

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

In the Matter of

Expanding Use of the 12.7-13.25 GHz Band for
Mobile Broadband or Other Expanded Use

GN Docket No. 22-352

REPLY COMMENTS OF 5G AMERICAS

5G Americas, the wireless industry trade association that is the voice for 5G in the Americas, submits these brief comments in response to the Commission’s *Notice of Inquiry* (“*Notice*”) in the above-referenced proceeding concerning the 12.7 GHz band. Currently chaired by T-Mobile US, 5G Americas has a broad membership of leading wireless operators and vendors facilitating the seamless deployment and widespread adoption of the 3rd Generation Partnership Project (“3GPP”) family of technologies, including LTE-Advanced, 5G, 5G-Advanced and beyond, throughout the Americas.¹ 5G Americas commends the Commission for launching this *Notice* now, given how long it traditionally takes to study and clear spectrum for commercial wireless broadband use.

Introduction

The *Notice* seeks comment on how to best promote nationwide 5G services, 6G, and beyond in the 550 MHz of spectrum between 12.7 – 13.25 GHz, which the Commission dubs the

¹ 5G Americas Board of Governors members include AT&T, Cable & Wireless Communications, Ciena, Cisco, Crown Castle, Ericsson, Intel, Mavenir, Nokia, Qualcomm Incorporated, Samsung, Shaw Communications Inc., T-Mobile US, Inc., Telefónica, VMware and WOM. [Board of Governors](#), 5G Americas (last visited Jan. 9, 2023).

“12.7 GHz band”.² Because historically it takes approximately a decade to implement a new generation of commercial wireless technology, 5G Americas applauds the Commission for launching its proceeding on the 12.7 GHz band.³ But 5G Americas joins a critical mass of commenters on urging the Commission to prioritize repurposing the lower 3 GHz band first, followed by other low mid-band ranges for flexible-use commercial licenses. Because other world regions are also beginning to consider the upper mid-band range, including 12.7 GHz, for commercial wireless broadband, the Commission’s proceeding will ideally be part of a globally harmonized inquiry. In the U.S., most of the current 12.7 GHz incumbents can be relocated to other fixed bands or to newer technologies. Following relocation, to protect other users in bands adjacent to the 12.7 GHz band, the new broadband licensees should be subject to the same out-of-band emissions and power requirements currently applicable to the existing 12.7 GHz incumbents.

Costs and Benefits

The Commission seeks comments on the costs and benefits of repurposing the 12.7 GHz band for mobile wireless broadband. Typically, new generations of wireless technologies have been deployed most rapidly in spectrum recently repurposed for commercial wireless providers.⁴ While 5G Americas prioritizes lower 3 GHz and other lower mid-band spectrum such as 4.4–4.94 GHz for repurposing as soon as possible, as the Commission notes in its *Notice*, the 12.7 GHz band has “considerable capacity and opportunity for channel reuse”.⁵ Ericsson agrees, noting those characteristics make the 12.7 GHz band “a good fit for future 6G technologies and

² See *Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use*, Notice of Inquiry, FCC 22-80, GN Docket No. 22-352, ¶ 1 (rel. Oct. 28, 2022) (“*Notice*”).

³ See, e.g., Comments of Ericsson at 4, 6–7, GN Docket No. 22-352 (filed Dec. 12, 2022) (“Ericsson Comments”); Comments of Qualcomm at 3, GN Docket No. 22-352 (filed Dec. 12, 2022) (“Qualcomm Comments”).

⁴ See, e.g., Qualcomm Comments at 2–3.

⁵ See *Notice* ¶ 3.

to complement spectrum in the 3–8 GHz range”.⁶ Ericsson notes in its comments that the 12.7 GHz band will be the advent of 6G, with interesting smart-city applications being developed in the 7–15 GHz band.⁷ Qualcomm adds that the next generation of commercial wireless services will feature distributed computing, connected intelligent edge, ubiquitous artificial intelligence (“AI”), high-resolution sensing, AI-native applications and increased energy efficiency.⁸ CTIA notes that 5G-enabled use cases are expected to deliver twenty percent of the U.S. target for emission reductions by 2025.⁹ Such effects, coupled with increased productivity and connectedness, promise great benefits to the U.S. economy and society as a whole.

