

**Before The  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Expanding Flexible Use of the	)	GN Docket No. 18-122
3.7 GHz to 4.2 GHz Band	)	
	)	
Report on the Flexibility of Allowing	)	
Commercial Wireless Services, Licensed or	)	
Unlicensed, to Use or Share Use of the	)	
Frequencies Between 3.7-4.2 GHz	)	

**COMMENTS OF CTIA**

CTIA<sup>1</sup> submits these comments in response to the Public Notice released by the Office of Engineering and Technology, International Bureau and Wireless Telecommunications Bureau of the Federal Communications Commission (“Commission”) seeking input for the Commission’s report to Congress on the feasibility of enabling wireless services to use or share use of the 3.7-4.2 GHz band.<sup>2</sup>

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<sup>1</sup> CTIA® ([www.ctia.org](http://www.ctia.org)) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st-century connected life. The association’s members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry’s voluntary best practices, hosts educational events that promote the wireless industry, and co-produces the industry’s leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, DC.

<sup>2</sup> See *Office of Engineering and Technology, International, and Wireless Telecommunications Bureaus Seek Comment for Report on the Feasibility of Allowing Commercial Wireless Services, Licensed or Unlicensed, to Use or Share Use of the Frequencies Between 3.7-4.2 GHz*, Public Notice, DA 18-446 (OET/IB/WTB rel. May 1, 2018).

## I. INTRODUCTION.

CTIA commends Congress for its interest in introducing wireless broadband in the 3.7-4.2 GHz band and Chairman Pai for his recent announcement that the Commission will vote on a Notice of Proposed Rulemaking to advance this proceeding at the July Open Meeting.<sup>3</sup> The 3.7-4.2 GHz band holds great promise for licensed wireless broadband: its contiguous 500 megahertz can support multiple, high-capacity 100-megahertz blocks, and its favorable propagation characteristics enable wider coverage. The band can help meet the exploding demand for wireless broadband and, soon, 5G – enabling the United States to continue its world leadership in wireless. CTIA has urged the Commission to maximize the amount of 3.7-4.2 GHz spectrum that can be repurposed for licensed mobile broadband and drive billions of dollars of investment and innovation in U.S. 5G.<sup>4</sup>

While the 3.7-4.2 GHz band supports important operations today, spectrum sharing in the same or nearby geographic areas is not a viable option between wireless broadband and satellite downlink operations. As one study submitted in response to the *Notice of Inquiry* demonstrates, large protection zones would be necessary for co-frequency satellite and terrestrial operations, making sharing in the same geographic area infeasible. To that end, CTIA applauds the Commission’s recent action to temporarily freeze any new or modified applications for satellite earth station receivers or fixed point-to-point microwave licenses in the 3.7-4.2 GHz band.<sup>5</sup> The

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<sup>3</sup> See Consolidated Appropriations Act, 2018, P.L. 115-141, Division P, the Repack Airwaves Yielding Better Access for Users of Modern Services (RAY BAUM’S) Act; FCC Chairman Ajit Pai, Remarks at the Wireless Infrastructure Association Connectivity Expo, at 4 (May 23, 2018), <https://docs.fcc.gov/public/attachments/DOC-350919A1.pdf>.

<sup>4</sup> CTIA incorporates by reference its filings in that docket. Comments of CTIA, GN Docket No. 17-183 (Oct. 2, 2017) (“CTIA Comments”); Reply Comments of CTIA, GN Docket No. 17-183 (Nov. 15, 2017) (“CTIA Reply Comments”).

<sup>5</sup> See *Temporary Freeze on Applications for New or Modified Fixed Satellite Service Earth Stations and Fixed Microwave Stations in 3.7-4.2 GHz Band 90-Day Window to File Applications For Earth Stations*

90-day filing window allowing existing, operational receive-only earth stations to register will expand the number of earth stations that the Commission may consider in any repurposing,<sup>6</sup> but it is not in the public interest to add new encumbrances in the band at this time. As noted below, however, there are myriad ways to enable repurposing while ensuring that existing users of the band can continue to receive their services, including repacking existing operations into a smaller portion of the band, relocating to other spectrum, moving to remote areas, and transitioning to another medium such as fiber.

