

**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)	RM-11795
to Allow Unlicensed Operation in the 95-1,000)	
GHz Band)	

REPLY COMMENTS OF NOKIA

Nokia submits Reply Comments in this proceeding seeking to make the spectrum above 95 GHz more readily accessible for new innovative services and technologies.

Nokia offers unparalleled leadership in the technologies that connect people and things. We bring together, in one company, mobile broadband with fixed line access, and the underlying IP routing and optical technology that connects them. Nokia is a longstanding supporter of the Commission's efforts to make additional spectrum available above 95 GHz for terrestrial fixed and mobile communications uses. To help lead the way for the next leap forward in wireless technologies and further push the spectrum frontiers, Nokia has joined with other technology leaders in founding the mmWave Coalition,¹ which supports the establishment of a regulatory framework in the U.S. to permit the use of radio frequencies above 95 GHz. With approximately 40,000 employees focused exclusively on research and development ("R&D"), and a broad portfolio covering mobile as well as fixed wireless technologies, Nokia is well placed to comment on the diverse use cases possible in the spectrum bands above 95 GHz.

¹ See, Monica Allevan, *Nokia Leading Effort to Push for Spectrum Above 95 GHz*, FIERCE WIRELESS, Dec. 1, 2017, available at <https://www.fiercewireless.com/wireless/nokia-leading-effort-to-push-for-spectrum-above-95-ghz>.

Nokia supports that the Commission is aggressively moving forward to facilitate services in the above-95 GHz Band. We highlight the overwhelming support in the Comment phase of this proceeding for Commission action for this valuable, largely untapped spectrum range. As stated by the Comments of the mmWave Coalition, “[a]dopting service rules for use of these frequencies will provide certainty and spur investment in and development of new technologies, products and services.”² However, Nokia urges that the Commission modify certain aspects of its proposal to unleash even greater potential of the band.

For example, in concert with a number of other commenters, Nokia would support allowing not only fixed point-to-point links in the band, but also fixed point-to-multipoint systems.³ In addition, while there may be little present interest for mobile use in these bands, much of the spectrum contemplated in this proceeding is already allocated for mobile and we support that the Commission’s rules should provide the potential for mobile use in the bands above 95 GHz. This proceeding should not serve as a gating item for such mobile uses should technology continue to evolve to make mobile attractive in the band. Indeed, Nokia continues to believe that the 70/80 GHz band has great promise for mobile,⁴ and so will bands above 95 GHz.

Nokia agrees with commenters that seek less restrictive technical rules. Nokia is in full alignment with the proposal of CTIA to adopt a more relaxed bit-rate requirement of 0.125 bits/second/Hz, consistent with the rules for the 70/80 GHz, and with the Commission’s proposal to adopt higher power limits such as 75 decibel milliwatts per 100 megahertz (75

² Comments of the mmWave Coalition, ET Docket No. 18-21, RM-1179, at 2 (filed May 2, 2018).

³ *See, e.g.*, Comments of CTIA, ET Docket No. 18-21, RM-1179, at 7 (filed May 2, 2018) (“Comments of CTIA”).

⁴ Letter from Jeffrey Marks, Nokia, to Marlene Dortch, Federal Communications Commission, GN Docket No. 14-177; IB Docket Nos. 15-256 and 97-95; RM-11664; WT Docket No. 10-112 (filed July 14, 2017) (demonstrating how various mitigation techniques combine to alleviate interference concerns between proposed 70 GHz mobile services and incumbent fixed services).

dBm/100 MHz) EIRP limit the Commission recently adopted for base stations in Part 30 of the Commission's rules.⁵⁶

Nokia also disagrees with the Commission's proposal to provide for more allocations for fixed satellite service (FSS) and mobile satellite service (MSS) in bands above 95 GHz. As noted above, there is wide agreement that this band is desirable for terrestrial services, which would be hobbled by introduction of satellite services and the challenging interference environment that accompany accommodating such services. Moreover, as T-Mobile explains, "the Commission's continued attempts to create additional capacity for satellite operations is simply misguided – particularly when it requires limitations of other services. There has been no demonstrated requirement for use of this spectrum by satellite providers, unlike the need for terrestrial use, where backhaul requirements are demonstrable."⁷

For the foregoing reasons, Nokia urges that the Commission adopt rules consistent with these Reply Comments to unlock the promise of radio frequencies above 95 GHz.

Respectfully submitted,

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⁵ Comments of CTIA at 6-7.

⁶ Spectrum Horizons, *et al.*, *Notice of Proposed Rulemaking and Order*, ET Docket No. 18-21, *et al.*, FCC 18-17, at ¶ 34 (rel. Feb. 28, 2018).

⁷ Comments of T-Mobile USA, Inc., ET Docket No. 18-21, RM-1179, at 12-13 (filed May 2, 2018).