



March 21, 2017

Ex Parte

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

Re: *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354*
Preservation of One Vacant Channel in the UHF Television Band for Use by White Space Devices and Wireless Microphones, MB Docket No. 15-146
Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band, ET Docket No. 13-49
Fixed Wireless Communications Coalition Request for Modified Coordination Procedures in Bands Shared Between the Fixed Service and the Fixed Satellite Service, RM No. 11778
Use of Spectrum Bands Above 24 GHz for Mobile Radio Service, GN Docket No. 14-177

Dear Ms. Dortch:

On March 16, 2017 Michael Calabrese, director of the Wireless Future Program at New America's Open Technology Institute (OTI), met with Erin McGrath, Wireless Legal Advisor to Commissioner Michael O'Rielly, regarding the above-listed proceedings.

Concerning the **3.5 GHz Citizens Broadband Radio Service**, I suggested that the Commission not reopen the rules concerning the geographic size, renewability or duration of Priority Access Licenses. Revisiting such basic aspects of the Order, which was adopted on a 5-0 vote nearly three years ago (with Recons on this same issue resolved nearly a year ago), would create uncertainty and tremendous delay on a historic policy innovation to promote spectrum sharing and access for a wide array of users and uses. The multi-stakeholder WinnForum process – as well as the multi-industry CBRS Alliance – are close to facilitating implementation that already includes active participation by the two largest mobile carriers, WISPA and other providers. The Commission should stay the course and test whether this more dynamic and small cell approach to spectrum band sharing spurs deployment and innovation, as expected.

Concerning **the Vacant Channel NPRM**, I reiterated the strong support of the Public Interest Spectrum Coalition (PISC) for the Commission's still-pending proposal to preserve at least one vacant television channel in every market nationwide for unlicensed use. An early Commission decision is needed to relieve the longstanding uncertainty about whether a minimum of at least three channels of unlicensed spectrum in the ongoing TV band will continue to be available for public use and private investment after the incentive auction.

Leading chipmakers and other tech industry stakeholders have steadfastly maintained that the post-auction band plan and repacking policies must ensure at least three channels of 6 megahertz of unlicensed access in every market nationwide, especially in the most populated metro markets, to enable many emerging unlicensed use cases and the economic. Otherwise, the social benefits that derive from low-band unlicensed spectrum access for broadband could be lost despite the already enormous investments of time and capital. Once there is certainty of sufficient unlicensed spectrum access nationwide, important benefits including lower barriers of entry for competition and innovation, and broad adoption of the already-developed 802.11af standard for Wi-Fi connectivity and machine-to-machine applications (such as remote sensing and monitoring) could thrive with access to spectrum with low-band propagation characteristics.

Concerning the Commission's ongoing proceeding to make next generation Wi-Fi possible by authorizing shared use of **the proposed U-NII-4 band at 5.9 GHz** with the auto industry, I suggested that Commissioner Clyburn endorse re-channelization of the band based on a clear separation between the two or three DSRC channels that are necessary for public safety and the remainder of the band (40 or 45 megahertz) that can readily be shared with low-power unlicensed operations, enabling gigabit Wi-Fi. OTI believes that segmenting the band – with exclusive public safety use at the top and shared commercial access on a co-equal basis below – is the only win-win outcome for consumers and the economy as a whole.

Concerning **the Fixed Wireless Communications Coalition (FWCC) petition**, OTI filed comments supporting the FWCC's proposal to open a rulemaking to consider how best to expand shared access and productive use of these grossly underutilized bands. OTI does not, however, endorse the specific rule changes proposed by FWCC, at least not as they would apply to the 3700 – 4200 MHz and 5925 – 6425 MHz bands. Both the downlink and uplink portions of the C-Band are grossly underutilized and could – given current dynamic spectrum sharing techniques – support extremely valuable, low-power fixed wireless and unlicensed use. FSS operators have no economic incentive to share spectrum, to use it efficiently, or even to inform the Commission if their licensed sites are no longer in use.

OTI recommends the Commission adopt a NPRM that proposes to authorize shared use of both C-Band segments, including a modernization of the Part 101 rules to facilitate point-to-multipoint fixed wireless use of 3.7-4.2 GHz and unlicensed access under Part 15 in the uplink C-Band (5925 – 6425 MHz) that is immediately adjacent to the U-NII-3 and proposed U-NII-4 unlicensed bands. The 6 GHz band may be the best opportunity to meet the exploding demand for high-capacity Wi-Fi using the mid-band spectrum most useful for Wi-Fi offload and other innovation. There is also an opportunity at present for global harmonization, since the European Commission's Electronic Communications Committee (ECC) recently initiated a study aimed at opening this same spectrum for unlicensed use.

With respect to expanding shared access to the 3.7-4.2 GHz band for fixed wireless services, the time is ripe for the Commission to enable intensive terrestrial use of vacant mid-band spectrum to promote the nation's affordable broadband goals. The 3700 – 4200 MHz band could potentially substitute for trenching wireline fiber to many homes and businesses over the final 300 to 1,000 feet or further, re-using the spectrum at low-power while greatly reducing the cost of gigabit broadband connectivity, particularly in small towns, exurbs and rural areas.

Finally, with respect to petitions for reconsideration of the **Spectrum Frontiers Order** of last July, I summarized the main points from comments in opposition that OTI and Public Knowledge filed jointly on January 31.¹ OTI and PK strongly oppose efforts to reverse the allocation of 37-37.6 GHz band for non-exclusive shared access, the operability requirement across the entire 37-40 GHz band, the allocation for unlicensed spectrum in the 64-71 GHz band, and the cybersecurity disclosure rules adopted in the Report & Order. The Commission developed a balanced set of rules to govern the first batch of spectrum being dedicated to 5G technologies, with appropriate allocations for licensed, shared, and unlicensed use, with appropriate protections for federal users and incumbents. The Commission's unanimous decision on these issues best serve the public interest, and the agency should not turn away from these strong policies in reaction to petitions that simply attempt to re-litigate a well-founded Order.

I noted that an example of the potential benefits of leveraging the 64-71 GHz unlicensed band for low-power fixed wireless as a substitute for trenching is the innovative Terragraph point-to-multipoint network topology that is being piloted by Facebook in San Jose, California.² The Terragraph network relies on unlicensed 60 GHz spectrum and WiGig, a very high-capacity enhancement of the Wi-Fi standard. Because of very limited propagation at 60 GHz, nodes are placed at roughly 200 meter intervals and use beam-steering antennas and a cloud-based controller to route traffic and minimize interference.³

Respectfully submitted,

/s/ *Michael Calabrese*
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cc: Erin McGrath

¹ Open Technology Institute at New America and Public Knowledge, Opposition to Petitions for Reconsideration, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, GN Docket No. 14-177 (Jan. 31, 2017).

² Caitlin McGarry, "Facebook's Terragraph Aims to Replace Fiber with Fast, Low-Cost Wi-Fi," *PCWorld* (April 13, 2016), available at <https://goo.gl/9JSk1x>; Russell Brandom, "Facebook's New Gigabit Wi-Fi System is Coming to San Jose," *The Verge* (April 13, 2016), available at <https://goo.gl/IWVxK8>.

³ Neeraj Chouby and Ali Yazdan Panah, "Introducing Facebook's New Terrestrial Connectivity System," Facebook Blog, available at <https://goo.gl/yTU1dX>.