



July 7, 2016

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Ex Parte Presentation, Use of Spectrum Bands Above 24 GHz for Mobile Radio Services, GN Docket No. 14-177; IB Docket No. 15-256; RM-11664, WT Docket No. 10-112; IB Docket No. 97-95.

Dear Ms. Dortch,

Throughout this proceeding, CTIA and its member companies have collaborated with satellite stakeholders and developed an extensive record in support of a millimeter wave frequency environment that will support innovative wireless and satellite services. CTIA files this *ex parte* letter to highlight the fact that satellite incumbents' current usage rights are limited, that CTIA and the wireless industry have already provided extensive accommodations to satellite incumbents, and that further concessions to satellite entities would severely undermine 5G wireless deployment in these bands.

CTIA and its members developed a framework for spectrum sharing that "would allow the Commission to facilitate the rapid introduction of 5G services while also permitting the continued operation and expansion of satellite services."¹ Despite the fact that satellite operations have only limited rights to use of this spectrum, both the Commission in the *Spectrum Frontiers NPRM* and the wireless industry in this proceeding have made significant accommodations to satellite incumbents. These efforts will enable continued satellite operation after Upper Microwave Flexible Use ("UMFU") licenses are auctioned and services are deployed in the 28 GHz band. Notwithstanding this fact, satellite stakeholders in this proceeding continue to press the Commission for even more accommodations. Subjecting mobile licensees to an unlimited and never-ending series

¹ Letter from Scott K. Bergmann, CTIA, to Marlene H. Dortch, FCC, GN Docket No. 14-177 *et. al*, at 1 (May 20, 2016) ("CTIA Sharing Framework *Ex Parte*").



of attempts to elevate satellite users and obtain preferential access to millimeter wave spectrum would introduce uncertainty about licensees' rights in the band and risk delaying or foreclosing deployment of 5G. Moreover, the Commission should reject satellite interests' calls for preferential treatment by seeking free access to spectrum to provide broadband Internet access in competition with mobile wireless providers who will purchase rights at auction to use spectrum.

This proceeding represents an outstanding effort by the Commission and key stakeholders to develop a productive regulatory framework for the provision of 5G services. Indeed, the Commission has recognized the critical economic and innovation promise that will enable the U.S. wireless industry to extend its global 4G leadership position into 5G services. As detailed below, both the Commission and the wireless industry have done far more than is necessary to accommodate incumbent satellite operations. CTIA and its members are committed to a millimeter wave regime that promotes and protects satellite and terrestrial operations alike. However, the Commission should reject opportunistic attempts to elevate satellite operators' rights and privileges above what is necessary to ensure their continued operation, attempts which would be detrimental to new 5G services in these bands.

Satellite Incumbents Have Only Limited Rights to Use of This Spectrum. The Commission's rules are clear that 28 GHz satellite incumbents enjoy only secondary usage rights, and are entitled to very little protection by the Commission in this proceeding. The Commission made 28 GHz satellite incumbents' secondary status clear in the *Spectrum Frontiers NPRM*.² UMFU is an outgrowth of the Commission's original primary fixed/mobile LMDS in the 28 GHz band, and thus retains primary rights. When the Commission allocated this band for LMDS in 1996, it made clear that FSS was secondary.³ The Commission has also observed that this spectrum was allocated

² *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Notice of Proposed Rulemaking, 81 FR 1802, ¶ 31 (2015) ("NPRM") ("We have carefully considered the opposition from certain satellite interests to allowing mobile use in this band, but tentatively conclude that those parties have not presented a valid basis for rejecting mobile use in this band. While those parties argue that they need regulatory certainty in order to invest in their systems, authorizing mobile use would not deprive FSS operators of any reasonable expectations they had of access to spectrum. Under our current rules, FSS use of this band is secondary to LMDS.").

³ *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for*



“under . . . a broad and flexible service definition” with the intent of permitting mobile use of the band once technological developments supported it.⁴ Further, it was the Commission’s belief that “it is in the public interest to provide terrestrial licensees in the 28 GHz band with the flexibility to offer a variety of services and to develop innovative new services.”⁵ There is no basis for the Commission to depart from the path it has taken for 20 years – that FSS services are secondary – and adopt unwarranted protections for FSS that would undermine UMFU deployment.⁶ As for the 37.5-40 GHz band, the spectrum usage rights of satellite incumbents are extremely limited.⁷ For decades, satellite interests have taken no action to launch satellites or file any applications for use of the 37-40 GHz band – only after the Commission launched this

Local Multipoint Distribution Service and for Fixed Satellite Services, First Report and Order and Fourth Notice of Proposed Rulemaking, 11 FCC Rcd 19005, ¶ 44 (1996).

