

August 23, 2018

BY ELECTRONIC FILING

Marlene Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: *Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz*,
GN Docket No. 17-183

Dear Ms. Dortch:

On July 31, 2018, representatives from Apple Inc., Broadcom Inc., Cisco Systems, Inc., Facebook, Inc., Google LLC, Hewlett Packard Enterprise, Intel Corporation, Marvell Technology Group, Microsoft Corporation, Qualcomm Incorporated, and Ruckus Networks, an ARRIS Company met with staff from the Commission's Office of Engineering and Technology, Wireless Telecommunications Bureau, and International Bureau to discuss protections for fixed-service incumbents in the 6 GHz band. The attached chart further details that proposal by comparing the automated frequency coordination mechanism discussed in that meeting with sharing mechanisms the FCC has adopted for other bands.

Sincerely,

Apple Inc.
Broadcom Inc.
Cisco Systems, Inc.
Facebook, Inc.
Google LLC
Hewlett Packard Enterprise
Intel Corporation
Marvell Technology Group
Microsoft Corporation
Qualcomm Incorporated
Ruckus Networks, an ARRIS Company

Enclosures

Comparison of 6 GHz AFC with TVWS & CBRN Spectrum Management Database Systems

	6 GHz U-NII Automated Frequency Coordination (AFC)	White Spaces Database (WSDB)	Citizens Broadband Radio Service Spectrum Access System (SAS)
Protected incumbents	<ul style="list-style-type: none"> Fixed microwave links Fixed-satellite earth stations Mobile ENG & public safety Radio astronomy 	<ul style="list-style-type: none"> Over-the-air TV receivers Wireless microphones WMTS and radio astronomy (in channel 37), public safety, others 	<ul style="list-style-type: none"> Federal users Fixed-satellite earth stations Grandfathered Part 90 devices
Key technical challenge(s)	Protect known fixed receivers & very small number of mobile receivers in U-NII-6 & U-NII-8 two sub-bands	Protect millions of unknown fixed & mobile receivers	Protect mobile federal naval radars & limit aggregate interference to protected users
Aggregate interference management	No (stateless)	No (stateless)	Yes (stateful)
Database peer synchronization	No <i>(incumbent content obtained from ULS and AFC Registrar)</i>	Yes <i>(incumbent content only; no RF state)</i>	Yes
Principal protection criteria	I/N (dB)	Angular distance (KM @ θ) or I/N (dB)	I (dBm)
Channel & power selection	By access point <i>(AFC provides available channel list)</i>	By access point <i>(WSDB provides available channel list)</i>	Constraints based on SAS calculations
Admission control	Access points only	Access points & clients	CBSDs only
Master Geolocation accuracy requirement	Flexible based on geolocation uncertainty with a confidence level of 95% of the device capability	Flexible based on 95 th %ile device capabilities	± 50 meters horizontal and ± 3 meters elevation
Client network discovery	Non-service transmissions for network discovery are permitted	Pre-association admission control (e.g. “enablement”) required	Under continuous control of authorized CBSD