

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

In the Matter of)
)
2019 World Radiocommunication Conference Advisory) IB Docket No. 16-185
Committee)
)
FCC Seeks Comments on Recommendations Approved) Public Notice DA 16-1216
By the World Radiocommunication Conference Advisory)
Committee)

COMMENTS OF CTIA

CTIA¹ respectfully submits these comments in response to the Commission’s *Public Notice* seeking comment on recommendations by the World Radiocommunication Conference Advisory Committee (“WAC”) for United States positions on issues being considered by the 2019 World Radiocommunication Conference (“WRC-19”).² As discussed below, the *Public Notice* includes a range of policy positions that impact the future of mobile services, including proposed positions on spectrum directly addressed in the FCC’s *Spectrum Frontiers* proceeding.³ While WRC-19 processes are important to international harmonization, that process can—and

¹ CTIA® (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.

² “FCC Seeks Comments on Recommendations Approved By the World Radiocommunication Conference Advisory Committee,” *FCC Public Notice*, DA 16-1216, IB Docket No. 16-185 (October 25, 2016) (“*Public Notice*”).

³ *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) (“*Spectrum Frontiers*”).

should—continue to unfold on a separate track from domestic regulatory activities, and should not detract from or delay the FCC’s efforts to rapidly complete foundational work necessary for fifth generation (“5G”) terrestrial mobile services. Indeed, CTIA believes the policy positions the United States carries to WRC-19, and its discussions and negotiations with foreign administrations generally, should consistently reflect the leadership and direction taken in the *Spectrum Frontiers* proceeding.

I. INTRODUCTION AND SUMMARY.

CTIA has been a leading advocate for 5G and a strong supporter of the Commission’s efforts in the *Spectrum Frontiers* proceeding to identify and allocate spectrum above 24 GHz for next generation terrestrial mobile broadband services. CTIA, and the wireless industry generally, have outlined an aggressive vision of 5G technologies and services, from smart cities to connected cars to virtual reality. As discussed in its comments and reply comments in that docket, 5G will transform the mobile experience as we know it today, ushering in an array of paradigm-shifting applications and features—in Chairman Wheeler words, “5G is like the missing piece of the puzzle depicting the wireless future: Where today’s wired and wireless networks force customers to choose EITHER high speed and capacity OR mobility, 5G’s promise of gigabit mobile connections at any location will open up hugely disruptive new value propositions for the users of networks.”⁴ 5G development is already underway across the United States as the wireless industry strives to achieve the “ultra-high-speed, high-capacity, low-

⁴ Remarks of FCC Chairman Tom Wheeler, CTIA Super Mobility Show 2016, at 2 (Sept. 7, 2016), http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0907/DOC-341138A1.pdf (emphasis in original).

latency, secure mobile connectivity” consumers will expect on the next frontier of wireless services.⁵

Specifically, the Commission should:

- Remain focused on allocation of additional mobile broadband spectrum to match the ever-increasing consumer demand for wireless service domestically as well as prioritize efforts to facilitate access to spectrum for 5G internationally and;
- Ensure that U.S. international positions are consistent and compatible with recent domestic decisions regarding terrestrial mobile spectrum bands.

Against this backdrop, and recognizing that WRC-19 processes are important to obtain international harmonization, it would be regrettable public policy to allow the international spectrum positions supported by the United States for WRC-19 to undercut or delay the rapid progress being made domestically. There is simply no reason for the FCC to slow down its efforts to complete allocation work for the spectrum bands above 24 GHz proposed for terrestrial mobile services.

II. THE COMMISSION SHOULD REMAIN FOCUSED ON IDENTIFYING AND ALLOCATING SPECTRUM ABOVE 24 GHZ FOR TERRESTRIAL MOBILE SERVICES.

