

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 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 Operation in the 27.5-28.35 GHz and 37.5-40 GHz Bands	)	IB Docket No. 15-256
	)	
Amendment of Parts 1, 22, 24, 27, 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 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
	)	

**COMMENTS OF CTIA**

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**COMMENTS OF CTIA**

CTIA<sup>1</sup> respectfully submits these comments in response to the Second Further Notice of Proposed Rulemaking seeking comment on proposed rules that would authorize mobile operations in additional spectrum bands above 24 GHz.<sup>2</sup>

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<sup>1</sup> CTIA<sup>®</sup> ([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, D.C.

<sup>2</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and

## I. INTRODUCTION AND SUMMARY.

The actions that the Federal Communications Commission (“Commission”) has already taken in this proceeding amount to a critical early step toward facilitating the deployment of 5G services in high-band spectrum and cementing U.S. leadership in their development and deployment. Millimeter wave spectrum will play a vital role in supporting the successful roll-out of next-generation products and services for American consumers, particularly as we race with other nations to lead in 5G, and the Commission’s efforts in this proceeding have been instrumental in achieving that goal. The Commission has commendably allocated more than five gigahertz of spectrum above 24 GHz to exclusive, licensed uses, authorized wide bandwidth channels to deliver on the ultra-fast speeds that 5G promises, and adopted flexible technical and licensing rules to foster innovation. To cement America’s leadership in our 5G future, CTIA urges the Commission to make available additional high-band spectrum for licensed, exclusive terrestrial use, and to expeditiously auction millimeter wave spectrum to facilitate such use. To that end, CTIA urges the Commission to:

- Promptly seek comment on auction procedures to allow the rapid auction of the 24.25-24.45 GHz and 24.75-25.25 GHz (“24 GHz”), 27.5-28.35 GHz (“28 GHz”), 37.6-40 GHz (“37/39 GHz”), and 47.2-48.2 GHz (“47 GHz”) spectrum bands;
- Continue to prioritize the identification, allocation, and licensing of additional spectrum for exclusively licensed terrestrial flexible use;
- Allocate and adopt service rules for the 29.1-29.25 GHz (“29 GHz”), 31-31.3 GHz (“31 GHz”), 31.8-33.4 GHz (“32 GHz”), 42-42.5 GHz (“42 GHz”), and 50.4-52.6 GHz (“50 GHz”) spectrum bands previously proposed for terrestrial fixed and mobile allocations;
- Propose that the 25.25-27.5 GHz (“26 GHz”) band be allocated for flexible, exclusive use licensing, as international entities have focused on this band for the deployment of 5G services; and
- Address CTIA’s petition for reconsideration of the service rules governing the 37-37.6 GHz band and adjust the requirements for this band to allow for exclusive use licensing.

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Memorandum Opinion and Order, GN Docket No. 14-177, *et al.*, FCC 17-152 (rel. Nov. 22, 2017) (“*Second Report and Order and FNPRM*”).

Additionally, the Commission should refrain from adopting stringent performance requirements for the nascent technologies that will eventually be deployed in the millimeter wave spectrum bands. Instead, it should allow millimeter wave licensees the flexibility to develop and deploy services, and it should adopt safe harbors that will create the regulatory certainty needed to foster experimentation and innovation for new 5G services.

Similarly, the Commission should further encourage the success of emerging terrestrial 5G services by reaffirming its commitment to next-generation services that consumers demand and providing a footnote to the Table of Allocations to protect terrestrial operations from harmful interference. Consistent with its actions on other bands made available in this proceeding, the Commission should also decline to apply a limit on aggregate interference into Fixed Satellite Service (“FSS”) systems in the 24 GHz band. To the extent that parties wish to submit additional data and information on this issue, they may continue to do so in the Commission’s previously opened docket. Finally, the Commission should move forward quickly with auctioning the millimeter wave spectrum bands this year. CTIA does not oppose the Commission adopting an operability requirement for the 24 GHz band, but the pendency of such a requirement should not delay or otherwise deter the auctioning of this spectrum.

