May 17, 2021

BY ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

Re: Unlicensed Use of the 6 GHz Band, ET Docket No. 18-295; Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz, GN Docket No. 17-183

Dear Ms. Dortch:

On May 13, 2021, representatives from Apple Inc., Broadcom Inc., Facebook, Inc., Google LLC, and Qualcomm Incorporated met by video conference with Danielle Thumann, Legal Advisor to Commissioner Carr, and discussed the attached presentation. I have attached a complete list of industry participants.

Pursuant to the FCC’s rules, I have filed a copy of this notice electronically in the above referenced dockets. If you require any additional information, please contact the undersigned.

Sincerely,

Paul Margie
Counsel to Apple Inc., Broadcom Inc., Facebook, Inc., and Google LLC

cc: meeting participants
MEETING ATTENDEES

Dan Mansergh, Apple Inc.
Chris Szymanski, Broadcom Inc.
Alan Norman, Facebook, Inc.
Megan Stull, Google LLC
John Kuzin, Qualcomm Incorporated
Paul Margie, Harris, Wiltshire & Grannis LLP
Jason Neal, Harris, Wiltshire & Grannis LLP
The 6 GHz band: Enabling the next wave of unlicensed innovation

May 13, 2021
6 USC Engineering Group

Apple
Broadcom
Cisco
Facebook
Google
Hewlett Packard Enterprise
Intel
Microsoft
Qualcomm
Overview

• **We strongly support the FCC’s 6 GHz decision**
  - The order adopted carefully considered rules that will protect incumbents while permitting innovation in fixed unlicensed equipment and operations

• The next step is to meet consumers’ expectation for mobility and portability through the pending Public Notice and FNPRM
  - Client-to-client (C2C)
  - Very-low-power (VLP)
  - Mobile AFC

• This comprehensive framework will support the innovation and investment needed to meet consumer and enterprise demand
Wi-Fi is an economic powerhouse

- Wi-Fi is projected to contribute nearly $1 trillion to the U.S. economy in 2021
  - $3.3 trillion contributed globally in 2021

- That contribution will grow to $1.58 trillion by 2025
  - $4.9 trillion global contribution by 2025

- Wi-Fi 6 and 6 GHz devices are significant contributors to this expected growth
Demand for Wi-Fi is exploding

- **Unlicensed bands are the workhorses of the wireless economy**
  - Unlicensed bands carry half of all internet traffic in the U.S., a figure that is growing each year
  - LTE offload to unlicensed will increase with 5G, from 54% of traffic in 2017 to 59% by 2022
  - Unlicensed is the onramp to broadband for American homes, enterprise wireless, rural communities, schools, healthcare facilities, and more
  - Unlicensed spectrum is also the backbone for new IoT networks
  - Key economic sectors—manufacturing, logistics, and research—depend on Wi-Fi for business processes and internal connections

- **But Quotient and Qualcomm studies have demonstrated an enormous unlicensed spectrum shortfall in the mid-band**

- **The 6 GHz band is central to addressing this pressing need**
FCC leadership has sparked global activity

Of the top 20 economies in the world, fully half have opened, or are in the process of opening, the 6 GHz band to unlicensed use—the US, Japan, Germany, UK, France, Canada, South Korea, Brazil, Mexico, and Saudi Arabia.

In Europe, the CEPT decision opening 6 GHz is expected to become European law in March 2021 and will shortly be followed by country-specific implementations.

**Americas**
The vast majority of countries in the Americas—85.7% of the populations of North and South America, and 90.6% of its GDP—have adopted rules or initiated consultations to open the 6 GHz band to unlicensed use.

Canada, Brazil, Mexico, Colombia, Chile, Peru, Argentina, Honduras, Costa Rica, Guatemala

**Europe/Mideast/Africa**
- European Union (27 countries)
- CEPT (48 countries)
- United Kingdom
- Saudi Arabia
- UAE
- Jordan
- Qatar (consultations pending)
- Oman (consultations pending)
- Egypt (trials)

**Asia/Australia**
- South Korea
- Japan (consultations pending)
- Taiwan (consultations pending)
- Australia (consultations pending)
The FCC’s existing framework

• The Commission’s order permits unlicensed use in 6 GHz based on the successful and time-tested U-NII rules

• The rules authorize categories of unlicensed devices in four sub-bands:
  • 5.925-6.425 GHz (U-NII-5)
  • 6.425-6.525 GHz (U-NII-6)
  • 6.525-6.875 GHz (U-NII-7)
  • 6.875-7.125 GHz (U-NII-8)

• Within these bands, the rules authorize two classes of fixed access points:
  • Low-power devices operating only indoors (LPI)
  • Standard-power devices operating under Automatic Frequency Coordination (AFC)

• The order represents the Commission’s hard work and thoughtful consideration of stakeholder information and technical analyses submitted in response to the Mid-Band NOI
Next step: Meeting consumer demand for mobility

• **Client-to-client (C2C)**
  - Proposal to permit client devices to talk directly to each other
  - Illustrative use cases: healthcare facilities, teacher-to-student content sharing in classrooms, highly immersive indoor VR, screen casting, worker training, smart home, gaming.

• **Very Low Power (VLP)**
  - Proposal to permit devices operating 160 times lower power than today’s Wi-Fi to operate indoors or outdoors without AFC
  - Illustrative use cases: AR/VR, wearable peripherals, audio/video transfer, automotive.

• **Mobile AFC**
  - Proposal to permit mobile as well as fixed AFC-controlled devices
  - Illustrative use cases: Mass transit connectivity, ports, mining, distribution centers.