The record in the *Spectrum Frontiers* proceeding documents a meteoric rise in mobile broadband consumption by U.S. consumers and businesses. As the Commission’s most recent wireless competition report showed, as of the end of 2015, 99.7 percent of the U.S. population had access to 4G LTE wireless services, with 89.1 percent having access to four or more providers—clearly demonstrating that wireless broadband in the United States is both ubiquitous and highly competitive.⁶ Total U.S. wireless data traffic increased approximately 138 percent

⁵ *Id.*

⁶ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless,*

from 2014, far surpassing international usage statistics.⁷ This robust growth in data traffic shows no signs of slowing, with projections estimating that by 2020, the average North American wireless subscriber will consume about 22 gigabytes of mobile data per month, compared to approximately 18 gigabytes for the average subscriber in Western Europe.⁸ At this rate, estimates predict that mobile data traffic will grow twice as fast as fixed IP traffic from 2015 to 2020.⁹

The deployment of 5G networks and services will only accelerate this growth¹⁰ as innovators turn their attention to the Internet of Things (“IoT”), which promises billions of new connections in the near future. By 2021, Ericsson estimates that there will be approximately 28

Including Commercial Mobile Services, Nineteenth Report, DA 16-1061, WT Docket No. 16-137, ¶ 39 (rel. Sept. 23, 2016) (“*19th Mobile Wireless Competition Report*”).

⁷ See *id.* ¶ 126 (citing CTIA Annual Survey); see also Comments of CTIA, GN Docket No. 16-137, at 12-13 (May 31, 2016) (“*CTIA Competition Report Comments*”). In 2015, American mobile users generated an average of 2,245 MB of mobile data traffic per connection per month, compared to only 921 MB for Central and Eastern Europe and 405 MB for the Asia-Pacific region. See Comments of CTIA, GN Docket No. 16-245, at 20-21 (filed Sept. 6, 2016) (“*CTIA Section 706 NOI Comments*”).

⁸ See Ericsson, *Ericsson Mobility Report: On the Pulse of the Networked Society*, at 6 (June 2016) (predicting that 5G subscription uptake will be faster than it was for 4G); Reply Comments of Sprint Corp., GN Docket No. 14-177, IB Docket Nos. 15-256 and 97-95, WT Docket No. 10-112, and RM-11664, at 2-3 (Feb. 26, 2016) (“The demand from wireless consumers for high-speed data is well-documented and that demand will only increase as 5G systems are tested, deployed, and operationalized.”). See *CTIA Section 706 NOI Comments* at 12; *CTIA Competition Report Comments* at 14.

⁹ Cisco, *Visual Networking Index Mobile Forecast*, available at http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country.

¹⁰ By the end of 2015, there were already 291 million active Internet-capable devices in the United States, up from 270 million at the end of 2014. *CTIA Competition Report Comments* at 12; see also *19th Mobile Wireless Competition Report* ¶13 (noting that 5G “networks and services are expected to usher in an era of explosive growth” for machine-to-machine (“M2M”) communications).

billion connected devices in circulation, nearly 16 billion of which will be related to IoT.¹¹ User-linked 5G connections alone will reach 690 million in 2025.¹² To make the 5G vision into reality, the wireless industry will need more licensed spectrum—and extensive amounts of it.¹³ The only solution—as the Commission has recognized—is to include access to the millimeter wave bands, which is why the FCC’s *Spectrum Frontiers* proceeding is so critically important to the nation’s economy. Commenters in that proceeding applauded the Commission for recognizing these facts and rapidly adopting allocation and service rules for the 27.5-28.35 GHz (“28 GHz”) and 37.6-40 GHz (“37 GHz”) bands to allow for mobile broadband services, including 5G.¹⁴ Commenters also supported the Further NPRM’s proposals to allocate additional spectrum in the 24.25-24.45 GHz and 24.75-25.25 GHz (“24 GHz”), 29.1-29.25 GHz

¹¹ *19th Mobile Wireless Competition Report* at n.34 (citing Ericsson, *Ericsson Mobility Report: On the Pulse of the Networked Society*, at 10 (June 2016), <https://www.ericsson.com/res/docs/2016/ericsson-mobility-report-2016.pdf>).

¹² Strategy Analytics, *Strategy Analytics: 5G to reach 690M Connections and 300M Handset Shipments by 2025* (Aug. 23, 2016), <https://www.strategyanalytics.com/strategy-analytics/news/strategy-analytics-press-releases/strategy-analytics-press-release/2016/08/23/strategy-analytics-5g-to-reach-690m-connections-and-300m-handset-shipments-by-2025#.V-PPjvkrKUK>

¹³ Coleman Bazelon & Giulia McHenry, *Substantial Licensed Spectrum Deficit (2015-2019): Updating the FCC’s Mobile Demand Projections*, THE BRATTLE GROUP, at 6-7 (Jun. 23, 2015) (finding the wireless industry will need more than 350 megahertz of new licensed spectrum by 2019 to meet growing data demand).