5G and 5G-Advanced will be the foundation for 6G. But new generations of wireless technology must have new bands to thrive. Economies of scale will also impact the timing of when 5G-Advanced and 6G can begin to benefit society. Hence, it is crucial that the Commission continue to focus on internationally harmonized bands like the lower 3 GHz for wireless broadband.¹⁰ Not only do internationally harmonized bands net far higher proceeds in spectrum auctions,¹¹ benefitting the U.S. public by contributing to deficit reduction and funding important goals like upgrading Public Safety Answering Points to next-generation 911 response, but internationally harmonized bands enable operators to benefit from a far broader ecosystem of competitively priced, innovative equipment and service features for such bands.

The Chairwoman herself initiated an international dialogue a year ago at GSMA’s Mobile World Congress by challenging the world to look at 7–15 GHz for the next generation of

⁶ See Ericsson Comments at 8.

⁷ See Ericsson Comments at 3.

⁸ Qualcomm Comments at 2.

⁹ Comments of CTIA at 5, GN Docket No. 22-352 (filed Dec. 12, 2022) (“CTIA Comments”).

¹⁰ See Comments of AT&T at 2, GN Docket No. 22-352 (filed Dec. 12, 2022) (“AT&T Comments”) (Urging that the Commission keep focused on internationally harmonized bands like lower mid-band ranges in 3–8 GHz).

¹¹ See CTIA Comments at 9.

wireless broadband.¹² Other countries have heeded that call and are beginning to make broadband proposals for the upper mid-band.¹³ Industry research is underway in the range, including for the 12.7 GHz band.¹⁴ Of course, as the Commission and others have noted, the 12.7 GHz band is already allocated globally to mobile wireless services,¹⁵ which lends itself to eventual harmonization for commercial broadband. Importantly, as Ericsson notes, 12.7 GHz is globally allocated to both fixed and mobile wireless services.¹⁶ Hence, flexible use is ideal. Some of the new 5G, 5G-Advanced and 6G applications may be fixed, such as Fixed Wireless Access, which is rapidly gaining traction today.¹⁷

Preferred Licensing Model

The Commission asks which licensing model for the 12.7 GHz band will promote mobile broadband and stimulate investment.¹⁸ Global harmonization of the specific mid-bands repurposed for commercial wireless is important, but so is global harmonization of the licensing model for those bands. As T-Mobile notes, “further access to wide, contiguous bands of spectrum on a licensed basis is necessary ‘to bring global harmonization, limit the costs to deploy infrastructure, and ensure continued efficient use of already allocated commercial

¹² Remarks of Jessica Rosenworcel, Chairwoman, FCC, Address at the Mobile World Congress: “New Frontier of Partnerships” (Mar. 1, 2022) (transcript available at <https://www.fcc.gov/document/chairwoman-rosenworcel-remarks-mobile-world-congress-2022>); see also Qualcomm Comments at 4–5.

¹³ See Submission of Finland, *Further views and support to the proposal for a new agenda item for WRC-27 to consider identification of spectrum for IMT-2030 in the frequency bands between 7.125–24 GHz*, Council of Eur. Postal and Telecomm’ns Admins. (“CEPT”), Electronic Comm’ns Comm’n (“ECC”), CPG Doc. PTA(22)074 (Aug. 31, 2022), <https://www.cept.org/ecc/groups/ecc/cpg/cpg-pta/client/meeting-documents/?fclid=30497>.

¹⁴ See Qualcomm Comments at n.5.

¹⁵ Notice, ¶ 3.

¹⁶ Ericsson Comments at 8; see also CTIA Comments at 1. AT&T also notes that many countries are using 4 GHz for 5G (see AT&T Comments at 2) and CTIA notes that several lower mid-band ranges have been discussed by international stakeholders in World Radio Conference agenda discussions (see CTIA Comments at 5–6).

¹⁷ See 5G Americas, *Mobile Communications Towards 2030* (November 2022), <https://www.5gamericas.org/wp-content/uploads/2022/11/Mobile-Communications-Towards-2030-InDesign.pdf>; see also 5G Americas, *Fixed Wireless Access with 5G Networks* (November 2021), <https://www.5gamericas.org/wp-content/uploads/2021/11/5G-FWA-WP.pdf>.