## **II. THE COMMISSION SHOULD PROMPTLY SEEK COMMENT ON AUCTION PROCEDURES FOR THE 24 GHz, 28 GHz, 37/39 GHz, AND 47 GHz BANDS.**

In the course of this proceeding, the Commission has adopted service rules for the 24 GHz, 28 GHz, 37/39 GHz, and 47 GHz bands.<sup>3</sup> With this necessary precursor completed, CTIA urges the Commission to move forward quickly to auction these spectrum bands this year. Specifically, the Commission should expeditiously release an auction procedures public notice

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<sup>3</sup> See, e.g., 47 C.F.R. Part 30.

for the 24 GHz, 28 GHz, 37/39 GHz, and 47 GHz bands to seek comment on the process for auctioning these licenses.<sup>4</sup> Initiating this next step will enable the Commission to continue the forward momentum of this proceeding and develop an expedient path towards awarding millimeter wave band licenses to auction participants aiming to deploy 5G services.

CTIA is cognizant of the Commission's concerns regarding compliance with a statute discussing the disbursement of interest for upfront payments deposited prior to auctions. In particular, the Commission has noted that the Communications Act requires upfront payments to be deposited in interest-bearing accounts, but that no financial institution is currently willing to accommodate the holding of such payments for a large spectrum auction.<sup>5</sup> This issue should not inhibit other elements of the spectrum auction process from moving forward while it is being addressed on a parallel track.

Instead, CTIA encourages the Commission to issue a public notice detailing the proposed auction procedures and seeking comment on the process for auctioning licenses in the high-frequency bands for which the Commission has already adopted service rules—*i.e.*, the 24 GHz, 28 GHz, 37/39 GHz, and 47 GHz bands.<sup>6</sup> Given that the initial air interface standard for 5G was adopted in late 2017,<sup>7</sup> there is increasing urgency for the Commission to take actions to ensure U.S. leadership in 5G deployment.

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<sup>4</sup> See, e.g., *Auction of Advanced Wireless Services Licenses Scheduled for November 13, 2014; Comment Sought on Competitive Bidding Procedures for Auction 97*, Public Notice, 29 FCC Rcd 5217 (2014).

<sup>5</sup> *Second Report and Order and FNPRM* ¶ 6, citing 47 U.S.C. § 309(j)(8)(c).

<sup>6</sup> *Second Report and Order and FNPRM* ¶¶ 15-59; see also *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) (“*First Report and Order and FNPRM*”).

<sup>7</sup> Press Release, First 5G NR Specs Approved, 3GPP (Dec. 22, 2017), [http://www.3gpp.org/news-events/3gpp-news/1929-nsa\\_nr\\_5g](http://www.3gpp.org/news-events/3gpp-news/1929-nsa_nr_5g).

Even if a particular spectrum band warrants further consideration or action, the Commission should not postpone related efforts to auction millimeter wave spectrum licenses. The auction process involves numerous steps and complex administrative processes, which can lead to delays, and the United States cannot afford delays in the race to 5G. Instead, the Commission should move forward expeditiously with auctioning any and all spectrum bands that are ready for assignment. Moving forward on the administrative aspects of the auction in the near term will increase the chances of a timely auction once the upfront payment issue and any other issues have been resolved.

### **III. THE COMMISSION SHOULD PRIORITIZE ACCESS TO ADDITIONAL EXCLUSIVE, LICENSED SPECTRUM FOR TERRESTRIAL 5G.**

Although CTIA commends the Commission for establishing several frequency bands for exclusive, licensed use, the Commission has the opportunity to identify, allocate, and license *additional* spectrum critical to cementing the nation's leadership in 5G. As detailed below, CTIA urges the Commission to move quickly to identify and allocate additional high-band spectrum for terrestrial wireless use.

