

August 31, 2018

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

**Encina Communications Corporation
Reply Comments Regarding GN Docket No. 17-183, Expanding Flexible
Use in Mid-Band Spectrum Between 3.7 and 24 GHz**

Dear Ms. Dortch:

Encina Communications Corporation (“ECC”) hereby respectfully submits these reply comments to the filings of Harris, Wiltshire & Grannis on behalf of Apple Inc, Broadcom Inc, Cisco Systems Inc, Facebook Inc, Google LLC, Hewlett Packard Enterprise, Intel Corporation, Marvell Technology Group, Microsoft Corporation and Qualcomm Incorporated (collectively “RLAN”), and also to the filings of AT&T, Verizon, the Fixed Wireless Communications Coalition (FWCC), the National Spectrum Managers Association (NSMA) and Wireless Applications Corporation (WAC).

I. REPLY COMMENTS

On January 26, 2018, RLAN proposed¹ that unlicensed Wi-Fi operations could be overlaid on the 5.925 GHz – 6.425 GHz (“6 GHz”) frequency band and submitted a report by RKF Engineering Services, LLC purporting to demonstrate that Radio Local Area Networks (“RLANs”) can share with Fixed Microwave Service (“FS”) systems with only negligible interference to the FS licensees.

ECC is in complete agreement with the filings of AT&T², Verizon³, FWCC⁴, NSMA⁵ and WAC⁶ re the fact that an overlay of unlicensed networks on the 6 GHz band would be disastrous. While RLAN filed an improved proposal on August 2, 2018⁷ which moves toward a frequency-coordinated approach, it erroneously focuses on Wi-Fi instead of the exclusivity of Part 101. We disagree with their filing in that: (1) Automated frequency coordination, like the autonomous car, is not ready for commercial deployment. (2) We disagree that U-NII-3 technical rules should be used as the baseline for interference mitigation because operation

¹ Docket 17-183 ex parte filing of January 26, 2018

² Docket 17-183 ex parte filing of March 26, 2018

³ Docket 17-183 ex parte filing of June 8, 2018

⁴ Docket 17-183 ex parte filing of June 8, 2018

⁵ Docket 17-183 ex parte filing of March 27, 2018

⁶ Docket 17-183 ex parte filing of May 11, 2018

⁷ Docket 17-183 ex parte filing of August 2, 2018

under Part 101 rules is on an exclusive-use basis. For operation in Part 101 licensed frequency bands Wi-Fi devices must abide by the rules of Part 101.

II. OVERVIEW

The problem with the RLAN approach is that they propose to deploy unlicensed Wi-Fi access points and clients in exclusive-use Part 101 spectrum, which results in almost insurmountable complexity in trying to mitigate interference. The solution is to "put a stake in the ground" by licensing access points and mobile base stations under Part 101 rules -- then referencing the unlicensed clients to the base station's rules of operation (see details below).

III. BACKGROUND

For decades Part 101 rules and protocols have been used to ensure that new applicants in Part 101 frequency bands have exclusive use of their licensed frequencies, therefore any proposal for flexible use in the 6 GHz band must not only ensure that existing licensees maintain their exclusive-use status (Rule 101.103) but must ensure that the solution does not block new Part 101 applicant paths.

IV. FUNDAMENTALS

A. Stations that Support Unlicensed Devices (Mobile, Nomadic or Fixed)

To be licensed in a Part 101 band, a mobile base station or Wi-Fi access point must show via a prior coordination procedure (Rule 101.103) that they would not cause harmful interference to any existing licensed station. Because a mobile base station or Wi-Fi access point is fixed, the prior coordination procedures of Rule 101.103 would be unchanged in our proposal.