¹⁸ See Notice ¶ 12, ¶¶ 31–32.

wireless spectrum.”¹⁹ 5G Americas joins the call of many commenters to license the 12.7 GHz band for exclusive, flexible, high-powered use.²⁰

Flexible use for wireless services in the 12.7 GHz band is beneficial because, as noted above, some next-generation wireless broadband applications are expected to be fixed. As AT&T advises, exclusively licensed flexible use will “fully unlock the potential” of 12.7 GHz to meet the Commission’s goals of promoting innovative broadband.²¹ Exclusive licenses facilitate service continuity and quality for the end user.²² This licensing model has proven successful in both mid-band and higher frequencies in delivering high-quality mobile broadband services to the public, and should be applied to this new band as well.²³

To maximize access to this new band by commercial providers, the Commission should relocate incumbents to the greatest extent possible, rather than apply a low-power sharing regime for new entrants. As a number of commenters have pointed out, with federal use limited at 12.7 GHz, relocation is ideal. Once relocation is underway, auctions should be conducted to award exclusive 12.7 GHz licenses to the highest bidder. As the Spectrum Act of 2012 dictates, where mutually-exclusive applications have been submitted, licenses must be assigned through competitive bidding.²⁴

¹⁹ Comments of T-Mobile at 11, GN Docket No. 22-352 (filed Dec. 12, 2022) (“T-Mobile Comments”) (quoting Accenture, *Spectrum Allocation in the United States* 3 (2022), <https://api.ctia.org/wpcontent/uploads/2022/09/Spectrum-Allocation-in-the-United-States-2022.09.pdf> (“Accenture Report”)); *see also* Comments of Nokia at 5, GN Docket No. 22-352 (filed Dec. 12, 2022) (“Nokia Comments”).

²⁰ *See, e.g.*, T-Mobile Comments at 2; AT&T Comments at 4; Nokia Comments at 5; Qualcomm Comments at 7–8; CTIA Comments at 2, 5–7, 11.

²¹ AT&T Comments at 4.

²² *See* Ericsson Comments at 2–3, 10.

²³ *Id.*

²⁴ *See* 47 U.S.C. § 309(j)(1).

Mid-Band Needs

More mid-band spectrum is critical to maintain the momentum of 5G and to support 5G-Advanced deployments.²⁵ Mid-band spectrum is the “workhorse” of 5G— currently more than two-thirds of the U.S. population is covered by mid-band for 5G.²⁶ To support 5G-Advanced and 6G, the U.S. will need more mid-band spectrum repurposed for commercial broadband. Studies show that as broadband technologies evolve, each operator will require several contiguous blocks of 100 MHz to deliver next-generation broadband.²⁷ Given the proven value of low mid-band spectrum to meet the demands of the U.S. public, the Commission should prioritize repurposing the rest of the lower 3 GHz band. The 12.7 GHz band should be viewed as a complement to lower mid-band spectrum—not a replacement. But as noted above, given the decade it typically takes to commercialize a new generation of wireless broadband, the Commission’s efforts to commence the review of 12.7 GHz are much appreciated.

Relocation Cost Sharing

The Commission asks for comment on relocation or sharing costs.²⁸ 5G Americas shares the view that most 12.7 GHz incumbents can be relocated.²⁹ Relocation expenses should be reimbursed from the pool of auctions proceeds, for relocation pursuant to a concrete deadline and should be shared by all new 12.7 GHz entrants, on a *pro rata* share.³⁰ As commenters note in

²⁵ The pace of 5G subscription is the fastest of any generation of mobile technology, with North American deployment leading the way with the percentage of population subscribed or consuming 5G services. To learn further about 5G-Advanced deployment, 5G Americas draws the Commission’s attention to its white paper, *Becoming 5G-Advanced: the 3GPP Roadmap* (December 2022), available at <https://www.5gamericas.org/wp-content/uploads/2022/12/Becoming-5G-Advanced-the-3GPP-2025-Roadmap-InDesign.pdf>

²⁶ Omdia, *5G in the US – 2022* (Sep. 28, 2022), <https://omdia.tech.informa.com/OM025119/5G-in-the-US--2022>

²⁷ Coleago Consulting Ltd., *IMT Spectrum Demand: Estimating the mid-bands spectrum needs in the 2025-2030 timeframe* 37 (Dec. 14, 2020), <https://www.gsma.com/gsmadeurope/resources/imt-spectrum-demand/>.

²⁸ See Notice ¶¶ 25–30.

²⁹ See Ericsson Comments at 10–11; Nokia Comments at 4–6; T-Mobile Comments at 8–9; Qualcomm Comments at 7; CTIA Comments at 1, 7.

³⁰ See T-Mobile Comments at 9.

response to the Commission's question,³¹ the *Emerging Technologies* framework³² is a valid precedent for relocating 12.7 GHz incumbents in order to pursue more efficient use of the spectrum that delivers greater public benefits.

