April 22, 2016

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: **Ex Parte Presentation**, *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177; *Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-50 GHz Bands*, IB Docket No. 15-256; *Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band*, RM-11664; *Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101*, WT Docket No. 10-112; *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands, et al.*, IB Docket No. 97-95

On April 20 and 21, 2016, CTIA® and representatives from member companies met separately with FCC Bureau Staff and wireless legal advisors to Chairman Wheeler and Commissioners Clyburn, O'Rielly, and Rosenworcel to discuss the above-referenced proceedings. A list of meeting attendees is attached.

In the meetings, CTIA discussed how high-band spectrum will serve as an important complement to low- and mid-band spectrum and enable Internet of Things and 5G technologies. CTIA therefore reiterated its support for the Commission moving forward with licensing and technical rules for the 28, 37, 39, and 64-71 GHz bands this summer that will provide the certainty needed to encourage investment and foster innovation in these bands. CTIA also urged the Commission to explore additional high-band spectrum for mobile wireless use. More details regarding CTIA's positions are provided in the attached presentation. CTIA looks forward to working with the Commission and other stakeholders to craft a regulatory framework that unlocks millimeter wave high-band spectrum for innovative and flexible commercial uses.

Pursuant to Section 1.1206 of the Commission's rules, a copy of this letter and attachment is being filed in ECFS and emailed to the Commission participants. Please do not hesitate to contact the undersigned with any questions.

Sincerely,

/s/ Scott K. Bergmann
Vice President, Regulatory Affairs
CTIA®

April 20, 2016 Meeting Participants

Meeting with FCC Bureau Staff

Federal Communications Commission – Wireless Telecommunications Bureau
Simon Banyai (by phone)
Steve Buenzow (by phone)
Chris Helzer
Tim Hilfiger (by phone)
Charles Oliver
Matthew Pearl
Brian Regan
John Schauble
Catherine Schroeder (by phone)
Blaise Scinto
Nancy Zaczek

Federal Communications Commission – Office of Engineering and Technology
Bahman Badipour
Reza Biazaran (by phone)
Martin Doczkat
Larry Frazier
Michael Ha
Ira Keltz
Julius Knapp
Karen Rackley (by phone)
Serey Thai
Anh Wride (by phone)

Federal Communications Commission – Public Safety and Homeland Security Bureau
Gregory Intoccia
Ahmed Lahjouji

Federal Communications Commission – International Bureau
Jose Albuquerque
Kal Krautkramer (by phone)

CTIA®
Scott Bergmann, Vice President, Regulatory Affairs
Brian Josef, Assistant Vice President, Regulatory Affairs

Kara Romagnino, Director, Regulatory Affairs
Paul Anuszkiewicz, Vice President, Spectrum Planning

CTIA Member Companies
Stacey Black, AT&T
Mark Racek, Ericsson
Peter Pitsch, Intel
Jeffrey Marks, Nokia
John Kuzin, Qualcomm (by phone)
Rob Kubik, Samsung
Garrie Losee, Sprint
John Hunter, T-Mobile
Grant Spellmeyer, U.S. Cellular
Greg Romano, Verizon

Meeting with Office of Commissioner Clyburn

Federal Communications Commission
Daudeline Meme

CTIA®
Scott Bergmann, Vice President, Regulatory Affairs
Brian Josef, Assistant Vice President, Regulatory Affairs
Kara Romagnino, Director, Regulatory Affairs

Meeting with Office of Commissioner O'Rielly

Federal Communications Commission
Erin McGrath

CTIA®
Scott Bergmann, Vice President, Regulatory Affairs
Brian Josef, Assistant Vice President, Regulatory Affairs
Kara Romagnino, Director, Regulatory Affairs

April 21, 2016 Meeting Participants

Meeting with Office of Chairman Wheeler

Federal Communications Commission
Edward "Smitty" Smith

CTIA®
Scott Bergmann, Vice President, Regulatory Affairs
Brian Josef, Assistant Vice President, Regulatory Affairs
Kara Romagnino, Director, Regulatory Affairs

Meeting with Office of Commissioner Rosenworcel

Federal Communications Commission
Johanna Thomas

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Scott Bergmann, Vice President, Regulatory Affairs
Brian Josef, Assistant Vice President, Regulatory Affairs
Kara Romagnino, Director, Regulatory Affairs

Spectrum Frontiers NPRM

Presentation to the Federal Communications Commission

April 20, 2016

Overview

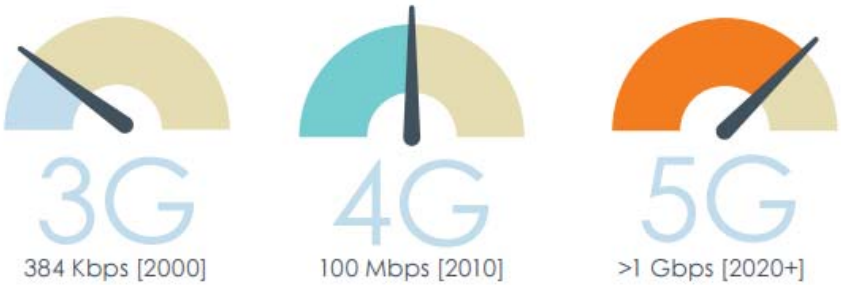
- America's Wireless Leadership
- 5G: The Next Generation of Wireless
- Unleashing 5G
- The FCC's High-Band Proceeding
  - Complete the proceeding this summer.
  - Make bands above 24 GHz available predominately on a licensed, exclusive-use basis.
  - Balance opportunities for licensed and unlicensed use.
  - Promote investment with clear service and licensing rules.
  - Protect existing high-band users without elevating existing licensees' rights.
  - Defer consideration on security concepts.

