

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

In the Matter of:)	
)	
International Bureau Seeks Comment on)	IB Docket No. 16-185
Recommendations Approved by World)	
Radiocommunication Conference)	
Advisory Committee)	
)	

COMMENTS OF CTIA

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CTIA¹ respectfully submits these comments in response to the Public Notice seeking comment on the draft recommendations provided by the World Radiocommunication Conference Advisory Committee (“WAC”) on issues that will be considered at the 2019 World Radiocommunication Conference (“WRC-19”).²

I. INTRODUCTION AND SUMMARY

The global race to lead the world in 5G is on, and the United States must continue to pursue comprehensive, forward-looking policies to surpass the competition. To realize this goal, it is imperative that the United States’ proposals at the WRC-19 conference also work towards

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 *International Bureau Seeks Comment on Recommendations Approved by World Radiocommunication Conference Advisory Committee*, Public Notice, IB Docket No. 16-185, DA 18-423 (rel. Apr. 26, 2018) (“Public Notice”).

U.S. 5G leadership. Concerning the draft recommendations provided by the WAC at its April 23, 2018 meeting, the United States should support:

- Identifying the 37-43.5 GHz tuning range for International Mobile Telecommunications on a global basis on Agenda Item 1.13;
- Proposing No Change on Agenda Item 8 to retain United States flexibility regarding the 470-608 MHz range; and
- Proposing No Change on Issue 9.1.1 to maintain the ability of countries to facilitate either terrestrial or satellite International Mobile Telecommunications (“IMT”) without unfair burdens on either service, subject to bilateral coordination when necessary.

U.S. leadership in 4G development and deployment led to significant economic gains for the country. The American wireless industry contributes \$475 billion to the economy annually and accounted for 2.6 percent of total U.S. Gross Domestic Product (“GDP”) in 2016.³ However, estimates indicate that American companies would have lost more than \$125 billion in revenue to other countries had the U.S. not led the way in 4G development and deployment.⁴ This includes more than \$40 billion in application store revenue flowing directly to U.S. companies and application developers.⁵

The U.S. wireless industry stands ready to invest \$275 billion to deploy 5G, which will create an estimated three million new jobs and add \$500 billion to the nation’s economy.⁶ Given the overwhelming benefits associated with the growth of 4G in the U.S. and the promise

³ See *How the Wireless Industry Powers the U.S. Economy*, ACCENTURE STRATEGY, at 3 (Apr. 2018), <https://api.ctia.org/wp-content/uploads/2018/04/Accenture-Strategy-Wireless-Industry-Powers-US-Economy-2018-POV.pdf>.

⁴ See *How America’s 4G Leadership Propelled the U.S. Economy*, RECON ANALYTICS, at 11 (Apr. 16, 2018), https://api.ctia.org/wp-content/uploads/2018/04/Recon-Analytics_How-Americas-4G-Leadership-Propelled-US-Economy_2018.pdf.

⁵ *Id.* at 1.

⁶ *Id.* (“America’s wireless industry is a global leader in making the commercial investments and preparations necessary for 5G deployment.”).

of 5G, it is imperative that we retain our wireless leadership in the transition to next-generation connectivity. However, according to recent research, the United States currently trails both China and South Korea in 5G readiness, based on an assessment of spectrum and infrastructure policies, industry investment, and overall government support.⁷ CTIA commends the steps the Commission has taken to facilitate deployment of 5G. Domestically, the agency has looked for opportunities to facilitate wireless use in low-, mid-, and high-band spectrum.⁸ And reforms to the nation's wireless infrastructure siting policies will accelerate deployment of small cells necessary to support next-generation networks and services.⁹ The United States must work to recapture the lead by continuing to modernize infrastructure policies and making spectrum available to support 4G and facilitate 5G deployment.

Internationally, the U.S. should seek to retain flexibility in the Radio Regulations and support proposals that will enable global spectrum harmonization. As Commissioner O'Rielly has highlighted, harmonization benefits consumers by providing the advantages of global

⁷ *The Global Race to 5G*, CTIA, at 3 (Apr. 2018), <https://api.ctia.org/wp-content/uploads/2018/04/Race-to-5G-Report.pdf>.

