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May 27, 2016

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington D.C. 20554

Re: Written *Ex Parte* Notice, GN Docket No. 14-177, IB Docket Nos. 15-256 and 97-95; RM-11664; and WT Docket No. 10-112

Dear Ms. Dortch:

The Boeing Company (“Boeing”), through its counsel, hereby responds to recent filings by CTIA in the Commission’s Spectrum Frontiers proceeding. CTIA’s submissions underscore the critical importance of ensuring that co-primary spectrum sharing is introduced in the 37.5-40.0 GHz band in order to prevent the band from remaining largely fallow for decades or more. Boeing urges the Commission to adopt rules that permit very high data-rate satellite communications systems, including ubiquitously deployed satellite user terminals, to share the 37.5-40.0 GHz band on a co-primary basis with incumbent licensees and the proposed Upper Microwave Flexible Use (“UMFU”) service.

The need for co-primary spectrum sharing is highlighted by CTIA in its recent filings. Far from championing the UMFU service as “a new and radically more capable generation of wireless mobile service,”¹ CTIA concedes that UMFU systems are “unlikely to deliver extensive coverage in a market, but instead will be best suited . . . in densely populated areas.”² CTIA also dispels any notion that UMFU may be used to introduce sorely needed competition in wireless services, predicting that UMFU systems will be used “primarily for adding capacity and high-speed data”³ to existing networks in areas “with the greatest population density.”⁴

¹ In the Matter of Use of Spectrum Bands Above 24 GHz for Mobile Radio Services, WT Docket No. 14-177, Notice of Inquiry, 29 FCC Rcd 13020, 13021 ¶ 16 (2014).

² Letter from Brian M. Josef, Assistant Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 2 (May 24, 2016) (“*May 24 CTIA Letter*”).

³ *Id.*

⁴ Letter from Scott K. Bergmann, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 2 (May 20, 2016) (“*May 20 CTIA Letter*”).

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CTIA acknowledges these facts in order to argue against the Commission's proposal to adopt substantive performance and coverage-based build out requirements for UMFU licensees. CTIA argues instead for the use of legacy "substantial service" performance showings of the sort that the Commission has increasingly rejected because they facilitate "gaming [of] the performance requirements"⁵ and they fail to ensure that "underutilized spectrum will be used intensively in the near future."⁶

The potential for such gaming is evident in CTIA's request. CTIA suggests that an adequate safe harbor for a UMFU substantial service showing would be the construction of just four fixed links per one million people by the end of a, presumably, ten year license term.⁷ CTIA observes that an identical safe harbor was used for several other services, including LMDS and 39 GHz,⁸ neither of which could be construed as examples of build out success. Instead, most LMDS licensees have struggled to comply with the feeble "four link" safe harbor ever since LMDS licenses were first issued in 1998, and 39 GHz licensees have not done any better since their licenses were first issued in 2000.

CTIA's request for a four link safe harbor is even more remarkable given the fact that UMFU links are anticipated to be very short range, *i.e.*, across a street or a room. On this basis, a four link safe harbor requirement could be satisfied for a major city or economic area ("EA") by a UMFU licensee within the confines of a single building.

CTIA also requests a safe harbor for mobile services of as little as 10 connections per 10,000 in population, or 1000 connections per EA⁹ (which equates to less than 10 connections per every quarter million people in New York). CTIA makes no attempt to hide the gaming potential of this approach, suggesting that a "connection" could include "the number of mobile or fixed connections that occurred in the market over a period of time (such as a month)."¹⁰ In other words, such a safe harbor arguably could be satisfied for a major city using a single mobile

⁵ Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al., GN Docket No. 14-177, et al., *Notice of Proposed Rulemaking*, FCC 15-138, ¶ 204 (Oct. 23, 2015) ("*Notice*").

⁶ See Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, WT Docket No. 07-293, Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Band, IB Docket No. 95-91, GEN Docket No. 90-357, RM-8610, Report and Order and Second Report and Order, 25 FCC Rcd 11710, ¶ 195 (2010) (concluding that eliminating substantial service performance requirements and replacing them with coverage requirements "will further the public interest by promoting the rapid deployment of new broadband services to the American public").

⁷ *May 24 CTIA Letter* at 3.

⁸ *See id.*

⁹ *See id.* at 4.

¹⁰ *Id.*

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or fixed device that communicates on a frequent (or, perhaps, infrequent) basis with a single access point. Further, CTIA argues that UMFU licensees should be permitted to employ this safe harbor approach without providing actual connection data to the Commission, but simply by certifying that they have satisfied the requirement.¹¹

Compounding this feeble safe harbor proposal, CTIA argues that UMFU performance requirements should be tolled until at least two manufacturers have certified equipment to operate in the millimeter wave band spectrum,¹² presumably requiring the completion of the standardization and equipment development processes before the clock even starts. The Commission's Wireless Telecommunications Bureau recently recognized that tolling milestones potentially indefinitely while licensees wait for manufacturers to develop equipment is contrary to the public interest,¹³ presumably because it gives licensees no incentive to encourage or assist in equipment development.