#### **A. The Commission Should Enable Next-Generation Services in the Remaining LMDS Bands.**

CTIA encourages the Commission to take steps to enable next-generation services in the remaining spectrum blocks of the Local Multipoint Distribution Service ("LMDS"), *i.e.*, the 29 GHz and 31 GHz bands. Although the Commission adopted service rules for the 28 GHz LMDS band that allow for mobile, terrestrial use, the Commission initially declined to adopt corresponding Part 30 rules for the 29 GHz and 31 GHz bands.<sup>8</sup> CTIA reiterates its support for

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<sup>8</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Notice of Proposed Rulemaking, 30 FCC Rcd 11878, 11902 ¶ 70 (2015). This decision was subject to a Petition for Reconsideration. *See, e.g.*, Petition for Reconsideration filed by Nextlink Wireless, GN Docket No. 14-177, *et al.*, at 12-13 (filed Dec. 14, 2016)

the Commission to modify its Part 30 rules to allow for mobile terrestrial use of the 29 GHz and 31 GHz bands.<sup>9</sup> Applying the Part 30 rules to the full LMDS band and allowing flexible use will provide a degree of regulatory certainty and greatly reduce the risk of these bands becoming “stranded” segments as more incumbents move to deploy 5G services in the 28 GHz band.<sup>10</sup> Additionally, because the bands have already been licensed for terrestrial services, this approach would be a simple and effective step for the Commission to take in promoting next-generation services. At a minimum, the Commission should seek further comment on use of the 29 GHz and 31 GHz bands for mobile services.

**B. The Commission Should Quickly Complete Service Rules for the 32 GHz, 42 GHz, and 50 GHz Bands.**

In addition to moving forward quickly to auction the high-band spectrum for which it has already developed licensing and technical rules, CTIA encourages the Commission to allocate the 32 GHz, 42 GHz, and 50 GHz bands for exclusive, licensed terrestrial use.<sup>11</sup> Each of these bands was proposed for exclusive, licensed use more than a year ago,<sup>12</sup> and there is a robust record supporting adoption of terrestrial fixed and mobile service rules for each band.<sup>13</sup>

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<sup>9</sup> Letter from Scott Bergmann, Vice President of Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 14-177, *et al.*, at 7 (filed July 14, 2017) (“CTIA Spectrum Frontiers Roadmap”).

<sup>10</sup> *See, e.g.*, Letter from Michele C. Farquhar, Counsel for Nextlink Wireless, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 14-177, *et al.*, at 2 (filed Apr. 20, 2017) (arguing that “not including the full LMDS band under Part 30 will lead to regulatory confusion and stranded band segments”).

<sup>11</sup> *Second Report and Order and FNPRM* ¶ 15, n.35.

<sup>12</sup> *First Report and Order and FNPRM* ¶¶ 389, 403, 420.

<sup>13</sup> *See, e.g.*, Comments of T-Mobile USA, Inc., GN Docket No. 14-177, *et al.*, at 11-15, 18-19 (filed Sept. 30, 2016); Comments of Fixed Wireless Communications Commission, GN Docket No. 14-177, *et al.*, at 4-6, 8 (filed Sept. 30, 2016); Comments of Nokia, GN Docket No. 14-177, *et al.*, at 7-9 (filed Sept. 30, 2016); Comments of Qualcomm, GN Docket No. 14-177, *et al.*, at 8-9, 11 (filed Sept. 30, 2016); Comments of Telecommunications Industry Association, GN Docket No. 14-177, *et al.*, at 8-10, 11, 13 (filed Sept. 30, 2016). *See also* Comments of Federated