⁸ For example, the FCC made available roughly five and a half gigahertz of millimeter wave spectrum for exclusive terrestrial wireless use in its Spectrum Frontiers proceeding, is considering targeted changes to the 3.5 GHz Band framework to increase investment and 5G readiness, and is also exploring opportunities to expand flexible use in mid-band spectrum between 3.7 and 24 GHz. See *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report and Order, 31 FCC Rcd 8014 (2016) ("2016 Spectrum Frontiers Order"); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report and Order, 32 FCC Rcd 10988 (2017) ("2017 Spectrum Frontiers Order"); *Promoting Investment in the 3550-3700 MHz Band*, Notice of Proposed Rulemaking, 32 FCC Rcd 8071 (2017); *Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz*, Notice of Inquiry, 32 FCC Rcd. 6373 (2017).

⁹ See *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Second Report and Order, WT Docket No. 17-79, 83 Fed. Reg. 19440 (2018); *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Notice of Proposed Rulemaking, 32 FCC Rcd 3330 (2017).

roaming and lower-cost products and services enabled by economies of scale.¹⁰ Spectrum harmonization reduces coordination challenges between neighboring countries and enables economies of scale that lead to lower prices and a wider range of services and devices for consumers. The United States should adopt the WAC proposals as set forth herein to facilitate global spectrum harmonization, maximize U.S. flexibility in the Radio Regulations, and position the U.S. to lead in 5G.

II. THE UNITED STATES SHOULD SUPPORT IDENTIFYING THE 37-43.5 GHZ TUNING RANGE FOR IMT ON A GLOBAL BASIS ON AGENDA ITEM 1.13.

The United States should advance View A on Agenda Item 1.13, which proposes to identify the 37-43.5 GHz tuning range for IMT on global basis. WRC-19 Agenda Item 1.13 asks ITU member countries to identify spectrum in the 37-43.5 GHz range that may be suitable for IMT, including spectrum that could be allocated on a primary basis for mobile service.¹¹ The WAC advanced two alternative views on the agenda item. View A proposes to identify the 37-43.5 GHz frequency range for IMT globally, as well as to allocate mobile service on a co-primary basis in the 40.5-42.5 GHz frequency range.¹² View B proposes to exclude IMT operations in the 40-42 GHz frequency range, limiting operations to the 37-40 GHz and 42-43.5 GHz frequency ranges in Region 2.¹³ View B also proposes an ITU Resolution imposing

¹⁰ Remarks of FCC Commissioner Michael O’Rielly Before the 6th Annual Americas Spectrum Management Conference, Washington, DC, at 2 (Oct. 13, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-347222A1.pdf.

¹¹ *Public Notice*, Attachment A, at 11.

¹² *See id.*, at 12-19. View A is supported by AT&T, Cisco Systems Inc., CTIA, Ericsson, GSMA, Intel Corporation, Samsung Electronics America, Sprint Corporation, T-Mobile, and Verizon.

¹³ *See id.*, at 20-30.

onerous and unnecessary operating conditions on IMT¹⁴ and does not address Regions 1 or 3.

CTIA urges the Commission to advance View A, which would harmonize spectrum globally for IMT while preserving nations' autonomy to decide how best to utilize spectrum between 37 GHz and 43.5 GHz within their borders.

Studies conducted by the ITU Radiocommunication Sector ("ITU-R") under Resolution 238 (WRC-15) confirm that sharing between IMT and incumbent services operating in the 37-43.5 GHz frequency range is feasible. As detailed in the View A proposal, these studies show large interference margins for Fixed-Satellite Service, Mobile Satellite Service ("MSS"), and Broadcasting Satellite Service operations in these frequency ranges.¹⁵ The studies also show that sharing is feasible with Earth Exploration Satellite Service, Space Research Service, and Radio Astronomy Service operations, as well as Fixed Service operations.¹⁶ Passive services in adjacent spectrum are protected by the -10 dBW power limit imposed in ITU Resolution 752 (WRC-07).

A global radio tuning range approach gives the United States the best chance to facilitate 5G deployment and is most likely to succeed at WRC-19, because it provides flexibility for countries and regions to make different segments of spectrum available for IMT within the 37-43.5 GHz frequency range depending on national circumstances.

Ideally, the exact same frequency bands would be harmonized globally. However, given varying incumbent uses and national priorities, that result is not possible. For example, the FCC

¹⁴ *Id.*

¹⁵ *Id.*, at 15.