## **II. THE 3.7-4.2 GHZ BAND HOLDS GREAT PROMISE FOR 5G.**

Across the globe, the race for 5G is on and mid-band spectrum is increasingly viewed as a key component to unlocking the benefits of 5G connectivity.<sup>7</sup> A recent report shows that China holds a narrow lead in overall 5G readiness, just ahead of South Korea and the United States.<sup>8</sup> In terms of mid-band spectrum availability, the United States will rank sixth out of ten countries by the end of 2018.<sup>9</sup> And while CTIA urges the Commission to auction the 3.5 GHz band in 2019, licensed operations are restricted to just 70 megahertz of the band and the three-tiered sharing framework remains untested. The 3.7-4.2 GHz band, however, can supply multiple 100-megahertz channel blocks required for 5G.

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*Currently Operating in the 3.7-4.2 GHz Band*, Public Notice, DA 18-398 (IB, PSHSB, WTB, rel. Apr. 19, 2018) (“*Temporary Freeze PN*”).

<sup>6</sup> *See id.*

<sup>7</sup> *See Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, 32 FCC Rcd 6373 ¶ 2 (2017) (“*Notice of Inquiry*”).

<sup>8</sup> *See* David Abecassis, Chris Nickerson, and Janette Stewart, *Global Race to 5G – Spectrum and Infrastructure Plans and Priorities*, ANALYSIS MASON, at 37 (April 2018) (“*Analysys Mason Report*”), [https://api.ctia.org/wp-content/uploads/2018/04/Analysys-Mason-Global-Race-To-5G\\_2018.pdf](https://api.ctia.org/wp-content/uploads/2018/04/Analysys-Mason-Global-Race-To-5G_2018.pdf).

<sup>9</sup> *Id.* at 35.

The Commission recognizes the importance of mid-band spectrum for 5G. As Chairman Pai has said, the Commission is freeing up mid-band spectrum for “wireless innovation.”<sup>10</sup> Likewise, Commissioner O’Rielly notes the Commission must “expedite its mid-band efforts, as the international focus on 5G harmonization has centered on these frequencies.”<sup>11</sup> As part of the plan for making the United States “5G Ready” Commissioner Carr notes the Commission is freeing up spectrum below 6 GHz.<sup>12</sup> And, Commissioner Rosenworcel observes that mid-band will “power the 5G future.”<sup>13</sup>

The 3.7-4.2 GHz band currently supports important operations, including satellite delivery of video content and fixed point-to-point microwave services, but studies suggest that the band is not efficiently utilized. This is due in part due to the “full-band, full-arc” policy, which permits satellite earth stations to coordinate across the entire band and entire geostationary arc, regardless of how much spectrum they actually use or how many satellites they access. Further, the record shows that many registered earth stations are not constructed or not in operation.<sup>14</sup> And the Commission has found that fixed point-to-point microwave operations in the band have seen “a steep decline over the past 20 years” and that “current [Fixed Service] use of this band is relatively minimal.”<sup>15</sup>

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<sup>10</sup> *Notice of Inquiry*, Statement of Chairman Ajit Pai.

<sup>11</sup> Remarks of FCC Commissioner Michael O’Rielly before the American Enterprise Institute, Apr. 19, 2018, <https://docs.fcc.gov/public/attachments/DOC-350335A1.pdf>.

<sup>12</sup> Remarks of Commissioner Brendan Carr at the Consumer Technology Association’s 5G Day, Feb. 28, 2018, [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-349499A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-349499A1.pdf).

<sup>13</sup> Remarks of Commissioner Jessica Rosenworcel Mobile World Congress, Feb. 27, 2018, <https://www.fcc.gov/document/remarks-commissioner-rosenworcel-mobile-world-congress-2018>.

<sup>14</sup> *See, e.g.*, CTIA Reply Comments at 8-9; Comments of AT&T, WT Docket No. 17-183, at 9-11 (Oct. 2, 2017); Comments of Alphabet Access and Google LLC, WT Docket No. 17-183, at 4-5 (Oct. 2, 2017).

<sup>15</sup> *Notice of Inquiry*, 32 FCC Rcd at 1379 ¶ 15.