⁴ *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rulemaking, 12 FCC Rcd 12545, ¶ 207 (1997) (“We conclude that, for now, our significant allocation of spectrum under such a broad and flexible service definition should permit licensees to satisfy a broad array of their customers’ communications needs, whether through one or multiple service offerings. Although LMDS is allocated as a fixed service, we know of no reason why we would not allow mobile operations if they are proposed and we obtain a record in support of such an allocation. We believe this would be consistent with our goal of providing LMDS licensees with maximum flexibility in designing their systems. We have authorized other wireless services to include mobile and fixed services, depending on whether developments in the service and related equipment demonstrate a need for changing the rules and a capability for mobile and fixed services to coexist in these bands.”) (footnotes omitted).

⁵ *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, Third Notice of Proposed Rulemaking and Supplemental Tentative Decision, 11 FCC Rcd 53, ¶ 52 (1995).

⁶ The Commission recently granted an authorization to ViaSat explicitly noting that operations of antennas in the 28.1-28.35 GHz bands are secondary. See FCC Authorization, Call Sign E120075, File No. SES-MOD-20160108-00029 at 7 (June 29, 2016).

⁷ As the Commission observes in the *Spectrum Frontiers NPRM*, FSS earth stations in the 37.5-40 GHz band are primary in the Table of Allocations, but gateway earth stations may only be deployed if the FSS licensee obtains a 39 GHz license in the area where the earth station will be located, or if it enters into an agreement with the corresponding 39 GHz licensee. *NPRM* ¶ 161. In addition, FSS users in the 39 GHz band operate under a “soft segmentation” band plan which, among other things, subjects them to lower power flux density limits to accommodate high-density fixed terrestrial systems. Comments of Straight Path Communications, Inc., GN Docket No. 14-177, ET Docket No. 95-183, PP Docket No. 93-253, RM-11664, at 19 (Jan. 15, 2015).



proceeding did any satellite entity file for use of the band.⁸ The Commission should not reward the satellite industry with newfound rights based upon eleventh-hour, opportunistic applications only seeking to block new terrestrial uses of the spectrum.

The Wireless Industry Has Provided Substantial Data and Analysis in Support of Spectrum Sharing. The Commission has long sought technical data and analysis that would support the sharing of 5G spectrum by terrestrial and satellite services alike. In March, Chairman Wheeler stressed to the satellite industry that their cooperation would be expected.⁹

The wireless industry answered Chairman Wheeler's call, and has provided extensive technical documentation in support of a sharing regime. CTIA members AT&T Services Inc. ("AT&T"), Nokia, Samsung Electronics America ("Samsung"), Ericsson, T-Mobile USA, Inc. ("T-Mobile"), and Verizon submitted a series of technical filings, detailing interference modeling and simulations between terrestrial and satellite services in the millimeter wave band spectrum.¹⁰ These filings refute many unrealistic claims regarding the potential for UMFU-to-FSS interference. These filers have continued to supplement the record in this proceeding, providing additional material from 5G standards organizations and refining included assumptions.¹¹ Satellite companies, however,

⁸ Monica Allevan, *Boeing Seeks Permission to Launch Satellite Constellation in Same V-band Spectrum as 5G Systems*, FIERCEWIRELESSTECH (June 22, 2016), <http://www.fiercewireless.com/tech/story/boeing-seeks-permission-launch-satelliteconstellation-same-v-band-spectrum/2016-06-27> (citing satellite industry consultant observations).

