54.25 GHz bands,"[23] and an appropriate band plan.[24] As such, it makes no sense to complicate this analysis by allowing Boeing to make use of this spectrum prior to the resolution of the *Spectrum Frontiers* proceeding.

IV. CONCLUSION

Boeing's proposed use of the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz bands would amount to premature operational rights in this valuable spectrum, which will advance 5G network operation in the United States. The Commission should deny the *Application* in favor of resolving outstanding allocation, operational and sharing issues related to these bands under the *Spectrum Frontiers* proceeding.

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[22] *Further Notice* at ¶ 418 (the Commission seeks comment on the 50.4-52.6 GHz band, which was not addressed in the *NPRM* and at WRC-15 was identified for sharing and compatibility studies); *see also id.* at ¶ 420 (the Commission proposes to authorize fixed and mobile operations in the 50 GHz band under the Part 30 Upper Microwave Flexible Use Service rules).

[23] *Id.* at ¶ 422.

[24] *Id.* at ¶ 423.

Respectfully submitted,

/s/ Rebecca Murphy Thompson
Steven K. Berry
Rebecca Murphy Thompson
Elizabeth Barket
COMPETITIVE CARRIERS ASSOCIATION
805 15th Street NW, Suite 401
Washington, DC 20005
(202) 449-9866

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