

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

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| In the Matter of |) | |
| |) | |
| Use of Spectrum Bands |) | |
| Above 24 GHz for Mobile |) | GN Docket No. 14-177 |
| Radio Service |) | |

COMMENTS OF THE INFORMATION TECHNOLOGY INDUSTRY COUNCIL

The Information Technology Industry Council (ITI) hereby submits its comments in response to the Notice of Proposed Rulemaking in the above-captioned proceeding.¹

Introduction and Background

ITI commends the Commission for moving in a timely manner to forge a leadership path for the United States on fifth generation mobile services (5G), and increase access to spectrum for innovative licensed and unlicensed spectrum designations above 24 GHz in this NPRM. By moving expeditiously, the Commission will promote investment, development, and deployment of 5G mobile services and other uses of these millimeter-wave (“mmW”) frequencies for wireless connectivity.

ITI represents 64 of the nation’s leading information and communications technology companies.² ITI is the voice of the high-tech community, advocating for

¹ Use of Spectrum Bands above 24 GHz for Mobile Radio Services, GN Docket No. 14-177, Notice of Proposed Rulemaking, FCC 15-138 (October 23, 2015)(“mmW NPRM”).

² For more information on ITI, including a list of its member companies, please visit: <http://www.itic.org/about/member-companies.dot>.

policies that advance U.S. leadership in technology, promote innovation, open access to new and emerging markets, protect and enhance consumer choice, and foster increased global competition. ITI's member companies include wireless and wireline network equipment providers, computer hardware and software companies, mobile computing and communications device manufactures, Internet and digital service providers, and network security providers. As such, ITI's member companies are at the forefront of developing next-generation wireless communications equipment, infrastructure, networks, and services, along with the content, applications and new uses that will be enhanced as mobile service evolves and advances.

At this time, 5G is still nascent; it would be better described as a set of capabilities³ rather than a clearly defined technology as standards have not been formalized. That said, countries are pressing ahead with investments and limited deployments of 5G. The government of South Korea has invested more than \$1.5 billion to deploy 5G in a limited manner by 2017.⁴ Similarly, the Japanese government, specifically the Ministry of Communications, is partnering with its domestic industry to make 5G a reality by 2020. Moving expeditiously with this rulemaking will promote continued U.S. leadership in mobile communications by providing certainty for researchers and reducing risk for private sector investment. Completing work on this

³ These capabilities include, but are not limited to, significantly reduced latency, increased data rates in densely populated areas, and ability to satisfy demand for an exponential number of connected devices.

⁴ See *South Korea spending \$1.5 billion for '5G' network*, CNN, <http://www.cnn.com/2014/01/22/tech/mobile/south-korea-5g/index.html>.

NPRM by 2016, which Chairman Wheeler notably stated⁵ is his intention, would provide certainty for investment and further development by these companies.

ITI equally supports the NPRM's recognition of the need for greater access to unlicensed spectrum in the mmW frequencies. A mix of flexible use licensed and unlicensed spectrum above 24 GHz will maintain the balance that has powered the wireless revolution to date. The Commission has often noted both the complementary role unlicensed spectrum can play to licensed spectrum, as well as the important economic impacts it provides.⁶

The overarching reason ITI urges the Commission to move forward expeditiously is the explosive consumer demand for wireless Internet service and connectivity. The drivers of this demand include increased mobile device penetration among the U.S. public, greater reliance on wireless devices as primary sources of connectivity, greater consumption of digital content and video, and growth in the overall number of connected devices related to the Internet of Things ("IoT"), just to name a few. Globally, mobile data traffic grew 65% between Q3 2014 and Q3 2015, not including Wi-Fi.⁷ However, more than half of mobile data traffic will be off-loaded to the fixed network via Wi-Fi in 2016, further reinforcing the need for a mix of spectrum to be made available to address

⁵ Testimony of Chairman Tom Wheeler at House E&C Subcommittee on Communications and Technology FCC Oversight Hearing (Nov. 17, 2015), Initial Transcript at 89, <http://docs.house.gov/meetings/IF/IF16/20151117/104195/HHRG-114-IF16-Transcript-20151117.pdf>

⁶ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd. 6567, ¶ 271 (2014).

⁷ See *Ericsson Mobility Report*, page 11, November 2015. <http://www.ericsson.com/res/docs/2015/mobility-report/ericsson-mobility-report-nov-2015.pdf>

this demand.⁸ Demand and uptake for 5G subscriptions is actually expected to outpace what was seen for 4G, with the United States, Japan, South Korea, and China having the fastest uptake.⁹ The trends are clear, and 5G, increased unlicensed connectivity, and other communications advancements in the mmW bands will be needed to address this demand, along with access to more spectrum well below and up to 24 GHz.

The Commission Should Grant Flexible Licenses in the 28 and 39 GHz Bands

ITI fully supports licensing the 27.5-28.35 (“28”) GHz band, as well as the 38.6-40 (“39”) GHz band, both of which were proposed for mobile service in the NPRM.¹⁰ As noted in the NPRM, there is significant support for licensed mobile use at 28 GHz¹¹, and 39 GHz.¹² The Commission should proceed by providing flexibility to existing fixed licensee incumbents at 28 GHz, and auction the unused portions of the 28 and 39 GHz bands. The Commission should do this by moving forward with the creation of the Upper Microwave Flexible Use Service (“UMFUS”), allowing new terrestrial licensees flexible use for both fixed and mobile operations. Given the infancy of 5G, licenses issued for large geographic areas, on a long-term basis, with minimal performance requirements will promote experimentation, innovation, and flexibility in these bands.