¹⁴ *See, e.g.*, Comments of 4G Americas, GN Docket No. 14-177, IB Docket Nos. 15-256 and 97-95, WT Docket No. 10-112, and RM-11664, at 14 (filed Jan. 26, 2016) (“4G Americas reiterates the importance of licensing spectrum on an exclusive basis to provide certainty for investment in 5G network deployment.”); Comments of Ericsson, GN Docket No. 14-177, IB Docket Nos. 15-256 and 97-95, WT Docket No. 10-112, and RM-11664, at iii (filed Jan. 28, 2016); Comments of Samsung Electronics America, Inc. and Samsung Research America, GN Docket No. 14-177, IB Docket Nos. 15-256 and 97-95, WT Docket No. 10-112, and RM-11664, at 13 (filed Jan. 28, 2016) (“A consistent licensing approach, allowing spectrum to be used on an exclusive basis, with full flexibility to deploy service will permit 5G services to be deployed in a robust fashion.”).

“29 GHz”), 31-31.3 GHz (“31 GHz”), 31.8-33.4 GHz (“32 GHz”), 40-42 GHz, 42-42.5 GHz (“42 GHz”), 47.2-50.2 GHz (“47 GHz”), and 50.4-52.6 (“50 GHz”) bands.¹⁵

Beyond the capacity and speed needs being addressed in the *Spectrum Frontiers* proceeding, it is also important to recognize that U.S. leadership in spectrum policies has allowed innovation and investment to flourish, and continued U.S. leadership in 5G is critical to the economic growth of the country as a whole. As Commissioner Rosenworcel aptly noted, “[t]he race to 5G is on” and it is a “race that we want to win.”¹⁶ To this end, CTIA applauds the Commission for its quickly developing rules to allocate several millimeter wave bands for mobile services.¹⁷ By unlocking the 28 GHz and 37 GHz bands for mobile uses, the Commission has taken an important step toward facilitating the transition to 5G systems. That momentum is continuing, with strong pressure to act on the additional 24 GHz, 32 GHz, 42 GHz, 47 GHz, 50 GHz and 70/80 GHz bands identified in the *Spectrum Frontiers* Further Notice of Proposed Rulemaking.¹⁸

¹⁵ See, e.g., Reply Comments of CTIA, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, at 4, 5, 6, 9 (filed Oct. 31, 2016); Comments of CTIA, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, at 12-13 (filed Sept. 30, 2016); Comments of Verizon, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, at 3 (filed Sept. 30, 2016); Comments of Samsung Electronics America, Inc. and Samsung Research America, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, at 5-6 (filed Sept. 30, 2016); Comments of T-Mobile USA, Inc., GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, at 7 (filed Sept. 30, 2016).

¹⁶ Jessica Rosenworcel, Commissioner, *Remarks at Leadership Forum on 5G: The Next Generation of Wireless: Five Ideas for the Road to 5G*, (Feb. 9, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-337655A1.pdf.

¹⁷ See *Spectrum Frontiers* ¶ 4.

¹⁸ *Id.* ¶ 370.

Action to identify and allocate spectrum for terrestrial mobile services should remain a national priority that should be uniformly reflected in all relevant U.S. positions at WRC-19. At a minimum, the international process itself—including calls for studies or other future developments—should not delay the Commission’s domestic action on critically needed spectrum for mobile broadband services.

III. WRC-19 SPECTRUM STUDIES SHOULD EMPHASIZE ALLOCATION AND PROTECTION OF SPECTRUM FOR TERRESTRIAL SERVICES.

While delay is a critical concern, a number of the preliminary views recommended for WRC-19 by the WAC would affect terrestrial mobile services in the bands implicated by the *Spectrum Frontiers* proceeding. CTIA’s view is that the U.S. positions at WRC-19 should further U.S. policy as developed in the *Spectrum Frontiers* proceeding—more than simply avoiding delay, the United States should use the WRC-19 process and other international *fora* to encourage other nations to follow the blueprint set forth in *Spectrum Frontiers*.

