

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Use of Spectrum Bands Above 24 GHz For Mobile Radio Services)	GN Docket No. 14-177
)	
Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands)	IB Docket No. 15-256
)	
Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band)	RM-11664
)	
Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services)	WT Docket No. 10-112
)	
Allocation and Designation of Spectrum for Fixed- Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0- 38.0 GHz and 40.0-40.5 GHz for Government Operations)	IB Docket No. 97-95
)	

REPLY COMMENTS OF CHARTER COMMUNICATIONS, INC.

October 31, 2016

I. INTRODUCTION AND SUMMARY

Charter Communications, Inc. (“Charter”) applauds the Commission’s recent actions to provide additional high-frequency spectrum for innovative mobile uses. The Commission’s Report & Order and Further Notice of Proposed Rulemaking¹—along with substantial private sector investment—will make it possible for Charter and other providers to deliver innovative new wireless services to consumers.

Flexible licensed use and unlicensed availability in the millimeter wave bands will pave the way for these services. The newly authorized 3.86 gigahertz of licensed spectrum in the 28 GHz, upper 37 GHz, and 39 GHz bands will support a broad range of interoperable technology and 5G advancements. And in a critical first step to addressing the exploding demand for unlicensed applications, the unlicensed 64-71 GHz band assembles an unprecedented 14 gigahertz of contiguous unlicensed spectrum.

As the company has stated, Charter sees wireless as a primary area for future communications growth—and plans to be a key part of that growth.² Charter intends to leverage and expand its existing Wi-Fi service, work with MVNO partners, and, at the appropriate time, invest in its own licensed spectrum based wireless network.³ Charter’s commitment to providing fast broadband on user-friendly terms, its advanced network already deployed across much of the country, and its history of innovation will all contribute to Charter’s success in this area.

Charter is already leveraging its experience and assets to expand wireless broadband opportunities in the new and proposed millimeter wave bands. Charter has recently filed an

¹ *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016) (“Order and FNPRM”).

² See Presentation of Tom Rutledge at Goldman Sachs 25th Annual Communacopia Conference (Sept. 21, 2016), <http://phx.corporate-ir.net/phoenix.zhtml?c=112298&p=irol-EventDetails&EventId=5237103>.

³ *Id.*

application to begin experiments in these bands to identify technologies and methods that will provide our customers with ubiquitous advanced communications services both inside and outside of the home. These services will, among other things, help close the broadband gap that persists in rural areas and other underserved communities.

Charter supports a number of the Commission’s proposals in this proceeding. Charter urges the Commission to take the next steps in unlocking the upper bands’ potential by adopting unlicensed authorizations in the 70/80 GHz bands and forging unified unlicensed access from 57-80 GHz. It further recommends a licensed mobile authorization for the 32 GHz band to help the band integrate with its newly authorized Upper Microwave Flexible Use (“UMFUS”) neighbors. And Charter asks the Commission not to adopt its unrealistic proposal that lower 37 GHz licensees put sites into service within seven days and reassert their registration every seven days thereafter.

II. THE RECORD SHOWS SUBSTANTIAL SUPPORT FOR PROPOSALS TO ADOPT UNLICENSED USE IN THE 70/80 GHZ BANDS AND HARMONIZE UNLICENSED USE IN THE BANDS FROM 57-80 GHZ

Charter joins NCTA-The Internet and Television Association (“NCTA”) and other commenters in urging the Commission to meet the growing demand for unlicensed spectrum by authorizing unlicensed use in the 70/80 GHz bands.⁴ Designating additional unlicensed spectrum contiguous with the existing unlicensed 57-71 GHz bands would spur further 5G innovation by fostering a larger swath of spectrum with unified technical standards. This move

⁴ Comments of NCTA-The Internet and Television Association at 7-13 (“NCTA Comments”); Comments of Microsoft Corporation at 5-11 (“Microsoft Comments”) (supporting Part 15 operations in the 70 GHz band and indoor-only unlicensed operations in the 80 GHz band); Dynamic Spectrum Alliance Initial Comments in FCC’s Spectrum Frontiers FNPRM at 7-9 (“DSA Comments”) (supporting unlicensed indoor-only use); Comments of Open Technology Institute at New America and Public Knowledge at 19-22 (“OTI & PK Comments”) (supporting an unlicensed indoor-only use under Part 15 with secondary access for outdoor use).

would spur device interoperability, promote economies of scale,⁵ and encourage development of very high bandwidth applications such as wide-channel WiGig⁶ and WirelessHD.⁷ Unifying unlicensed operations in these bands would also offer a highly desirable expanse of unlicensed spectrum to complement the comparatively large amount of licensed millimeter wave spectrum in lower bands with superior propagation characteristics. Authorizing unlicensed spectrum in 70/80 GHz bands, moreover, would provide a larger contiguous block that extends the benefits the Commission already expects from the unlicensed spectrum in the adjacent 57-71 GHz bands and simplify coexistence with incumbent users in these ranges.