The Commission can move forward with consideration of these bands for terrestrial services without adversely affecting adjacent-band passive services, including radio astronomy and earth-exploration satellite services.<sup>14</sup> Passive services such as radio astronomy, earth-exploration, and space research are highly sensitive to harmful emissions and therefore typically require significant protections prior to allowing use of adjacent bands for commercial services. Here, the 32 GHz band is adjacent to the 31.3-31.8 GHz band, which is allocated for earth-exploration satellite (passive), radio astronomy, and space research (passive) services;<sup>15</sup> the 42 GHz band is adjacent to the 42.5-43.5 GHz band, which has a primary allocation for radio astronomy;<sup>16</sup> and the 50 GHz band is between a primary allocation for earth-exploration satellite (passive) and space research (passive) services in the 50.2-50.4 GHz and 52.6-54.25 GHz bands.<sup>17</sup>

However, as demonstrated by a study T-Mobile submitted in this proceeding, the Commission can fully protect adjacent-band passive services by imposing certain “moderate operating constraints.”<sup>18</sup> T-Mobile’s study looked at the potential for coexistence between 5G wireless broadband operations and passive services in bands located adjacent to proposed

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Wireless, GN Docket No. 14-177, *et al.*, at 20-21 (filed Sept. 30, 2016) (supporting terrestrial fixed and mobile service rules for the 32 GHz band).

<sup>14</sup> See, e.g., Monica Allevan, *NextLink submits study that supports T-Mobile’s argument for 32 GHz as a 5G band*, FIERCE WIRELESS (Oct. 18, 2017), <https://www.fiercewireless.com/wireless/nextlink-submits-study-supports-t-mobile-s-argument-for-32-ghz-as-a-5g-band>.

<sup>15</sup> 47 C.F.R. § 2.106.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> Letter from Steve Sharkey, Vice President, Government Affairs – Technology and Engineering Policy, T-Mobile USA, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 14-177, *et al.*, at 2 (filed Oct. 2, 2017) (“T-Mobile Coexistence Study”).

frequencies for 5G operations, *i.e.*, the 32 GHz, 47 GHz, and 50 GHz bands.<sup>19</sup> Against the backdrop of International Telecommunication Union recommendations, and using conservative estimates, T-Mobile demonstrated that “[b]roadband deployments in the 32 GHz, 47 GHz, and 50 GHz bands can coexist with existing [Radio Astronomy Services], [Earth Exploration Satellite Service], and other passive operations without causing harmful interference.”<sup>20</sup> While the T-Mobile Coexistence Study did not directly analyze the 42 GHz band, the interference environment (mobile broadband services adjacent to radio astronomy reception) is the same as is addressed for the 32/47/50 GHz bands in the Coexistence Study. Therefore, the findings for these other spectrum bands are directly applicable to the operating parameters and protection requirements needed for the 42 GHz band to coexist with the adjacent radio astronomy systems.

In light of the encouraging findings in T-Mobile’s study, the Commission should move forward with service rules for terrestrial services in the 32 GHz, 42 GHz, and 50 GHz bands.

**C. The Commission Should Seek Comment on Use of the 26 GHz Band for Exclusive, Licensed Terrestrial Services.**

While the Commission has correctly focused on deployment in the 24 GHz, 28 GHz, 37/39 GHz, and 47 GHz bands, much attention has been given to the 26 GHz band on the international stage. For example, South Korea is trialing the 26.5-29.5 GHz band in 2018 and looking to launch commercial deployments in 2019,<sup>21</sup> and China has been studying the 24.25-27.5 GHz band for 5G services.<sup>22</sup> Similarly, the European Union is considering the 24.25-27.5

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<sup>19</sup> *Id.* at 1.

<sup>20</sup> *Id.* at 35.

<sup>21</sup> *See, e.g.*, Monica Allevan, *KT gets ready to show off 5G for PyeongChang 2018 Olympics*, FIERCE WIRELESS (Apr. 24, 2017), <https://www.fiercewireless.com/wireless/kt-gets-ready-to-show-off-5g-for-pyeongchang-2018-olympics>.

