

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

In the Matter of)	
)	
Spectrum Horizons)	ET Docket No. 18-21
)	
James Edwin Whedbee Petition for Rulemaking to)	RM-11795
Allow Unlicensed Operation in the 95-1,000 GHz)	
Band)	

REPLY COMMENTS OF CTIA

CTIA respectfully submits these reply comments in response to the Notice of Proposed Rulemaking released by the Federal Communications Commission (“Commission”) on making spectrum above 95 GHz more readily accessible for innovative services and technologies.¹

I. INTRODUCTION.

As CTIA and others highlighted in this proceeding, the nascent nature of technology development for the spectrum above 95 GHz warrants a flexible approach to licensing and technical rules for these bands to ensure innovation can flourish. To that end, the record supports adoption of licensing rules for the spectrum above 95 GHz that will allow for a variety of new services and applications, including mobile services. The record also supports relaxed technical operational limits, which will allow for the use of state-of-the-art antennas and transmission equipment. To ensure innovative uses of this spectrum can develop, the Commission should reject calls to limit uses of the band or to set aside significant portions of the spectrum for specific services. Additionally, CTIA supports use of the bands above 95 GHz for both licensed and unlicensed uses and encourages the Commission to utilize the flexible Part 70/80/90 GHz

¹ *Spectrum Horizons, et al.*, Notice of Proposed Rulemaking and Order, ET Docket No. 18-21, *et al.*, FCC 18-17 (rel. Feb. 28, 2018) (“*Spectrum Horizons NPRM*”).

framework and reserve spectrum for unlicensed uses where licensed use of the spectrum is not feasible. Given the proven sharing framework, the Commission should reject proposals to use of a Spectrum Access System (“SAS”) in the spectrum above 95 GHz.

II. THE COMMISSION SHOULD ADOPT LIGHT-TOUCH LICENSING AND TECHNICAL RULES FOR THE SPECTRUM ABOVE 95 GHz.

In its initial comments, CTIA supported flexible licensing and technical rules for the spectrum above 95 GHz.² Other parties similarly support flexible rules to facilitate continued development of the nascent services in this spectrum.³ Commenters also agree that the existing licensing framework governing the 70 GHz, 80 GHz, and 90 GHz bands should be applied to the spectrum above 95 GHz.⁴ As T-Mobile notes, “[t]he 70/80/90 GHz rules serve as a reasonable baseline from which to create rules for the spectrum above 95 GHz.”⁵

While fixed microwave and wireless backhaul are the most notable near-term use cases for spectrum above 95 GHz,⁶ commenters agree with CTIA that the Commission should not

² Comments of CTIA, ET Docket No. 18-21, at 2-8 (filed May 2, 2018) (“CTIA Comments”)

³ See, e.g., Comments of Qualcomm Incorporated, ET Docket No. 18-21, at 2 (filed May 2, 2018) (“Qualcomm Comments”) (urging the Commission to “adopt flexible use rules so that both fixed and mobile deployments will be allowed in the spectrum horizons’ bands below 160 GHz”); Comments of the Telecommunications Industry Association, ET Docket No. 18-21, at 1 (filed May 2, 2018) (“TIA Comments”) (“As the Commission recognizes, it must strike an appropriate balance between allowing some potential services to deploy in these bands while not ‘constrain[ing] the ways in which the bands above 95 GHz can develop or foreclose innovation through too-rigid service rules.’”); Comments of the Consumer Technology Association, ET Docket No. 18-21, at 4 (filed May 2, 2018) (“CTA Comments”) (“Given the nascent nature of the communication technologies using the bands above 95 GHz, the Commission must not pick winners or losers, but provide sufficient flexibility in its rules.”).

⁴ See, e.g., Comments of Ericsson, ET Docket No. 18-21, at 13 (filed May 2, 2018) (“Ericsson Comments”); Comments of T-Mobile USA, Inc., ET Docket No. 18-21, at 6 (filed May 2, 2018) (“T-Mobile Comments”); see also CTIA Comments at 8-12.

⁵ T-Mobile Comments at 6.