¹⁶ *Id.* In the unlikely event that Fixed Service systems are pointed directly across the IMT deployment area, some studies note the possibility of interference. This scenario is highly unlikely given Fixed Service system design.

opened the 37-40 GHz frequency range for flexible use, and is considering proposals to make additional spectrum available in the 42-42.5 GHz frequency range as part of its *Spectrum Frontiers* proceeding.¹⁷ Meanwhile, the most recent European Conference of Postal and Telecommunications Administrations (“CEPT”) report shows that European nations intend to prioritize spectrum in the 40-43.5 GHz frequency range for 5G,¹⁸ and China has invested significantly in research for 5G in the 37-42.5 GHz frequency range.¹⁹

View A facilitates the opportunity to develop a Region 2 Inter-American Proposal (“IAP”) for harmonizing the 37-43.5 GHz band by providing nations the flexibility to authorize services within their borders as they see fit, while still identifying the entire 37-43.5 GHz frequency range for IMT. View A permits the United States to retain its forward-looking, millimeter wave spectrum policies adopted in the *Spectrum Frontiers* proceeding: identifying the 37-40 GHz frequency range for flexible, terrestrial use; identifying the 40-42 GHz frequency range for satellite use; and considering spectrum in the 42 GHz band for flexible, terrestrial use in future proceedings. The proposal likewise affords other countries the same flexibility and

¹⁷ See 2016 *Spectrum Frontiers Order*; 2017 *Spectrum Frontiers Order*. See also 2017 *Spectrum Frontiers Order*, 32 FCC Rcd at 11118, Statement of Chairman Ajit Pai (“I plan to follow up on today’s achievement by presenting the next spectrum frontiers item in the first half of next year. This will continue our commitment to enabling access to these high-band frequencies.”); 2017 *Spectrum Frontiers Order*, at 11122, Statement of Commissioner Michael O’Rielly (“I appreciate that the Chairman’s team has committed to mine to follow up this item with another in the first half of next year. I expect that order would deal with the remaining bands that were in the 2016 notice, such as 32, 42, and 50 GHz, and an accompanying notice should, at a minimum, tee up 26 GHz, a band that is highly popular for 5G internationally.”).

¹⁸ See CEPT Roadmap for 5G, at 2 (approved Nov. 18, 2016; revised Nov. 17, 2017, and Mar. 2, 2018), https://cept.org/Documents/ecc/41710/ecc-18-050-annex-19_cept-roadmap-5g.

¹⁹ David Abecassis, Chris Nickerson, and Janette Stewart, *Global Race to 5G—Spectrum and Infrastructure Plans and Priorities*, Final Report for CTIA, ANALYSYS MASON, at 17 (Apr. 2018), https://api.ctia.org/wp-content/uploads/2018/04/Analysys-Mason-Global-Race-To-5G_2018.pdf.

provides the best chance to successfully harmonize the spectrum in Region 2 through an IAP. Wider global tuning ranges also provide flexibility for equipment manufacturers to design and build equipment that uses time-division duplex (“TDD”) schemes that can transmit and receive in any part of the band, as permitted, in a way that was not possible in the legacy cellular and Personal Communications Service (“PCS”) bands that used frequency-division duplex (“FDD”) schemes and required different equipment for each different band plan. The ability to use the same equipment across the tuning range will facilitate economies of scale and, ultimately, lower prices for consumers.

The View B proposal ignores that sharing is feasible in the 40-42 GHz frequency range.²⁰ In doing so, the proposal would deny nations the ability to tailor 5G deployment decisions to meet regional and country-specific priorities, and fails to advocate for global harmonization of spectrum. Furthermore, limiting the IMT identification to the 37-40 GHz and 42-43.5 GHz frequency ranges would foreclose opportunities in the 40-42 GHz frequency range in other countries. The United States should therefore reject View B and instead advocate for IMT identification across the entire tuning range and in all three regions.

The United States should also reject the View B proposal to adopt an ITU Resolution imposing operational restrictions on IMT services.²¹ The proposed restrictions, such as mandatory minimum downtilt of all base station antennas by 10 degrees and maximum equivalent isotropically radiated power (“EIRP”) limit of 52 dBm/200 MHz, are not only onerous and unnecessary, but also inappropriate for formal resolution. A one-size-fits-all approach is unworkable in our diverse, global ecosystem. It is therefore inappropriate to

²⁰ See *Public Notice*, Attachment A, at 23-24.