<sup>22</sup> *5G in China: Outlook and regional comparisons*, GSMA, at 27 (2017), <https://www.gsmaintelligence.com/research/?file=67a750f6114580b86045a6a0f9587ea0&download> (“China is also assessing spectrum needs in the millimetre wave band for extremely high

GHz band for commercial deployments in 2020,<sup>23</sup> and OfCom has sought input on the use of the 24.25-27.5 GHz for 5G service in the UK.<sup>24</sup> There is no denying the global interest in this spectrum, and American service providers are beginning their own trials.<sup>25</sup>

In light of this worldwide attention, the Commission should expeditiously seek comment on how the 26 GHz band could support terrestrial fixed and mobile services, including 5G. The 26 GHz band is *directly* adjacent to the 28 GHz band, and *nearly* adjacent to the 24 GHz band. If the Commission were to allow terrestrial fixed and mobile services throughout the entire 26 GHz band, it would create four gigahertz of nearly contiguous spectrum<sup>26</sup> that could be suitable for 5G services. The 26 GHz band may also present the ability to support communications across greater distances, as spectrum below 30 GHz tends to deliver better and broader geographic coverage around 5G base station sites than higher frequency spectrum.<sup>27</sup> Consequently, this better geographic coverage would likely make mobile operations in this band more economically feasible.

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data rate requirements in hotspot areas, and has consulted on frequency planning in the 24.75–27.5 GHz, 37–42.5 GHz and other millimetre wave bands for 5G.”)

<sup>23</sup> European Commission Radio Spectrum Committee, Opinion of the RSC pursuant to Advisory Procedure under Article 4 of Regulation 182/2011/EU and Article 4.2 of Radio Spectrum Decision 676/2002/EC (rel. Dec. 8, 2016), [https://circabc.europa.eu/sd/a/448dc765-51de-4fc8-b6e0-56ed6a1d0bca/RSCOM16-40rev3%205G%20draft\\_mandate\\_C](https://circabc.europa.eu/sd/a/448dc765-51de-4fc8-b6e0-56ed6a1d0bca/RSCOM16-40rev3%205G%20draft_mandate_C).

<sup>24</sup> OfCom, Consultation: Fixed Wireless Spectrum Strategy (Dec. 7, 2017), [https://www.ofcom.org.uk/data/assets/pdf\\_file/0027/108594/Fixed-Wireless-Spectrum-Strategy.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0027/108594/Fixed-Wireless-Spectrum-Strategy.pdf).

<sup>25</sup> See, e.g., Mike Dano, *Editor’s Corner—The battle over 5G spectrum has begun*, FIERCE WIRELESS (Feb. 1, 2017), <https://www.fiercewireless.com/wireless/battle-over-5g-spectrum-has-begun>.

<sup>26</sup> That is, 24.25 to 28.35 GHz with a small gap from 24.45-24.75 GHz.

<sup>27</sup> See, e.g., Comments of Ericsson, GN Docket 14-177, *et al.*, at 10 (filed Sept. 30, 2016) (noting that frequency ranges below 30 GHz would have better coverage characteristics and outdoor-to-indoor capability than the other bands being studied internationally).

Indeed, CTIA believes that tapping the 26 GHz band among those to use for domestic 5G services will harmonize U.S. and global efforts, resulting in the economies of scale needed to facilitate the development of new mobile devices.<sup>28</sup> Moreover, adding the 26 GHz band to the previously allocated 24 GHz and 28 GHz bands would provide nearly four gigahertz of contiguous spectrum, permitting the development of equipment at scale that could readily use the entire 24 to 28 GHz band within a single device and chipset globally. As international initiatives on 5G continue to focus on the 24.25-27.5 GHz band, the Commission should demonstrate its leadership and seek comment on how the 26 GHz band could be most optimally used, including for exclusive, licensed terrestrial services.