⁶ See, e.g., Ericsson Comments at 8 (“[A] meaningful portion of the spectrum between 95 GHz and 275 GHz should be suitable for wireless backhaul – and Ericsson is working to make backhaul a reality in these bands.”); T-Mobile Comments at 4 (“The spectrum above 95 GHz is well-suited to support 5G backhaul.”).

foreclose opportunities for development of mobile wireless uses in these bands, particularly given that there are primary terrestrial mobile allocations.⁷ While more study will be needed to determine the requirements to coordinate mobile and fixed uses, after that study it is likely that “mobile access and point-to-point links can be deployed above 95 GHz with a limited reduction in the maximum path length of the links caused by increased atmospheric loss.”⁸ Indeed, the U.S. is already lagging behind other countries, such as Europe, that have begun to establish band plans for this spectrum.⁹ The Commission should therefore adopt service and technical rules for the spectrum above 95 GHz that will enable flexible use licenses for both fixed and mobile services.

Finally, the record supports relaxed technical rules governing antennas and transmit power to accommodate opportunities for manufacturers and providers to innovate and experiment with different applications for these high-band frequencies. In particular, the recommendations made by T-Mobile and Ericsson to address the unnecessary restrictions on antennas should be considered, and the existing Commission proposals should be modified.¹⁰ Moreover, the Commission’s proposal for transmit power limits should be increased to be

⁷ See, e.g., T-Mobile Comments at 5 (“[T]he Commission should therefore be mindful of the potential to use the spectrum for mobile service in the future”); TIA Comments at 2 (“[T]he Commission should open at least some bands for mobile allocations to encourage the development of new technologies, while avoiding band fragmentation.”); see also CTIA Comments at 4-5.

⁸ Qualcomm Comments at 7.

⁹ See, e.g., ECC Recommendation work item SE19_37 and SE19_38, https://eccwp.cept.org/WI_Detail.aspx?wiid=534 and https://eccwp.cept.org/WI_Detail.aspx?wiid=537.

¹⁰ See T-Mobile Comments at 8-9 (advocating for relaxed antenna gains (at most 38 dBi), wider antenna beamwidths (2.2 degrees as opposed to the Commission 1.2 degree proposal), and removal and relaxation of antenna polarization restrictions); Ericsson Comments at 16 (suggesting that antenna gain limits are not necessary, but at most 35 dBi).

consistent with power limits found in other spectrum bands.¹¹

III. THE COMMISSION SHOULD ENCOURAGE LICENSED TERRESTRIAL USE OF THE SPECTRUM ABOVE 95 GHz.

A. The Commission Should Not Reserve Spectrum Solely For Satellite Operations.

In their initial comments, certain parties argue that: (1) the Commission should allocate only 36 gigahertz (of a possible 102.2 gigahertz) for terrestrial services; (2) no spectrum above 95 GHz should be used for mobile services; (3) 14 gigahertz of spectrum should be reserved solely for satellite communications; and (4) significant portions of the spectrum above 95 GHz should remain fallow for some indeterminate amount of time.¹² These arguments are without merit and should be rejected. Instead, the record demonstrates that all spectrum above 95 GHz with a primary terrestrial allocation should be made available for licensing for wireless use.¹³

As CTIA has discussed in this and other Commission proceedings, the terrestrial wireless industry has consistently established a need for capacity for both fixed and mobile services, and growing demand for wireless connectivity shows no signs of slowing as we look to deploy next-

¹¹ Ericsson Comments at 15-16 (suggesting a 55 dBW power limit as a fixed value across a signal's entire bandwidth). *See also* CTIA Comments at 7 (noting that a transmit power limit should be greater than the 25 dBW/MHz value proposed by the Commission).

¹² Comments of The Boeing Company, ET Docket No. 18-21, at 4-8 (filed May 2, 2018) ("Boeing Comments"); Comments of The Satellite Industry Association, ET Docket No. 18-21, at 2-11 (filed May 2, 2018) ("SIA Comments").