For example, the WAC recommendations include proposed U.S. views on agenda items that could affect terrestrial mobile that include:

- *Agenda item 1.13* delineates the spectrum bands to be studied for next generation International Mobile Telecommunications (“IMT”), which includes 5G services. CTIA believes that the U.S. should include information on the decisions made in the *Spectrum Frontiers* proceeding as this could assist other countries due to the impact of the U.S. market in driving economies of scale and roaming. The bands to study are generally consistent with those under consideration in the U.S., except for the omission of the 27.5-28.35 GHz band. Inasmuch as that appears to be a key 5G band in the U.S., CTIA believes the FCC should continue to promote the use of that spectrum for 5G mobile services.
- *Agenda item 1.14* supports studies for high-altitude platform services (“HAPS”) in the 21.4-22 GHz, 24.25-27.5 GHz, and 38-39.5 GHz bands. Given that 38-39.5 GHz has been allocated for terrestrial mobile use, and that portions of 24.25-27.5 GHz are proposed for reallocation to terrestrial mobile use, it is CTIA’s view that any studies relative to HAPS’ use of those bands should not undermine the existing use of the spectrum by terrestrial licensees.

- *Agenda item 1.5* supports studies on sharing and compatibility between earth stations in motion and current/planned stations of existing services in the 17.7-19.7 GHz and 27.5-29.5 GHz bands. Again, because portions of the 27.5-29.5 GHz band have been allocated for terrestrial mobile service, any studies should be grounded by a strict premise of not causing harmful interference to mobile broadband.
- *Agenda item 1.6* supports studies for non-GSO satellite systems in the 37.5-39.5 GHz, 39.5-42.5 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz bands. As CTIA has documented in the *Spectrum Frontiers* proceeding and with respect to Boeing's proposed use of these bands domestically, non-GSO satellite systems pose a significant threat of harmful interference to allocated and proposed terrestrial mobile uses, and therefore should not be permitted. While CTIA has no objections to studies *per se*, any support for such studies related to WRC-19 should not be a basis for undermining terrestrial mobile use of such bands domestically. CTIA will carefully evaluate any proposals under this agenda item if/when they are developed in the WAC process.
- *Agenda item 9.1, Issue 9.1.9* supports studies of allocating the 51.4-52.4 GHz band to the Fixed-Satellite Service while ensuring compatibility with existing services and *Agenda item 10* supports studies of additional spectrum needs for the Fixed-Satellite Service in the 37.5-39.5 GHz band. Again, because of the pre-existing or proposed allocations of such spectrum to terrestrial mobile use, CTIA supports studies only to the extent that they do not interfere with, or delay, the deployment of primary terrestrial mobile services in these bands. CTIA will carefully evaluate any proposals under this agenda item if/when they are developed in the WAC process.

In sum, CTIA firmly believes that U.S. positions at WRC-19 must reflect the U.S. policy positions as expressed in the *Spectrum Frontiers* proceeding. To the extent that any *Spectrum Frontiers* bands are implicated by WRC-19, the U.S. position should be consistent with its efforts to promote existing and future terrestrial mobile services. While not opposing studies under WRC-19 agenda items, CTIA believes that the U.S. position should not weaken the protections provided to—or proposed for—terrestrial services.

IV. CONCLUSION.

Given the spectrum bands involved, there is an obvious intersection between the United States' WRC-19 preparations and the domestic policies developed in the *Spectrum Frontiers*

proceeding. Issues of compatibility and sharing that have been examined domestically in the context of that proceeding should not be undercut, undermined, or delayed by U.S. positions on the international stage. Quite the opposite should be true—U.S. negotiators and diplomats should take every opportunity to encourage foreign administrations to pursue parallel and complementary paths to the *Spectrum Frontiers* proceeding, whether at WRC-19 or in other *fora*. The FCC’s bold leadership for 5G will pay significant dividends for the American public, and the nation’s advocacy on spectrum policy should support that initiative fully and vigorously.

Respectfully submitted,

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