**D. The 37-37.6 GHz Band Should Be Licensed for Exclusive Use with Federal Coordination as a Condition of Licensing.**

In December 2016, CTIA sought reconsideration of the Commission’s decision to allocate the 37-37.6 GHz band on a coordinated, co-primary basis between federal and non-federal users, with non-federal rights granted by rule.<sup>29</sup> CTIA continues to believe that there is considerable record support for licensing this portion of the 37 GHz band for exclusive use for non-federal users.<sup>30</sup>

CTIA believes that application of an experimental sharing regime, such as the untested three-tiered sharing regime adopted in the 3.5 GHz band, would be premature. Instead, as CTIA

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<sup>28</sup> See, e.g., Remarks of Commr. Michael O’Rielly before 5G Americas’ “Technology Briefing,” at 1 (Oct. 2, 2017), [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-347083A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-347083A1.pdf) (“[T]he economies of scale created by marketing products internationally enables research, development, and manufacturing costs to be widely dispersed, promoting investment and innovation while reducing the cost of devices and services for Americans.”).

<sup>29</sup> See Petition for Reconsideration filed by CTIA, GN Docket No. 14-177, *et al.*, at 24 (filed Dec. 14, 2016) (“CTIA Petition for Reconsideration”).

<sup>30</sup> See, e.g., CTIA Spectrum Frontiers Roadmap at 3; T-Mobile Reply Comments, GN Docket No. 14-177, *et al.*, at 6 (filed Oct. 31, 2016); Comments of Qualcomm, GN Docket No. 14-177, at 15 (filed Sept. 30, 2016).

and others have stated, the Commission should manage this portion of the band by having non-federal entities obtain authorizations through competitive bidding, coupled with an obligation to manage sharing with federal users.<sup>31</sup> This would be similar to the mechanisms the Commission successfully used to license the AWS-1 (“1710-1755 MHz”) and AWS-3 (“1755-1780 MHz”) spectrum.<sup>32</sup> In adopting an approach similar to that which is applied to other bands, the Commission would create a more consistent regulatory environment in which 5G services may be more likely to flourish.

CTIA also urges the Commission to continue to work with its federal partners to explore exclusive use licensing with a sharing condition, which CTIA believes will enable the highest and best use of this valuable spectrum band. In the interim, the Commission should not allow the existing operability requirement for the 37-40 GHz band<sup>33</sup> to delay the auction process for the remaining 37.6-40 GHz spectrum.

#### **IV. LICENSEES SHOULD BE PERMITTED TO FLEXIBLY DEPLOY 5G SERVICES.**

As CTIA has previously noted, any performance requirements adopted for millimeter wave spectrum should be crafted to reflect the evolving nature of 5G services and technologies.<sup>34</sup>

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<sup>31</sup> CTIA Petition for Reconsideration at 24-25; Petition for Reconsideration filed by T-Mobile USA, GN Docket No. 14-177, *et al.*, at 7-8 (filed Dec. 14, 2016) (“T-Mobile Petition for Reconsideration”); Petition for Reconsideration filed by Competitive Carrier Association, GN Docket No. 14-177, *et al.*, at 6-7 (filed Dec. 14, 2016) (“CCA Petition for Reconsideration”).

<sup>32</sup> *See, e.g.*, CTIA Petition for Reconsideration at 25-26; T-Mobile Petition for Reconsideration at 6-7; CCA Petition for Reconsideration at 7, n.16; Reply to Oppositions of CTIA, GN Docket No. 14-177, *et al.*, at 9 (filed Feb. 24, 2017).

<sup>33</sup> 47 C.F.R. § 30.208.

<sup>34</sup> *See, e.g.*, Comments of CTIA, GN Docket No. 14-177, *et al.*, at 16-19 (filed Sept. 30, 2016); Letter from Scott Bergmann, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 14-177, *et al.*, at 2 (filed May 24, 2016).

The proposals in the *Second Report and Order and FNPRM*—which focus on geographic coverage in a licensed area<sup>35</sup>—would stifle experimentation and innovation of 5G use cases. The use cases for 5G are only just being developed and some potential uses may not initially require extensive coverage.

Instead, as it has noted before, the Commission should afford licensees “enough flexibility to accommodate both traditional services and . . . innovative services or deployment patterns” that will be essential to fostering a thriving and dynamic 5G ecosystem.<sup>36</sup> Specifically, the Commission should identify a representative, non-exhaustive list of flexible options for providers to sufficiently satisfy their performance requirements.