By allocating and repurposing a large swath of the 3.7-4.2 GHz band, the Commission will take an important step to promote U.S. leadership in 5G. Its adjacency to the 3.5 GHz band will enable sharing equipment across bands, speeding deployment and reducing capital expenditures.<sup>16</sup> And as other countries focus on the 3 GHz band for their own 5G deployments, there are sizable cost and efficiency benefits to deployment in internationally harmonized bands.

**III. SHARING IN THE SAME GEOGRAPHIC AREA IS NOT FEASIBLE, BUT THE 3.7-4.2 GHZ BAND CAN BE REPURPOSED BY REPACKING OR RELOCATING EXISTING OPERATIONS AND CLEARING SPECTRUM FOR WIRELESS BROADBAND USE.**

The Commission should not include in its report to Congress, and should not further consider in its Notice of Proposed Rulemaking, co-frequency sharing in the same geographic area or for that matter, nearby near-adjacent channel sharing of the 3.7-4.2 GHz band. Sharing the same or nearby 3.7-4.2 GHz frequencies in the same area cannot adequately protect against harmful interference. This is evident from a report Ericsson submitted in the record, which demonstrated that sharing between satellite and mobile operations is not feasible across large geographic areas in the band. The report concluded that at least 30 kilometers (and potentially as much as 50-70 kilometers) of separation would be needed between a terrestrial wireless base station and a C-band earth station for the two services to coexist on the same spectrum.<sup>17</sup> Nearby adjacent channel sharing was also expected to pose challenges. Other parties opposed sharing spectrum in this band.<sup>18</sup>

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<sup>16</sup> Many commenters noted the advantages of mid-band spectrum generally, and the 3.7 GHz to 4.2 GHz band in particular, for meeting the rapidly growing demand for broadband wireless services. *See, e.g.*, CTIA Comments at 6-7; CTIA Reply Comments at 2-3; Comments of T-Mobile, WT Docket No. 17-183, at 3, 9-11 (Oct. 2, 2017); Comments of Verizon, WT Docket No. 17-183, at 4 (Oct. 2, 2017).

<sup>17</sup> Ericsson, Co-Channel Sharing Assessment (Oct. 2017), appended as Att. A to Comments of Ericsson, GN Docket No. 17-183 (Oct. 2, 2017).

<sup>18</sup> *See, e.g.*, Comments of Nokia, WT Docket No. 17-183, at 10-13 (Oct 2, 2017); Comments of the Satellite Industry Association, GN Docket No. 17-183, at 34 (Oct. 2, 2017).

The Commission should instead look to free up the bulk of 3.7-4.2 GHz for flexible use, while finding multiple ways to transition incumbent operations off repurposed frequencies without disrupting service to existing users. For example:

- Satellite operations could be repacked into a smaller portion of the 3.7-4.2 GHz band.
- Fiber connections could replace many downlinks to earth station receivers. Delivering traffic over fiber has certain advantages, such as greater capacity.
- Earth stations could relocate to more remote locations where they can more feasibly be protected from harmful interference.
- Some existing operations could relocate to other spectrum bands, including the Ku-band and Ka-bands for Fixed Satellite Services and the 11 GHz and 18 GHz bands for Fixed Services.
- Users could access the backhaul communication capability that 5G systems will deploy to provide content delivery.

These options are not mutually exclusive; all of them should be considered. And the Commission should revisit the “full-band, full-arc” policy to help eliminate significant spectrum inefficiencies that exist in today’s 3.7-4.2 GHz framework.<sup>19</sup> In its upcoming Notice of Proposed Rulemaking, the Commission should seek input on these and other options to preserve service to existing users while repurposing the band to enable more intensive use of this spectrum.

#### **IV. CONCLUSION.**

CTIA supports consideration of a broad cross-section of procedures to repurpose the 3.7-4.2 GHz band for flexible use, from market-based tools to more traditional reallocation

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<sup>19</sup> Numerous other commenters urged the Commission to revisit this policy. *See, e.g.*, Ericsson Comments at 7-8; Comments of AT&T, WT Docket No. 17-183, at 11 (Oct. 2, 2017); Comments of Fixed Wireless Communications Coalition, WT Docket No. 17-183, at 5-6 (Oct. 2, 2017).

measures, but spectrum sharing in the same area between new mobile services and satellite or fixed point-to-point operations is infeasible.

Respectfully submitted,

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