²¹ See *id.* at 27-30.

memorialize prescriptive operating procedures in the Radio Regulations, which can only be amended at World Radiocommunication Conferences. This is especially true in an era of rapidly evolving spectrum sharing technologies. The United States should seek to retain flexibility in adopting technical parameters for IMT operations. Moreover, View B’s proposed restrictions are inconsistent with the technical parameters the Commission adopted in its *Spectrum Frontiers* proceeding.²² If ITU member countries were to adopt View B’s proposed resolution at WRC-19, then the United States would be in derogation of the Radio Regulations with respect to fixed and mobile Upper Microwave Flexible Use Service (“UMFUS”) operations in the 37-40 GHz band.

It is vital that the United States support identifying the 37-43.5 GHz frequency range for IMT on a global basis and without prescriptive operating conditions. Although CTIA hopes for global harmonization of as much spectrum as possible to support 5G, and anticipates supporting proposals for additional bands in the future, the 37-43.5 GHz frequency range provides the best opportunity to secure a wide swath of globally harmonized spectrum. Other frequencies highlighted for consideration in WRC-19 Agenda Item 1.13 will be used for backhaul services, have significant sharing challenges, or may face challenges related to adjacent band protections. To ensure U.S. 5G success, CTIA strongly encourages the United States to support a global IMT identification across the entire 37-43.5 GHz frequency range.

III. THE UNITED STATES SHOULD SUPPORT A “NO CHANGE” PROPOSAL ON AGENDA ITEM 8.

The United States should decline to support the View A proposal on Agenda Item 8 to remove the United States from footnotes 5.295 and 5.297, and should instead support the View B No Change proposal. WRC-19 Agenda Item 8 is a standing agenda item to consider requests

²² See 2016 *Spectrum Frontiers Order*, 31 FCC Rcd at 8106-27, ¶¶ 266-324.

from member countries to delete their country footnotes or have their country name deleted from footnotes.²³ View A proposes to delete the United States from footnote 5.295, which identifies portions of the 470–608 MHz frequency range for IMT, and footnote 5.297, which allocates the 512–608 MHz frequency range for fixed and mobile services on a primary basis. CTIA encourages the United States to support View B’s No Change proposal, which would preserve U.S. flexibility for future IMT, fixed, and mobile operations in the band without impacting broadcast operations.²⁴

Removing the United States from footnotes 5.295 and 5.297 would prevent the nation from making additional spectrum in the 470-608 MHz frequency range available for IMT in the future and would undermine efforts to globally harmonize the 600 MHz spectrum repurposed in the Incentive Auction,²⁵ without providing any countervailing benefits. Notably, the U.S. would lose the autonomy to decide whether to permit fixed or mobile services in this frequency range, and adding the U.S. back to the list of countries identified in footnotes 5.295 and 5.297 at a later date would require approval from other ITU member countries to study and implement the change, which could take years and multiple WRC cycles. The View A proposal also is inconsistent with statutory provisions for the 470-512 MHz (“T-Band”) frequency range. The T-Band falls within the spectrum band identified for IMT and fixed and mobile services under footnote 5.295. Congress, through the Middle Class Tax Relief and Job Creation Act of 2012,

²³ See *Public Notice*, Attachment A, at 67.

²⁴ See *id.*, Attachment A, at 68-75, 76-78. View B is supported by AT&T, Cisco Systems Inc., CTIA, Ericsson, GSMA, Intel Corporation, Nokia, Samsung Electronics America, Sprint Corporation, T-Mobile, and Verizon.

²⁵ See *Resolution 810 (WRC-15)*, *WRC-23 Preliminary Agenda Item 2.5* (“To review the spectrum use and spectrum needs of existing services in the frequency band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 on the basis of the review in accordance with Resolution 235 (WRC-15).”), https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000C0033PDFE.pdf.

directed the FCC to reallocate the T-band spectrum.²⁶ The United States should not support a proposal that is inconsistent with currently enacted legislation.