**V. THE COMMISSION SHOULD PROTECT 5G OPERATIONS IN THE TABLE OF ALLOCATIONS AND REJECT PROPOSALS THAT WOULD INHIBIT 5G SERVICE.**

**A. The Commission Should Adopt a Footnote for the U.S. Table of Allocations to Protect Terrestrial Use.**

The Commission seeks comment on whether it should adopt a footnote to the U.S. Table of Allocations specifying the relative interference protection obligations of FSS and Part 30 stations.<sup>37</sup> Because the Commission recognized that the 24 GHz, 28 GHz, 37/39 GHz, and 47 GHz bands are to be primarily available in the U.S. for terrestrial wireless service,<sup>38</sup> adoption

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<sup>35</sup> The Commission seeks comment on: adoption of a performance requirement for millimeter wave spectrum licensees to provide geographic area coverage of 25 percent of the license area; whether having a presence in 25 percent of subset units of the license area (such as census tracts, counties, or other area designation) could be adopted as a millimeter wave band performance requirement; or whether some metric other than geographic area coverage would be more appropriate. *Second Report and Order and FNPRM* ¶ 100-02.

<sup>36</sup> *First Report and Order and FNPRM* ¶ 203.

<sup>37</sup> *Second Report and Order and FNPRM* ¶ 94.

<sup>38</sup> *Id.* ¶ 95 (noting that the predominant use of the 24 GHz band would be for terrestrial wireless services). *See also id.* ¶ 2 (asserting that the 24.25-24.45 GHz, 24.75-25.25 GHz, 27.5-28.35 GHz, 37-40 GHz, and 47.2-48.2 GHz bands are available for flexible wireless use). *See also*

of a footnote would codify this requirement and provide protection for terrestrial operations. CTIA therefore recommends that the Commission adopt a U.S. footnote for each of these bands that reads as follows:

**US566.** The following frequency bands in the range 24-50 GHz are identified predominantly for terrestrial mobile and fixed services on a primary basis: (1) 24.25-24.45 GHz; (2) 24.75-25.25 GHz; (3) 27.5-28.35 GHz; (4) 37-40 GHz; and (5) 47.2-48.2 GHz.

As additional millimeter wave spectrum bands are identified and allocated predominantly to terrestrial mobile and fixed services, the Commission should add these bands to this U.S. Table of Allocations footnote. This is a simple but effective action that the Commission can take to demonstrate globally that these millimeter wave spectrum bands will be primarily available for 5G services and to foster a regulatory environment in which 5G services can flourish both domestically and abroad.

**B. The Commission Should Reaffirm Its Position Rejecting Aggregate Interference Claims.**

The Commission also seeks comment on how it should address aggregate interference to satellite operations in the 24.75-25.25 GHz band from terrestrial operations.<sup>39</sup> CTIA believes there is no basis for the Commission to revisit its prior decision concerning aggregate interference.

The Commission previously found in this proceeding that the potential for aggregate interference rising to the level of harmful interference is unlikely, is not a basis for refusing to

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*First Report and Order and FNPRM ¶¶ 50, 55 (restricting the 28 GHz to limited FSS use and primary use by terrestrial wireless services).*

<sup>39</sup> *Second Report and Order and FNPRM ¶ 95.*

authorize mobile service, and does not require any regulatory limit.<sup>40</sup> This rationale counsels toward the same outcome as it relates to the 24.75-25.25 GHz band. Alternatively, satellite entities can file in the open docket created by the Commission any relevant data and analyses that demonstrates any changes in the amount of aggregate interference that harmfully impacts FSS operations.<sup>41</sup>