Charter therefore supports harmonized, unlicensed use of the 57-80 GHz bands and urges the Commission not to adopt the three-tier proposal for the 70/80 GHz bands. The three-tier proposal would undermine many of the benefits flowing from harmonized, unlicensed use by limiting the scope of outdoor unlicensed applications that integrate the Part 15 technical standards in the contiguous 57-71 GHz range. If the Commission nonetheless adopts a three-tier access system for the 70/80 GHz bands, Charter asks that the Commission implement NCTA's proposal to extend the upper boundary of the current 64-71 GHz unlicensed band to 72.5 GHz and authorize indoor unlicensed use in the 70/80 GHz bands. This extension, importantly, will allow an additional IEEE 802.11ad channel without disrupting existing operations.⁸

⁵ See, e.g., Microsoft Comments at 8.

⁶ OTI & PK Comments at 20-21.

⁷ NCTA Comments at 6-7.

⁸ NCTA Comments at 12-13.

Commenters have largely supported an indoor unlicensed allocation in these bands as harmless to incumbents and an excellent opportunity to efficiently use the spectrum.⁹

III. THERE IS NEAR-UNIVERSAL SUPPORT FOR AUTHORIZING LICENSED USE OF THE 32 GHZ BAND UNDER THE UMFUS RULES ADOPTED FOR OTHER LICENSED MILLIMETER WAVE BANDS

Charter adds its voice to the near-universal support from NCTA and other commenters asking the Commission to authorize licensed mobile use of the 32 GHz band.¹⁰ The band's proximity to other UMFUS bands—especially the highly similar 28 GHz band that was already made available under UMFUS rules—would provide 1600 megahertz of contiguous spectrum poised for easy integration into 5G networks. It would also create further avenues for technology development in this frequency space by minimizing the number of bands user equipment will need to accommodate. This, in turn, would lower the cost of user equipment, simplify developmental experiments, and—thanks to the savings and simplification of that equipment—encourage further user adoption of equipment and use of all of the licensed UMFUS frequencies. Charter also agrees that the 32 GHz band should incorporate the same licensing and service framework as other bands in the UMFUS, including channel bandwidths of at least 200 megahertz, to maximize opportunities for 5G expansion and adoption.

⁹ See, e.g., OTI & PK Comments at 20-21; DSA Comments at 8; Microsoft Comments at 5-11 (supporting indoor/outdoor operations in the 70 GHz band and indoor-only unlicensed operations in the 80 GHz band).

¹⁰ NCTA Comments at 13-17; Comments of the Consumer Technology Association f/k/a the Consumer Electronics Association at 3, 4; Comments of CTIA at 10; Comments of Facebook, Inc. at 4 (“Facebook Comments”); Comments of the Fixed Wireless Communications Coalition at 2 (“FWCC Comments”); Comments of Ericsson at 10-11; Comments of Nokia at 5-7; Comments of Qualcomm Incorporated at 8; Comments of Samsung Electronics America, Inc. and Samsung Research America at 4-5; Comments of Straight Path Communications Inc. at 3; Comments of the Telecommunications Industry Association at 8-9 (“TIA Comments”); Comments of T-Mobile USA, Inc. at 11 (“T-Mobile Comments”); Verizon’s Comments on Further Notice at 1, 3.

The efficient use of these frequencies is also important. Rather than using guard bands, the Commission can best utilize these bands while protecting incumbents by implementing geographic coordination or exclusion¹¹ or, alternatively, a database approach like the Spectrum Access System that the Commission adopted for the 3.5 GHz band.¹² These methods can reliably protect incumbents without resorting to guard bands that occupy valuable spectrum without allowing productive use of those frequencies.

IV. THE COMMISSION SHOULD NOT IMPOSE A SEVEN DAY SERVICE REQUIREMENT ON LICENSEES IN THE LOWER 37 GHZ BAND

Along with NCTA and other commenters,¹³ Charter opposes the Commission’s proposal “that registered non-Federal sites [in the lower 37 GHz band] be put into service within seven days of coordination and that registered and coordinated sites must reassert their registration every seven days.”¹⁴ A seven-day deadline is simply infeasible. Licensees need more time to obtain permits, secure mounting rights, purchase and install equipment and backhaul, arrange power delivery at the site, and conduct any required tests. If the Commission nonetheless adopts a service requirement for licensees in this band, Charter strongly recommends that sites be allowed to go into service after significantly more time—at least 120 days—to give licensees the time necessary to engage in permitting and siting activities after coordination.¹⁵

V. CONCLUSION

The record in this proceeding shows overwhelming support for the Commission’s groundbreaking next generation rules and proposals. Charter asks the Commission to continue

¹¹ See, e.g. TIA Comments at 7.

¹² See, e.g. Comments of Federated Wireless, Inc. at 20-21.

¹³ Reply Comments of NCTA-The Internet and Television Association at 12-13; Comments of 5G Americas at 12-13; Comment of Intel Corporation at 14; T-Mobile Comments at 22.

¹⁴ *Order and FNPRM*, 31 FCC Rcd at 8172 ¶ 456.

¹⁵ See, e.g. Starry, Inc., Comments on Further Notice of Proposed Rulemaking at 3.

energizing 5G development by recognizing the substantial record support for (1) adopting harmonized unlicensed use in the 70/80 GHz bands and forging unified unlicensed access from 57-80 GHz, (2) authorizing the 32 GHz band for licensed mobile use under the UMFUS rules, and (3) not adopting the proposal to require lower 37 GHz service within seven days and the related seven-day reassertion period. These proposals will help Charter and others usher in the next stage of wireless communication.

Respectfully submitted,

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