Arguments by View A proponents that the results of the Incentive Auction necessitate U.S. withdrawal from footnotes 5.295 and 5.297 are unconvincing.²⁷ For decades these footnotes have provided co-primary allocations in the 512-608 MHz frequency range for fixed and mobile services in the United States without any negative effect.²⁸ And existing FCC rules protect broadcast operations from harmful interference. Supporting a “No Change” proposal allows the United States to retain flexibility regarding future spectrum use as contemplated by Congress, without risk of harmful interference to broadcast operations.

IV. THE UNITED STATES SHOULD SUPPORT A “NO CHANGE” PROPOSAL ON ISSUE 9.1.1.

The United States should support maintaining existing protections without change for the 1980-2010 MHz and 2170-2200 MHz frequency ranges. Issue 9.1.1 requests ITU member feedback on possible technical and operational procedures to facilitate spectrum sharing between terrestrial and satellite IMT services in the 1980-2010 MHz and 2170-2200 MHz frequency ranges.²⁹ Some ITU-R members are seeking to expand the issue well beyond the scope of Issue 9.1.1 to include all MSS, including new Non-Geostationary Satellite Orbit (“NGSO”) systems that are not part of the satellite component of IMT. View A supports maintaining the existing

²⁶ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96, 126 Stat. 205, codified at 47 U.S.C. § 1413.

²⁷ See *Public Notice*, Attachment A, at 72.

²⁸ See ITU Radio Regulations, n.678 (1982), available at <http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/1.11.48.en.101.pdf>. See also *id.*, n.675 (providing co-primary allocations for fixed and mobile services in the 470-512 MHz and 614-806 MHz frequency ranges).

²⁹ See *Public Notice*, Attachment A, at 33.

protections without change, while View B proposes onerous power limits to protect these services.³⁰ CTIA recommends the FCC support View A, which would allow countries to support terrestrial and satellite IMT deployment without imposing unfair burdens on either service.

The United States should not support the View B approach, which would impact existing licenses and deployments in the Broadband PCS and Advanced Wireless Services (“AWS”) frequency ranges.³¹ For the past 10 years, satellite and terrestrial operators have coexisted in the 1980-2010 MHz and 2170-2200 MHz frequency ranges without undue burden, achieving compatibility when necessary through bilateral coordination. Proponents of View B have failed to justify the need to restrict terrestrial IMT output power, citing studies based upon “worst case . . . aggregate interference from IMT terrestrial base stations.”³² The Commission should base policies on risk-informed interference assessments, not unrealistic, worst-case scenarios.³³ Further, the proposed constraints would place the burden of interference protection entirely on terrestrial operations, rather than sharing the burden between satellite and terrestrial operations. For these reasons, the United States should support a “No Change” proposal on Agenda Item 9.1.1.

³⁰ See *id.*, Attachment A, at 34-47. View A is broadly supported by AT&T, Cisco Systems, Inc., CTIA, EchoStar Corporation, Dish Networks, Ericsson, GSMA, Intel Corporation, Jansky-Barmat Telecommunications Inc., Nokia, Samsung Electronics America, Sprint Corporation, Steptoe & Johnson LLP, T-Mobile, and Verizon.

³¹ This includes Broadband PCS operations in the 2180-2200 MHz band and AWS operations in the 1995-2000 MHz, 2155-2180 MHz, and 2180-2200 MHz bands.

³² See *Public Notice*, Attachment A, at 42.

³³ The FCC’s Technological Advisory Council (“TAC”), in its proposed basic spectrum management principles, made this very point: “The TAC recommends that . . . the Commission should not base its rules on exceptional events. . . . [I]t is essential to bring realism into modeling of coexistence scenarios.” *Office of Engineering and Technology Seeks Comment on Technological Advisory Council Spectrum Policy Recommendations*, Public Notice, 32 FCC Rcd 10160, 10162 (2017).

V. CONCLUSION

In order to ensure U.S. 5G leadership, the United States must pursue investment and spectrum policy reforms nationally, as well as advocate internationally for policies that will preserve flexibility while enabling global spectrum harmonization. Accordingly, CTIA encourages the Commission to identify the 37-43.5 GHz frequency range for IMT on a global basis for WRC-19 Agenda Item 1.13, and support “No Change” proposals for WRC-19 Agenda Items 8 and 9.1.1.

Respectfully Submitted,

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