⁹ Remarks of Chairman Tom Wheeler at the 19th Annual Satellite Leadership Dinner, at 4 (Mar. 7, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-338135A1.pdf. At that time, Chairman Wheeler strongly encouraged "SIA member companies to explore these sharing opportunities with the terrestrial industry – quickly and seriously. This will require the industries to work diligently to resolve the technical details necessary for sharing scarce spectrum across the spectrum chart, so that a variety of technologies can work together in deploying broadband and maximizing the benefits of high-speed connectivity." *Id.*

¹⁰ See Letter from AT&T, Nokia, Samsung, T-Mobile, and Verizon to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, et al, (May 6, 2016) ("Joint Filers May 6 Letter"); see also Ex Parte presentation of AT&T, Nokia, Samsung, T-Mobile, and Verizon to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, et al, (May 12, 2016) ("Joint Filers May 12 Letter"); Letter from AT&T, Ericsson, Nokia, Samsung, T-Mobile, and Verizon to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, et al, (June 1, 2016) ("Joint Filers June 1 Letter"); Letter from Ericsson to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, et al, (May 25, 2016).

¹¹ See, e.g., Letter from Stacey Black, AT&T et al., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, at 1-2 (filed June 1, 2016).



disengaged from technical discussions and have not been as forthcoming with information regarding their operations.

The Wireless Industry Sharing Framework Provides Extensive Accommodations for FSS Incumbents. The protections proposed by CTIA and the wireless industry in their proposed sharing framework represent significant concessions to the satellite industry, particularly in light of FSS' secondary status. Even the Commission's proposals in the *Spectrum Frontiers NPRM* were generous, but the sharing framework developed by the wireless industry took protection of satellite rights a step further. Under the proposal advanced by CTIA, terrestrial mobile licensees would retain primary status in the 28 GHz and 37-40 GHz bands.¹² However, existing FSS earth stations would be afforded secondary "operation rights," and UMFU licensees would be required to design their networks to accept interference from these stations.¹³ Further, FSS operators would be permitted to add new earth stations to existing facilities, and FSS operators would not be required to relocate or modify existing systems or applications at the request of UMFU licensees.¹⁴ And, outside of the top 150 Metropolitan Statistical Areas, future FSS stations may continue to be deployed on a secondary basis with the potential for "operation rights" upon agreement with UMFU licensees.¹⁵ This proposal more than satisfies the Commission's goal of ensuring satellite and mobile coexistence in the millimeter wave bands.

These Sharing Proposals Will Ensure a Robust Satellite Ecosystem in the Future. As the record in this proceeding makes clear, the adoption of 5G rules will not threaten the viability of satellite services in the future. The Commission has outlined a variety of proposals that would provide protections to existing licensees while enabling future satellite development in these bands. The coexistence framework developed by CTIA and its members would still permit satellite services to serve the public in the majority of the country, especially in rural areas.¹⁶

¹² Letter from Scott K. Bergmann, CTIA, to Marlene H. Dortch, FCC, GN Docket No. 14-177, WT Docket No. 10-112, IB Docket Nos. 15-256 and 97-95, and RM-11664, at 3 (May 20, 2016) ("*CTIA Sharing Framework Ex Parte*").

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ See *Sharing Framework Ex Parte*.



Far from curtailing the ability of satellite licensees to deploy service, the Commission and wireless industry have provided numerous options to accommodate them, above and beyond those protections the Commission is required to afford or were proposed in the *Spectrum Frontiers NPRM*. For example, the Commission in the *Spectrum Frontiers NPRM*, while acknowledging the limited existing rights of satellite incumbents, proposed a market-based framework by which incumbents could obtain primary usage rights.¹⁷ The Commission also proposed to allow for future deployment of fixed FSS user equipment on a secondary basis.¹⁸ And finally, the Commission sought comment on proposals that would promote sharing of the 37.5-40 GHz band by satellite and terrestrial operations in the future. Thus, the Commission in the *Spectrum Frontiers NPRM* has already gone out of its way to accommodate satellite operations in these bands. And, as CTIA understands the draft Order, satellite stakeholders already are being made significant concessions.

Notwithstanding the Efforts of the Commission and the Wireless Industry, Satellite Operators Continue to Demand Allowances in Excess of Their Rights. When it adopts rules in this proceeding, the Commission should reject self-serving proposals by satellite incumbents that are far in excess of their legal rights and will have a significant negative impact on 5G deployment. These eleventh-hour proposals include, but are not limited to: (1) grant of primary status in the 28 GHz band in contravention of 20-year-old rules and policies;¹⁹ (2) an unnecessary inquiry into aggregate interference;²⁰ (3) grandfathering of pending earth stations above and beyond what is reasonable;²¹ (4) calling for delayed action and co-primary rights in the 37 and 39 GHz bands even

¹⁷ *NPRM* ¶¶ 132-134.