¹³ *See* Ericsson Comments at 10 ("Ericsson supports the Commission's proposal to make the following bands available for licensed, fixed point-to-point service: 95-100 GHz, 102-109.5 GHz, 111.8- 114.25 GHz, 130-134 GHz, 141-148.5 GHz, 151.5-158.5 GHz, 158.5-164 GHz, 167-174.5 GHz, 174.5-174.8 GHz, 191.8-200 GHz, 209-226 GHz, 231.5-232 GHz, 232-235 GHz, 238-240 GHz, 240-241 GHz, and 252-275 GHz."); T-Mobile Comments at 4 ("Therefore, making additional spectrum available for 5G backhaul is important to maintaining U.S. leadership in wireless technologies."); Qualcomm Comments at 7 ("The FCC should thus authorize flexible use licenses to deploy mobile and fixed services in these seven bands just above 95 GHz in the same manner it has done for the millimeter wave bands: 95-100 GHz, 102-109.5 GHz, 111.8-114.25 GHz, 122.25-123 GHz, 130-134 GHz, 141-148.5 GHz, and 151.5-158.5 GHz bands.").

generation 5G networks.¹⁴ 5G will require densified networks, more backhaul options, and wider bandwidth backhaul to support higher capacity services, and high-band spectrum will play a vital role in meeting those needs.¹⁵ By ensuring robust spectrum availability and modernizing its infrastructure siting policies, the Commission can better ensure that the U.S. wireless industry can meet consumer and business demands, bringing social and economic benefits to people across the country.¹⁶

Limiting the bands in which terrestrial services can be deployed or precluding mobile use is not only contrary to this goal, but antithetical to the Commission's long-standing precedent of establishing minimal technical limits on use of spectrum and allowing the commercial industry to deploy any service with a primary allocation. In this case, the spectrum bands above 95 GHz have a primary terrestrial mobile allocation¹⁷ and SIA and Boeing have failed to provide any technical evidence that mobile use would cause harmful interference to any party. Instead, they point only to engineering data provided as part of the *Spectrum Frontiers* proceeding for the 28 GHz and 39 GHz bands. That data, however, actually indicates that mobile and satellite systems are capable of sharing, and would be more feasible in these spectrum bands, which have more limited propagation characteristics.

Additionally, dedicating or setting aside spectrum for a single service in bands with

¹⁴ See, e.g., Comments of CTIA, AU Docket No. 18-85, at 2-7 (filed May 9, 2018).

¹⁵ See T-Mobile Comments at 3-4 (noting that 5G backhaul will need bandwidths of up to five gigahertz); see also Ericsson Comments at 20 (highlighting that the spectrum above 95 GHz will help to meet the "higher data-carrying capabilities" of 5G services for "high-capacity backhaul").

¹⁶ See, e.g., Letter from Scott K. Bergmann, CTIA, to Marlene H. Dortch, FCC, GN Docket No. 14-177 *et al.* (filed Apr. 17, 2018) (submitting recent reports regarding the economic benefits of America's 4G leadership and the importance of winning the race to 5G).

¹⁷ 47 C.F.R. § 2.106.

multiple primary allocations would undermine the goals of this proceeding.¹⁸ This is particularly true given that the bands above 95 GHz have limited propagation and interference footprints, and that no satellite party has presented any evidence of any near-term plans for a satellite system in these frequencies. Rather than dedicate or set aside spectrum exclusively for the satellite industry – all but guaranteeing that the bands will not be used for the foreseeable future – the Commission should enact policies that ensure these bands can be developed and deployed to the benefit of business and consumers. The Commission should thus move forward with its proposals to adopt licensing and service rules for all 102.2 gigahertz of available spectrum above 95 GHz for terrestrial services with fixed and mobile terrestrial allocations and adapt existing sharing rules so that all parties with primary allocations are afforded the opportunity to innovate and deploy in these spectrum bands.

B. Unlicensed Uses Can Be Accommodated Under The Proposed Licensing Framework.

The record broadly supports the Commission’s proposal to make 15.2 gigahertz of spectrum above 95 GHz available for unlicensed uses.¹⁹ As CTIA highlighted in its initial comments, both licensed and unlicensed spectrum have important roles to play in the wireless

¹⁸ See, e.g., FCC Press Release, FCC Proposes to Open ‘Spectrum Horizons’ Above 95 GHz For New Services and Technologies (Feb. 22, 2018), https://apps.fcc.gov/edocs_public/attachmatch/DOC-349378A1.pdf (“By supporting multiple types of authorizations [in the spectrum above 95 GHz], the Commission will be better able to accommodate the diverse types of services and applications that may be developed for these bands.”).