⁸ See *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2014-2019 White Paper* (Executive Summary), February 3, 2015.

http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html

⁹ *Ericsson Mobility Report*, page 6.

¹⁰ mmW NPRM, ¶ 30, 42.

¹¹ mmW NPRM, ¶ 28.

¹² mmW NPRM, ¶ 39.

The Commission Should Grant Licenses for the 37 GHz Band

ITI supports innovative uses of spectrum to promote innovation, but also want to see spectrum put to efficient use. ITI believes the proposed hybrid approach, in which there would be segregated bands with differing rules for “indoor” and “outdoor” use, could create confusion, lead to inefficient spectrum use, or result in general disinterest in fully utilizing this spectrum. ITI believes the 37 GHz spectrum should be licensed in a similar fashion to 28 GHz and 39 GHz.

The Commission Should Support Unlicensed Use of 64-71 GHz Spectrum

ITI supports unlicensed designation for Part 15 use of the 64-71 GHz band. Being adjacent to the 57-64 GHz band, which is currently designated for Part 15 use, will provide a significant, contiguous block of mmW spectrum that will facilitate innovation and help meet consumer demand. ITI agrees with the Commission’s conclusions that permitting unlicensed operation in this band will help meet consumer demand for unlicensed spectrum that can deliver high data rates and low latency.¹³

The Commission Should Adopt Its Proposed Market-based Mechanism to Accommodate FSS Use

Existing or new Fixed Satellite (FSS) use could interfere with the proposed 5G (UMFUS) use of these frequencies. In particular, the Commission proposes to accommodate secondary FSS earth station use of the 27.5-28.35 GHz band using “a mechanism under which satellite earth stations could acquire co-primary status where

¹³ mmW NPRM, ¶ 58.

their owners believe that such a level of protection is necessary.”¹⁴ ITI supports this proposal.

Automatically granting FSS operations co-primary status could impede the development of a terrestrial mobile service in this band.¹⁵ Instead, the Commission proposes to permit FSS operators to acquire terrestrial licenses by “participating in Commission auctions or by purchasing them from existing Upper Microwave Flexible Use licensees.”¹⁶ In this way, the FSS licensee would have the “right to exclude other users from the geographic area of the license.”¹⁷ As the Commission recognizes, this mechanism--by allowing voluntary sharing or partitioning between the relevant parties--would facilitate “the highest and best use of the spectrum in a given area.”¹⁸ ITI believes that, in balancing the competing interests of FSS and terrestrial wireless interests, the Commission should rely on such market-based negotiations as opposed to any of the technical approaches on which the Commission also seeks comment.

The Commission Should Allocate Additional Bands Below 28 GHz and above 71 GHz for Broadband Connectivity

ITI applauds the Commission’s work on the current NPRM, as finalizing rules for mmW frequencies will mark a significant step toward the next generation of wireless. As noted above the consumer demand for mobile connectivity is unprecedented, and will require making spectrum of all types available to meet that

¹⁴ mmW NPRM ¶129.

¹⁵ mmW NPRM ¶130.

¹⁶ mmW NPRM ¶132.

¹⁷ mmW NPRM ¶132.

¹⁸ mmW NPRM ¶133.

demand. ITI believes there is more spectrum the Commission should make available, and urge further proceedings between 6 GHz and 24 GHz, and above, to identify additional spectrum for broadband. In addition to facilitating 5G investment and development, there are other innovative opportunities that a mix of licensed, lightly licensed, and unlicensed will bring. For instance, in these higher frequency bands, lightly licensed or unlicensed spectrum could support backhaul, supplemental capacity for wide-area mobile networks, unlicensed wireless cable replacement, and aerial broadband.

In particular, 24.25-27.5 was identified at the 15th World Radiocommunications Conference as worthy of study for 5G and for broadband delivery via aerial platforms. The Commission noted in the NPRM that this band may warrant additional consideration, and we would urge the Commission to do so--whether for traditional terrestrial services or other innovative wireless services.¹⁹ Additionally, as the FCC explores spectrum above 71 GHz, the Commission should look closely at extending the 64-71 GHz band to include 71-72.5 GHz. Expanding the current 64-71GHz band to 72.5 GHz may allow an additional channel to fit in that band and make better use of the top of the 64-71 GHz band.

¹⁹ mmW NPRM ¶66

Conclusion

ITI urges the Commission to move forward with a mix of licensed and unlicensed spectrum as outlined in the comments above. The balanced approach recognizes the need for licensed spectrum to meet the demands and significant investment considerations of deploying wide-area networks, while providing opportunity for a large contiguous block of unlicensed that will complement licensed services and further promote innovation. We commend the Commission for moving forward quickly to promote U.S. leadership in the mmW frequencies, and provide regulatory clarity that will encourage investment by ITI's member companies.

Respectfully,

A handwritten signature in black ink that reads "J. Vince Jesaitis". The signature is written in a cursive, flowing style.

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January 27, 2016