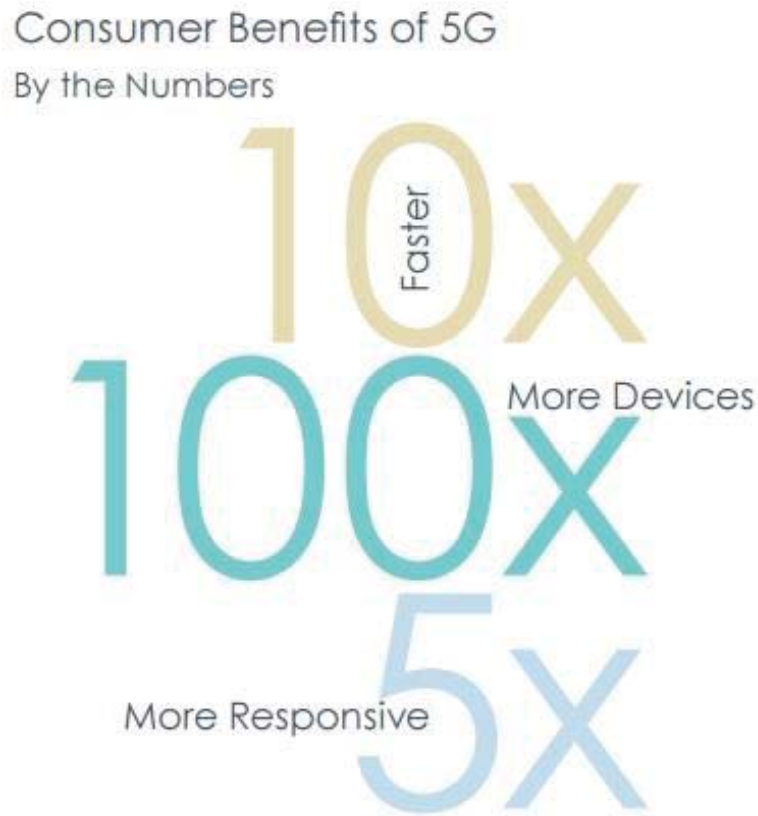
America's Wireless Leadership

- The U.S. wireless industry's leadership in 4G LTE generates >$400 billion in annual economic impact and supports >1.3 million jobs, not including other verticals.
- The U.S. was able to lead in 4G in large part because of our first-mover advantage thanks to critical spectrum auctions that fueled investment in 4G LTE networks.
- To continue to enjoy these economic benefits, the U.S. must extend its lead in 4G LTE to 5G.

5G: The Next Generation of Wireless

- 5G will:
  - Have speeds at least 10x faster than 4G;
  - Support 100x more devices; and
  - Be 5x more responsive.
- These next-generation wireless networks could add $2.7 trillion to the U.S. economy by 2030.





5G: The Next Generation of Wireless

- mHealth and Telemedicine
  - Remote health monitoring and virtual doctor visits will help Americans live longer and healthier while generating efficiencies and improvements in health care access and outcomes.
- Smart Cities
  - Wireless sensors and systems will enable smart energy grids, improve public safety, and reimagine public transportation and how we monitor our critical infrastructure.
- Virtual and Augmented Reality
  - Whether allowing a medical student to experience an operation from a surgeon's perspective or training police officers, VR/AR will transform education and entertainment options.

Unleashing 5G

- CTIA supports the Commission's efforts to allocate additional spectrum for mobile broadband services.
- The Commission's examination of bands above 24 GHz should be part of a holistic examination of high-, mid -, and low-band spectrum for mobile use.
  - High-band spectrum is complementary to spectrum below 3 GHz.
  - Low- and mid-band spectrum have better propagation characteristics and, for the foreseeable future, will be more advantageous for macro network coverage and capacity.
- Streamlined siting policies are also necessary to support spectrum deployments.
  - Higher frequencies mean more infrastructure – carriers will need to deploy thousands of small cells to take advantage of the new spectrum to provide users with service.