5G Americas agrees with other commenters that NASA's Goldstone Deep Space facility in the Mojave Desert does not need to be relocated.³³ As the Commission has done in the past, it should, after notice and comment and in consultation with the National Telecommunications and Information Administration, develop an adequate protection zone around the Goldstone facility to ensure against interference from full-power commercial broadband.³⁴

Service Rules to Protect Incumbents in Adjacent Bands

The Commission asks for comment on how to protect incumbents in the adjacent bands above and below 12.7 GHz.³⁵ As noted above, 5G Americas joins other commenters in advocating for exclusively-licensed flexible use of the 12.7 GHz band, and at power levels consistent with other flexible-use broadband under the Commission's current rules. Exclusive, licensed use enables uncoordinated wide-channel, full-power deployments,³⁶ which will further the Commission's goal of promoting broadband in the band. Higher-power operations deliver wider coverage and greater capacity.³⁷ Moreover, the propagation loss at 12.7 GHz as compared to that at low mid-band spectrum will require even higher-power.³⁸ But incumbents in the bands adjacent to the 12.7 GHz band can be protected from full-power commercial broadband use

³¹ See Notice ¶ 26.

³² See *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies (Emerging Technologies)*, First Report and Order and Third Notice of Proposed Rule Making, 7 FCC Rcd. 6886 (1992).

³³ See, e.g., Qualcomm Comments at 7; Ericsson Comments at 1.

³⁴ See Nokia Comments at 6; CTIA Comments at 8–9.

³⁵ Notice ¶¶ 33–39.

³⁶ Ericsson Comments at 2.

³⁷ See, e.g., AT&T Comments at 2; see also CTIA Comments at 9.

³⁸ CTIA Comments at 9–10.

through application of the same out-of-band emission (“OOBE”) and EIRP limits currently required of today’s 12.7 GHz incumbents.³⁹

In addition to advocating to maintain the existing OOBE and EIRP limits for new entrants for the protection of adjacent-band uses, 5G Americas joins those that caution the Commission not to impose strict build-out requirements on new entrants.⁴⁰ As the Commission understands, as broadband deployments access higher frequencies, the base station coverage area reduces in size, and the number of base stations needed to service the licensing area increases. 5G Americas appreciates the Commission leadership with state, tribal and local governments to streamline the permitting process and expedite installation. But challenges remain.⁴¹

Incumbent Use

As part of its consideration on how to promote broadband in 12.7 GHz, the Commission asks for information on incumbent use of the band.⁴² 5G Americas agrees with other commenters that detailed information on incumbents’ current operating and deployment parameters should be required by the Commission. For instance, CTIA proposes that the Commission issue a *Public Notice* requiring from incumbents precise information on operating power levels, antenna characteristics, operating locations, and whether the licensed application is fixed or mobile⁴³ (for instance, BAS and CARS can operate in both mobile or fixed mode). Such information is critical to assess prior to the finalization of any Commission rules. CTIA also refers to the Channel Study that the Commission developed for the 600 MHz incentive auction, which it then required broadcasters to review and comment on regarding its accuracy, in order to

³⁹ See Nokia Comments at 7; T-Mobile Comments at 16; CTIA Comments at 13–14.

⁴⁰ See T-Mobile Comments at 14–15.

⁴¹ See T-Mobile Comments at 14 (“The buildout requirements for millimeter wave spectrum that has already been licensed are proving difficult to achieve.”).

⁴² See *Notice* ¶¶ 4–11, ¶ 25.

⁴³ CTIA Comments at 12.

ensure protection and stability going forward.⁴⁴ 5G Americas agrees that such a *Public Notice* requiring incumbents’ response would be constructive in eliciting the relevant and accurate information critical to developing rules in the public interest.⁴⁵

Conclusion

5G Americas is pleased that the Commission has begun its review of a band of upper mid-band spectrum in a globally-harmonized range for next-generation wireless broadband. We, like others in the mobile industry, view upper mid-band spectrum as a complement to the “work horse” of low mid-band. 5G Americas urges the Commission to progress its review of the 3.1 – 3.45 GHz band this year, as well to initiate a proceeding on 4.4 – 4.94 GHz and 7.125 – 8.4 GHz. When the Commission does propose rules for the 12.7 GHz, it should propose flexible, exclusively-licensed, high-power use, in order to maximize the benefits of 5G-Advanced and 6G applications in the band for the American people.

Respectfully submitted,



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⁴⁴ *Id.*

⁴⁵ *Id.*; see also Nokia Comments at 3; Qualcomm Comments at 9.