¹⁸ *Id.* ¶¶ 147-159.

¹⁹ See, e.g., Letter from Tom Stroup, SIA, to Marlene H. Dortch, FCC, GN Docket No. 14-177, Attachment at 1.

²⁰ *Id.*

²¹ *Id.* (“28 GHz earth station applications pending prior to the effective date of the R&O, should be eligible for the same level of protection as already-authorized earth stations. Additionally, because of the inability to change space station designs, new individually-licensed earth stations for communication with space stations already authorized or applied for by the pending report and order date should be granted additional flexibility in terms of deployment location.”).



though no satellites have been deployed;²² and (5) permitting collocation of 38 GHz band FSS earth stations at protected 28 GHz band sites.²³ These proposals, if granted, would greatly expand the rights of satellite operators beyond those currently afforded by the Commission, and provide preferential treatment for satellite competitors to the detriment of terrestrial wireless services in these bands.

The Commission Should Deny Satellite Operators' Attempts to Seek Even Greater Protections Through Speculative Filings. Further, the Commission should cut off grandfathering privileges as of the October 22, 2015 adoption date of the *Spectrum Frontiers NPRM* amidst the rush of opportunistic satellite filings submitted since the adoption of the *Spectrum Frontiers NPRM*.²⁴ This is particularly important in light of the vast amount of spectrum already available to satellite providers and announcements of systems never ultimately deployed. The Commission should not permit opportunistic filings by satellite companies to undermine the carefully-drawn balance of interests in the millimeter wave bands and the rapid deployment of 5G services. Satellite companies have a long history of filing speculative applications that ultimately fail to bear fruit. For example:

- In 1999, Boeing received a contract to build spy satellites for the U.S. government. However its “initial design for the optical system that was the heart of one of the two new satellite systems was so elaborate that optical engineers working on the project said it could not be built.” Further,

²² Letter from Jennifer Warren, Lockheed Martin, to Marlene H. Dortch, FCC, GN Docket No. 14-177 (June 24, 2016).

²³ Letter from Jennifer A. Manner, Echostar, to Marlene H. Dortch, FCC, GN Docket No. 14-177, WT Docket No. 10-112, IB Docket Nos. 15-256 and 97-95, and RM-11664, at 2 (June 27, 2016).

²⁴ See Ex Parte Letter from Brian M. Josef, CTIA, to Marlene H. Dortch, FCC, GN Docket No. 14-177, WT Docket No. 10-112, IB Docket Nos. 15-256 and 97-95, and RM-11664 (July 5, 2016); see also Boeing Petition for Rulemaking 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 (filed June 22, 2016). Boeing’s filing reveals its transparent attempt “to be grandfathered in and potentially seek operating restrictions upon future terrestrial systems.” Monica Allevan, *Boeing Seeks Permission to Launch Satellite Constellation in Same V-band Spectrum as 5G Systems*, FIERCEWIRELESSTECH (June 22, 2016), <http://www.fiercewireless.com/tech/story/boeing-seeks-permission-launch-satellite-constellation-same-v-band-spectrum/2016-06-27> (citing satellite industry consultant observations).



Boeing “started burning through cash and dropping deadlines.” The contract was canceled in 2005.²⁵

- Teledesic planned to build a global broadband satellite network that would create “Internet in the sky.” The project went through numerous delays, designs, and satellite contractors before it was abandoned in 2002.²⁶
- SkyBridge, established in 1997, hoped to develop a competing system to Teledesic’s. The planned \$6 billion satellite network was originally slated to launch in 2002, but slipped to 2004 as costs ballooned, and ultimately was scrapped.²⁷
- In 2015, Boeing dropped its only order for a new small satellite intended to be used for communications and imaging services. Boeing pulled out of the project after its partner, HySpecIQ, held talks with Boeing about slowing down construction and restructuring the contract because of the downturn in the natural resources market.²⁸

To the extent that satellite operators now seek to deploy in the 28, 37, and 39 GHz bands, the Commission has articulated an approach that affords sufficient access to this spectrum.

²⁵ Noah Shachtman, *Rogue Satellite’s Rotten, \$10 Billion Legacy*, WIRED (Feb. 20, 2008), <https://www.wired.com/2008/02/that-satellite/>. See also Philip Taubman, *In Death of Spy Satellite Program, Lofty Plans and Unrealistic Bids*, N.Y. TIMES (Nov. 11, 2007), http://www.nytimes.com/2007/11/11/washington/11satellite.html?_r=0.