Adopt High-Band Order This Summer

- The FCC should expeditiously complete its Spectrum Frontiers proceeding.
  - The FCC should rapidly make available high-band spectrum in the 28 GHz, 37 GHz, 39 GHz, and 64-71 GHz bands.
  - All five FCC Commissioners on a bipartisan basis support the effort started last year, and Chairman Wheeler said the FCC "plan[s] to act on the Spectrum Frontiers proceeding this summer."
- U.S. wireless companies are beginning 5G trials this year, and timely access to high-band spectrum is a critical input.
  - High-band spectrum blocks of 200 megahertz or more can provide operators with the ability to carry significantly more traffic and higher resolution traffic.

Flexible, Exclusive Use Licensing Will Promote 5G Innovation

- The FCC should make bands above 24 GHz available predominantly on a licensed, exclusive-use basis.
  - Exclusive use, flexible licensing policies have been extremely successful when applied in other bands.
  - The successful exclusive-use, flexible licensing framework will be particularly important in promoting investment in nascent 5G technologies.
    - Certainty associated with exclusive spectrum rights allows players in the emerging 5G ecosystem to more confidently invest in network infrastructure, end-user devices, and other technologies for use in the millimeter wave bands.
  - The NPRM's proposed licensing framework for the 28 and 39 GHz bands is consistent with these principles.
    - The Upper Microwave Flexible Use Service will promote innovation and investment in the 28 and 39 GHz bands, and the Commission's proposed licensing rules will balance the needs of incumbent and new licensees and promote seamless deployment of new services.
  - This framework should be applied to the 37 GHz band.
    - The "hybrid" approach proposed for this band is unnecessarily complicated and inefficient and would undermine investment in the 37 GHz band.

Establish Opportunities for Both Licensed and Unlicensed Use

- The FCC should balance opportunities for licensed and unlicensed use by bifurcating the 64-71 GHz band.
  - CTIA is a strong supporter of unlicensed spectrum and supports adoption of a nine gigahertz unlicensed block for the 57-66 GHz band.
    - Under this division of spectrum, the 64-66 GHz band can be combined with the 57-64 GHz band to create a 9-gigahertz contiguous unlicensed band.
  - CTIA supports adoption of a five gigahertz licensed block for the 66-71 GHz band.
    - Making the 66-71 GHz band available for licensed services would be consistent with the Commission's policy – reiterated in this proceeding – of promoting international harmonization of spectrum.
    - There is a substantial likelihood that the 66-71 GHz band could be a true global band for licensed services, something that would greatly enhance the scale and scope brought to bear for deployment and innovation in the band.
  - This more equitable distribution of millimeter wave spectrum is consistent with international efforts and balances the amount of spectrum accessible for both unlicensed and licensed purposes.

Licensing Framework Should Promote Investment

- The FCC should promote investment with clear service and licensing rules, including by:
  - Avoiding experimental sharing or other non-exclusive, untested access arrangements;
  - Building upon the successful rules governing mobile services in Part 27 for the 28, 37, and 39 GHz bands;
  - Adopting 200 megahertz or larger channels in the 28, 37, and 39 GHz bands and 500 megahertz channels in the 66-71 GHz band;
  - Providing significant license terms (*i.e.*, 10 years) with renewal expectancies in the 28, 37, 39 and 66-71 GHz bands; and
  - Subjecting millimeter wave band spectrum to reasonable performance requirements that approximately reflect the far more limited coverage of high-band spectrum (*i.e.*, substantial service requirements with safe harbors).

Establish Reasonable Frameworks for Protecting Incumbents

- The FCC should protect existing high-band users.
  - The Commission's rules should continue to protect primary wireless, satellite, and federal incumbents from harmful interference caused by new millimeter wave services.
    - Indeed, the wireless industry has a strong track record (*e.g.*, AWS-1 and AWS-3) of working collaboratively with incumbents to address reasonable protections.
- However, the Commission should not elevate the protection status for any party. Specifically, the Commission:
  - *Should not* bestow upon secondary services any new rights that would undermine the development of the millimeter wave spectrum for mobile broadband, unless and until other consensus frameworks are developed.
  - *Should not* require primary millimeter wave licensees to provide granular information regarding their network deployments for purposes of enabling secondary access.
  - *Should not* create coordination zones surrounding federal facilities that are larger than necessary.

Address Security Issues in Other Relevant Fora

- The FCC should defer consideration of security requirements at the service rule level.
  - Wireless network security has been and continues to be a priority for the wireless industry.
  - The Commission's questions regarding security protocols for millimeter wave spectrum, while important, are best considered in a separate forum where they can be considered more holistically.
  - The Commission should instead focus on developing licensing and service rules for millimeter wave spectrum in this proceeding.

Next Steps in High-Band Proceeding

- The FCC should continue to look for opportunities to make additional high-band spectrum available.
  - The Commission should consider additional high-band spectrum opportunities even if they do not meet all of the criteria suggested by the Commission for selecting spectrum bands for initial consideration.
  - In the future, bands with less than 500 megahertz of contiguous spectrum or bands that are not uniformly internationally harmonized may nonetheless prove to be ideally suited for 5G services.
  - Similarly, if a candidate spectrum band is well-suited for mobile services in all other respects, international harmonization should not serve as a barrier to deployment of such a band.

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