**C. The Commission Should Apply the 28 GHz Sharing Requirements to the 24 GHz Band.**

The Commission also proposes to apply the sharing requirements adopted for the 47 GHz band<sup>42</sup> to the 24.75-25.25 GHz spectrum, which would be available for FSS use.<sup>43</sup> CTIA instead suggests that the Commission apply the sharing requirements for the 28 GHz band to the 24 GHz band. First, the 47 GHz sharing rules provide protection that is inferior to that provided by the rules for the 28 GHz band. For example, the rules for 28 GHz limit preclusion zones of 0.1 percent of the market's population for areas larger than 450,000 people, whereas the rules for the 47 GHz band invoke these requirements only in areas of greater than 2,250,000 in population. Second, the 24 GHz band was previously unavailable for widespread FSS use (other than for BSS feeder links), which means, similar to the 28 GHz band, there has not been an expectation by the FSS industry that there would be widespread use of this spectrum for FSS without the need for additional coordination with terrestrial operations.<sup>44</sup> Therefore, application of the 28 GHz sharing framework—which requires more coordination by FSS operations—would be

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<sup>40</sup> *First Report and Order and FNPRM* ¶¶ 61-69 (dismissing arguments regarding aggregate interference as related to the 28 GHz band).

<sup>41</sup> *See generally GN Docket No. 17-171; Docket Established for 28 GHz Aggregate Interference Analysis*, Public Notice, 32 FCC Rcd 5022 (2017).

<sup>42</sup> *See* 47 C.F.R. § 25.136.

<sup>43</sup> *Second Report and Order and FNPRM* ¶ 94.

<sup>44</sup> *Id.*

most applicable for the 24 GHz band.

By imposing the 28 GHz sharing requirements in Section 25.136(d) on the 24 GHz band, the Commission would ensure that the 24 GHz band will be protected from broader FSS use and in a substantially similar fashion as the adjacent 28 GHz band. Moreover, application of this sharing framework would not inhibit the use of the band for future FSS earth stations. It would simply provide more assurances to terrestrial operations that more widespread use of the band for FSS would be fully coordinated prior to deployment. Accordingly, CTIA encourages the Commission to apply the sharing criteria adopted for the 28 GHz band to the new FSS use of the 24 GHz band.

## **VI. OPERABILITY REQUIREMENTS FOR THE 24 GHz BAND SHOULD NOT DETER AUCTIONING OF THE SPECTRUM.**

The Commission proposes to extend the operability requirement (in place for the 28 GHz and 37/39 GHz bands) to the 24 GHz band.<sup>45</sup> Under this proposal, any equipment capable of operating anywhere within the 24 GHz band (24.25-24.45 GHz and 24.75-25.25 GHz) must be capable of operating across the entire 24 GHz band, on all frequencies in both band segments.<sup>46</sup>

CTIA does not oppose the adoption of an operability requirement similar to Section 30.208 of the Commission's rules for the 24.25-24.45 GHz and 24.75-25.25 GHz bands. However, as CTIA has noted in other contexts, the development of an operability requirement for a given band should not adversely affect the timing for the corresponding auction of that spectrum.<sup>47</sup> In other words, the Commission should continue to move towards auctioning the

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<sup>45</sup> *Id.*

<sup>46</sup> *Id.* ¶ 108.

<sup>47</sup> *See, e.g.*, Letter from Scott Bergmann, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 14-177, *et al.*, at 2 (dated July 8, 2016); Comments of CTIA, GN Docket No. 14-177, *et al.*, at 31 (filed Jan. 28, 2016).

24 GHz spectrum while the operability requirement is finalized.

## **VII. CONCLUSION.**

The efforts made by the Commission in this proceeding to identify and allocate additional spectrum for terrestrial mobile and fixed services will promote U.S. leadership in the development and deployment of 5G. To build upon its solid foundation, the Commission should rapidly auction bands for which it has already adopted service rules, develop technical and service rules for additional high-band spectrum to facilitate the deployment of next-generation products and services, and ensure that rules for the spectrum in the millimeter wave bands allow experimentation to flourish without stifling innovation.

Respectfully Submitted

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