Boeing raises these points not to argue for more stringent UMFU performance requirements, however warranted, but to stress the importance of ensuring that spectrum made available for UMFU in the 37.5-40.0 GHz band is shared on a truly co-primary basis with very high data rate satellite communications services. To this end, CTIA claims that it favors spectrum sharing,¹⁴ but only on terms detrimental to satellite services. CTIA persists in incorrectly claiming that the fixed satellite service ("FSS") is "secondary" in the 28, 37 and 39 GHz bands¹⁵ (FSS is co-primary in each band, both in the domestic and international allocation tables).

CTIA further argues that satellite systems should not be afforded co-primary spectrum sharing opportunities in the 28, 37 and 39 GHz bands except through a "market-based mechanism (such as competitive bidding or leasing)."¹⁶ As Boeing and others have convincingly

¹¹ *See id.* at 4.

¹² *See id.* at 3.

¹³ Requests by FCR, Inc., Progeny LMS, LLC, PCS Partners, L.P. and Helen Wong-Armijo for Waiver and Limited Extension of Time, Requests by Skybridge Spectrum Foundation and Telesaurus Holdings GB, LLC for Waiver and Limited Extension of Time, Order, DA 14-1257, ¶¶ 17-18 (WTB, Mobility Division, Aug. 29, 2014) (cautioning that "the Bureau will not consider future requests for waiver or extension of either the interim or end-of-term construction deadline based on claims related to lack of equipment").

¹⁴ *See May 20 CTIA Letter* at 1.

¹⁵ *See id.* at 2.

¹⁶ *See id.* at 1.

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explained,¹⁷ requiring satellite operators to participate in spectrum auctions would clearly violate the Open-market Reorganization for the Betterment of International Telecommunications Act (“ORBIT Act”), which expressly prohibits the Commission from “assign[ing] by competitive bidding orbital locations or spectrum used for the provision of international or global satellite communications services.”¹⁸ Further, requiring satellite operators to secure spectrum access through leases would not provide sufficient regulatory certainty to justify the construction and launch of satellite systems.

Of equal concern, CTIA argues that new FSS terminals should be precluded from operating in the top-150 Metropolitan Statistical Areas.¹⁹ CTIA makes no attempt to explain why FSS terminals should be barred from these urban and suburban areas. Such a prohibition would hardly seem necessary to protect four fixed links per one million people, or 10 mobile “connections” per 10,000 people.

Instead, the Commission should recognize that terrestrial 5G services – as fascinating as they may seem – may be very slow in coming to the wireless marketplace. Further, even when they do arrive, as CTIA observes, their short range propagation characteristics will make “extensive, coverage based performance,” at best, “economically infeasible.”²⁰ In stark contrast, mmW satellite communications systems will, by their very nature, make very high data rate broadband services available to consumers in all locations in the United States immediately upon their first day of operation. Existing satellite networks have already successfully demonstrated that they provide attractive and competitive broadband services to end users in populous communities and rural areas alike, and the Commission should facilitate, not prevent, the expansion of these important broadband services.

Boeing stresses that it is not asking the Commission to choose between terrestrial and satellite based mmW services. Technological developments are making it possible for both services to share the 37.5-40.0 GHz band on a robust and competitive basis. To facilitate this highly efficient and beneficial use of the 37.5-40.0 GHz band, the Commission should provide sufficient time for the satellite and wireless industries to develop effective and non-burdensome spectrum sharing arrangements that will permit both terrestrial and satellite mmW services to rapidly develop.

¹⁷ See, e.g., Reply Comments of The Boeing Company, GN Docket No. 14-177, et al., at 11-13 (Feb. 26, 2016); Echostar Satellite Operating Corporation, Hughes Network Systems, LLC, and Alta Wireless, Inc., GN Docket No. 14-177, et al., at 36-37 (Jan 29, 2016).

¹⁸ Notice, ¶ 134

¹⁹ See *id.* at 3.

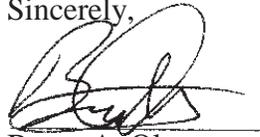
²⁰ May 24 CTIA Letter at 2.

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Such reasonable regulatory measures to permit spectrum sharing could include adopting a power limit for UMFU base stations in a range comparable to the 62 dBm limit proposed by the Commission in the *Notice*,²¹ requiring UMFU base stations and user terminals to employ beam forming and power control, which appears consistent with the stated plans of 5G proponents, and imposing base station transmitter height limits. With respect to satellite services in the 37.5-40.0 GHz band, the Commission should remove its prohibition on the operation of receive-only satellite user terminals in the band, and permit satellites to transmit in the 37.5-40.0 GHz band at the pdf levels that were adopted by the International Telecommunication Union for this spectrum, rather than the 12 dB tighter limit that was adopted in the U.S. more than a decade ago prior to development of the mmW technologies that now make co-primary spectrum sharing between satellite and terrestrial services possible.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Bruce A. Olcott', written over a horizontal line.

Bruce A. Olcott

Counsel to The Boeing Company

²¹ *Notice*, ¶ 274.