²⁶ Sharon Pian Chan, *The birth and demise of an idea: Teledesic’s ‘Internet in the sky’*, SEATTLE TIMES (Oct. 7, 2002), <http://community.seattletimes.nwsourc.com/archive/?date=20021007&slug=teledesic070>.

²⁷ *SkyBridge reassesses its plans to set up a \$6bn satellite system*, FLIGHTGLOBAL (Mar. 6, 2001), available at <https://www.flightglobal.com/news/articles/skybridge-reassesses-its-plans-to-set-up-a-6bn-satellite-system-126990/>; Tim Furniss, *Alcatel set to scrap Skybridge project*, FLIGHTGLOBAL (Jan. 8, 2002), <https://www.flightglobal.com/news/articles/alcatel-set-to-scrap-skybridge-project-140940/>; Peter B. de Selding, *WorldVu, a Satellite Startup Aiming To Provide Global Internet Connectivity, Continues To Grow Absent Clear Google Relationship*, SPACE NEWS (Sept. 3, 2014), <http://spacenews.com/41755worldvu-a-satellite-startup-aiming-to-provide-global-internet/>.

²⁸ Doug Cameron, *Boeing Loses Only Small Satellite Order*, WALL ST. J. (May 12, 2015), <http://www.wsj.com/articles/boeing-loses-only-small-satellite-order-1431468793>.



The Commission Should Not Advantage Satellite Operators Over Terrestrial Providers for the Provision of Broadband Services.

Notably, in this proceeding satellite operators have expressed a desire to compete with terrestrial services.²⁹ If satellite companies want to compete with terrestrial mobile providers in the provision of broadband services, then the Commission should establish a level regulatory playing field and require satellite operators to go through the same steps to acquire and maintain spectrum access as their terrestrial counterparts. Anything short of that would give satellite providers preferential treatment over U.S. wireless carriers. Indeed, satellite operators are awash in spectrum, with far less investment and innovation. Satellite providers have existing allocations between 3 and 80 GHz that encompass nearly 22 gigahertz of spectrum – *twice the spectrum under consideration in this proceeding* – available for use in broadband, two-way, or broadcast communications.³⁰ Wireless carriers’ urgent need for additional spectrum is apparent in their continual investments to expand their LTE networks, introduce network advancements, and deploy small cells and distributed antenna systems to enhance connectivity for consumers. Wireless providers’ cumulative capital investment exceeded \$462 billion at the end of 2015 and saw incremental CAPEX of almost \$32 billion compared to less than \$3 billion CAPEX by satellite providers.³¹ The Commission should be mindful of the abundance of spectrum already available to the satellite industry and their lack of investment as it considers allocation of spectrum in the upcoming Report and Order.

²⁹ See, e.g., The Boeing Company, *Satellite and 5G Sharing at the Spectrum Frontier – Charting a New Broadband Future* (June 30, 2016) (“The benefits of satellite-delivered broadband access can now be realized in upper mmW frequencies because significant advances in satellite and phased-array antenna technologies enable extraordinary spectrum re-use and low-cost user terminals, resulting in a ubiquitous broadband offering with a compelling business case that can compete effectively with existing terrestrial offerings.”), attached to Letter from Bruce A. Olcott, Counsel to the Boeing Company, to Marlene H. Dortch, FCC, , GN Docket No. 14-177, WT Docket No. 10-112, IB Docket Nos. 15-256 and 97-95, and RM-11664 (June 30, 2016).

³⁰ See 47 C.F.R. Section 2.106. CTIA notes that this nearly 22 gigahertz of spectrum available to satellite operators excludes the spectrum at issue in this proceeding in the 28, 37, and 39 GHz bands.

³¹ See CTIA Comments on the State of Mobile Wireless Competition, WT Docket No. 16-137 (May 31, 2016); see also 2014 Annual Capital Expenditures, <http://www.census.gov/data/tables/2014/econ/aces/2014-aces-summary.html>.



Pursuant to Section 1.1206 of the Commission's rules, a copy of this letter is being filed in ECFS. Please do not hesitate to contact the undersigned with any questions.

Sincerely,

/s/ Scott K. Bergmann

Vice President, Regulatory Affairs
CTIA