¹⁹ CTA Comments at 7 (“The four frequency bands currently proposed for unlicensed use (the 122-123 GHz band, the 244-246 GHz band, the 174.8-182 GHz band, and the 185-190 GHz band) are well-suited for unlicensed operations.”); Qualcomm Comments at 10 (“Qualcomm supports the FCC authorizing 15.2 GHz for unlicensed use within the four bands proposed in the NPRM: 122-123 GHz, 174.8-182 GHz, 185-190 GHz and 244-246 GHz.”); Comments of IEEE 802 (“IEEE 802 supports the Commission’s proposal to open 15.2 GHz of spectrum above 95 GHz for unlicensed use in the four bands, 122-123 GHz, 174.8-182 GHz, 185-190 GHz, and 244-246 GHz.”).

ecosystem.²⁰ However, some parties have suggested that even more spectrum be made available for unlicensed purposes.²¹ These arguments should be rejected. Instead, additional spectrum in the bands above 95 GHz should only be reserved for unlicensed uses where it cannot easily be used for licensed terrestrial fixed and mobile wireless services. Spectrum bands with a primary terrestrial fixed or mobile allocation have a protected status from interference that would be lost if those bands were limited to unlicensed use only. The Commission should therefore move forward with its proposal to adopt licensing and technical rules for all the bands above 95 GHz that have primary fixed and mobile allocations – as those bands can readily be deployed for protected licensed services.

Moreover, parties desiring access to more spectrum for unlicensed-like uses should be able to utilize the modified license registration process to obtain access to spectrum for those applications, given that the proposed licensing rules for spectrum above 95 GHz revolve around a “lightly-licensed” registration process as is in place for the 70/80/90 GHz bands.

C. The Commission Should Reject Calls To Apply The SAS Framework To Spectrum Above 95 GHz.

Starry suggests that use of the SAS sharing framework would be well suited for the spectrum above 95 GHz.²² However, there is no basis for extending the SAS model adopted for the 3.5 GHz band to additional frequency bands before it has been proven successful on a widespread basis nor is the SAS model applicable for this spectrum, as it has been designed to manage dynamic access that is not necessary here. The Commission should therefore reject this proposal and instead apply the 70/80/90 GHz rubric – modified as necessary for the spectrum

²⁰ CTIA Comments at 12.

²¹ See, e.g., Boeing Comments at iv; Comments of Wi-Fi Alliance, ET Docket No. 18-21, at 4 (filed May 2, 2018); Comments of Facebook, Inc., ET Docket No. 18-21, at 4 (filed May 2, 2018).

²² Comments of Starry, Inc., ET Docket No. 18-21 at 5 (filed May 2, 2018).

above 95 GHz – that has been deployed in the real world and has been demonstrated to manage sharing of spectrum with similar propagation characteristics.

IV. CONCLUSION.

The Commission's continued efforts to identify and allocate additional spectrum for terrestrial fixed and mobile wireless services will ensure that the U.S. takes a leading role in developing and deploying next-generation technologies and services, including fixed wireless backhaul. CTIA urges the Commission to employ a balanced, light-touch approach to licensing and technical rules in these nascent bands. By doing so, the Commission will provide licensees with the flexibility necessary to maximize the potential of these bands, unlocking countless benefits for American consumers.

Respectfully Submitted,

/s/ Kara Romagnino Graves

Kara Romagnino Graves
Director, Regulatory Affairs

Thomas C. Power
Senior Vice President and General Counsel

Scott K. Bergmann
Senior Vice President, Regulatory Affairs

Paul Anuszkiewicz
Vice President, Spectrum Planning

CTIA
1400 Sixteenth Street, NW
Suite 600
Washington, DC 20036
(202) 785-0081

Dated: May 17, 2018