B. Unlicensed Devices (Mobile, Nomadic or Fixed)

Unlicensed devices can be safely operated around a licensed base station or access point provided the interference from any unlicensed device -- operating from a licensed station and arriving at another licensed station (existing or new application) -- is less than the interference from the unlicensed device's licensed base station or access point. To do this the spectrum manager performing the interference analysis for the new applicant base station/access point must also show that the interference into existing licensed stations and other new applicant stations from the mobile/nomadic devices is less than the interference from the new applicant station/access point.

C. Peer Review

Before an applicant can apply for a license for a station that supports mobile, nomadic and/or fixed unlicensed devices the applicant must, pursuant to Rule 101.103, have clearance from existing licensees and new applicant spectrum managers.

V. PROPOSED NEW RULE REQUIREMENTS

A. Stations that Support Mobile, Nomadic and/or Fixed Unlicensed Client Devices

Stations that support mobile, nomadic and/or fixed unlicensed client devices must comply with all the applicable parts of Rule 101, and in addition must:

- (a) Limit the EIRP to a maximum of 50 dBm.
- (b) Transmit its operating protocol (3GPP, 802.11 or proprietary).
- (c) Transmit its latitude, longitude and elevation AMSL.
- (d) Transmit the maximum distance (2 kilometers or less) the client devices can be from the base station.

B. Unlicensed Client Devices

Client devices must comply with all the applicable parts of Rule 101, and in addition must:

- (a) Have a maximum EIRP of 27 dBm.
- (b) Listen before talk.
- (c) Only transmit after:
 - (1) it identifies a licensed station with which it has the capability to communicate
 - (2) its distance from the fixed station and altitude are compliant with the requirements given by the licensed station.

VI. PROPOSED RULE CHANGES

1. **Rule 101.143** – Change the EIRP below the minimum path length specified in Rule 101.143 from a formula to a maximum of 50 dBm (which makes it possible to operate at all distances below the minimum path length).
2. **Rule 101.115(a)** – *“~~Unless otherwise authorized upon specific request by the applicant, each s~~ Stations authorized under the rules of this part must employ a directional antenna adjusted with the center of the major lobe of radiation in the horizontal plane directed toward the receiving station with which it communicates: provided, however, where a station communicates with more than one point, a multi- or omni-directional antenna ~~may be is~~ authorized ~~if necessary~~. New Periscope antenna systems will not, under ordinary circumstances, be authorized.”* (This eliminates unnecessary delay after successful prior coordination, dramatically lowers monthly recurring antenna lease charges, and blocks far fewer new applicants.)

VII. CONCLUSION

With only one new Part 101 rule and two Part 101 rule changes, increases in spectrum efficiency will make possible safe Expanded Flexible Use of spectrum in the 6 GHz band, with bandwidths up to 120 MHz and with only minimal changes to equipment hardware and application software, and to 3GPP and 802.11 standards.

With these changes the Commission will take a giant step toward solving the critical demand for spectrum for 4G/5G small cells and Wi-Fi, and do so without disrupting Fixed Satellite and Fixed Microwave Services.

Respectfully submitted.

Michael Mulcay, Chairman & CTO
Encina Communications Corporation
6701 Democracy Boulevard, Suite 300
Bethesda, MD 201817

Courtesy copies to:

Ajit Pai, Chairman, ajit.pai@fcc.gov
Michael O'Rielly, Commissioner, mike.orielly@fcc.gov
Brendan Carr, Commissioner, brenden.carr@fcc.gov
Jessica Rosenworcel, Commissioner, jessica.rosenworcel@fcc.gov
Rachael Bender, Wireless Advisor to Chairman Pai, rachael.bender@fcc.gov
Erin McGrath, Wireless Advisor to Commissioner O'Rielly, erin.mcgrath@fcc.gov
Will Adams, Wireless Advisor to Commissioner Carr, will.adams@fcc.gov
Umair Javed, Wireless Advisor to Commissioner Rosenworcel, umair.javed@fcc.gov
Julius P. Knapp, Chief OET, julius.knapp@fcc.gov
Donald Stockdale, Chief WTB, donald.stockdale@fcc.gov