

October 31, 2019

VIA ECFS

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

RE: Notice of Ex Parte Presentation, *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258; *3.5 GHz SAS and ESC Applications*, GN Docket No. 15-319; *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295; *Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band*, GN Docket No. 18-122.

Dear Ms. Dortch:

On October 29, 2019, representatives of Federated Wireless, Inc. ("Federated Wireless"), including Kurt Schaubach, Chief Technology Officer, and Jennifer McCarthy, Vice President, Legal Advocacy, together with their counsel Jennifer Richter and Shea Boyd of Akin Gump Strauss Hauer & Feld LLP, met with Will Adams, Wireless Advisor to Commissioner Carr, Erin McGrath, Wireless Advisor to Commissioner O'Rielly, Umair Javed, Wireless Advisor to Commissioner Rosenworcel, and Wireless Telecommunications Bureau and the Office of Engineering and Technology staff. Federated Wireless discussed the successes of Initial Commercial Deployment ("ICD") in the Citizens Broadband Radio Service ("CBRS"), the ability of an Automated Frequency Coordinator ("AFC") to enable new unlicensed services in the 6 GHz band as quickly as possible, potential coexistence issues at the C-Band/CBRS band edge, and the opportunity to leverage automated spectrum access tools to accelerate deployment of new terrestrial broadband services in the C-Band. Specifically, Federated Wireless addressed the following issues:

6 GHz AFC

Federated Wireless has developed and demonstrated a fully functional AFC prototype that will accelerate the introduction of a variety of unlicensed services, while ensuring protection of existing services, in the 6 GHz band. The AFC is essential to realize the potential of the 6 GHz band and its development will not delay entry of new services. Federated Wireless notes that industry has coalesced around the need for an AFC for a wide variety of use cases, including both outdoor operations and operations with output power greater than 250 mW. Given this growing consensus and the ongoing work within industry to standardize AFC functionality, Federated Wireless asks that the Commission continue to build on this momentum by addressing AFC in the upcoming 6 GHz order and by deciding a few key issues to assist industry in its efforts to reach agreement quickly on an AFC implementation framework. While stakeholder consensus building and standardization is generally a time intensive activity, this task can be completed quickly and efficiently with a few key actions from the Commission.

Federated Wireless recommends the following key principles by which the Commission can help accelerate the multi-stakeholder processes that are already underway. First, the Commission should establish single exposure/entry protection criteria for incumbent services, rather than aggregate interference protections, as aggregate protections would greatly increase the complexity of the AFC. Setting single user interference criteria and thresholds that account for anticipated use cases should be sufficient to protect incumbents while eliminating much of the complexity that hampered the CBRS Spectrum Access System (“SAS”) development. In CBRS, this complexity included the need for each SAS to follow a single implementation standard. Single exposure/entry analysis, on the other hand, would permit different AFC implementations, which should both accelerate the standardization process, allow for innovation and differentiation, and lead to more user choice in the 6 GHz ecosystem.

Similarly, taking a key lesson from CBRS, the Commission can accelerate the time to market for new 6 GHz services by defining key protection requirements parameters as well as an AFC certification framework. Federated Wireless recommends that the Commission address the following issues in the 6 GHz order: 1) define incumbent interference protection criteria; 2) identify the propagation model(s) to be used by AFCs; 3) permit the use of different geolocation methods by 6 GHz devices so long as location precision can be accounted for in AFC computations; and 4) model the AFC certification process on the existing OET equipment authorization process, including use of authorized third-party laboratories for testing, black box conformance testing against a single certification standard, and review of results and approval by the Commission.

The Commission should also dedicate discussion in the upcoming order to clearly define the role and expected functionality of the AFC. For example, an AFC might simply advise on spectrum availability or, alternatively, it could be designed as a more active system for near real-time interference mitigation. Federated Wireless notes that the complexity of these functionalities varies greatly and requires different capabilities, which must be enabled within the AFC itself and by the Commission’s rules. If the AFC is to have a role in interference mitigation, it will be important for the AFC to be able to identify and interact with any device that could be the cause of interference and for the Commission to define the expected timeline for resolution of interference complaints.

C-Band

Federated Wireless also discussed two issues related to the efforts to introduce new terrestrial broadband services in the C-Band.

First, Federated Wireless noted potential coexistence issues between CBRS and C-Band operations. The C-Band/CBRS band edge poses particular challenges because of: 1) the combination of relatively higher C-Band power levels and out-of-band emissions (“OOBE”) limit; and 2) a CBRS General Authorized Access (“GAA”) licensing structure that complicates inter-band mutual interference avoidance coordination. Accordingly, the Commission should consider various means to ensure that newly authorized flexible use operations at 3.7-4.2 GHz do not impair the upper CBRS spectrum. One readily available solution is to use an automated coordination capability, such as a SAS, to mitigate interference to the CBRS band from C-Band operations and vice versa. Additionally, other means of encouraging coordination, such as

harmonizing OOB limits, could be helpful in ensuring spectrum in both bands is used efficiently.

Second, the cloud-based technology underlying the CBRs SAS and Federated Wireless's 6 GHz AFC prototype could also be leveraged to enable accelerated access to the C-Band by new terrestrial broadband licensees. Fixed Satellite Service ("FSS") protection criteria have already been established for CBRs and could be easily expanded to the C-Band. While the C-Band clearing and re-packing process could take multiple years, during this time there will be valuable "white space" that new entrants could begin using without causing harmful interference to FSS operations prior to their transition to a new subset of frequencies. From the moment the C-Band transition process begins, a SAS or similar automated coordination database can begin facilitating spectrum access for new entrants. As the transition progresses, the SAS can update the protection requirements to account for newly cleared geographic areas and make spectrum available in real-time through software updates that propagate instantly. The Commission has successfully accelerated deployment in bands being cleared for new services in the past, including in the 700 MHz and the PCS bands.¹ The proposed implementation in the C-Band that relies on automated interference analysis of a SAS-like system will be both more efficient and more effective than prior solutions relying on individualized engineering analysis.

Respectfully submitted,

/s/ Jennifer M. McCarthy
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¹ See, e.g., 47 C.F.R. §§ 24.237, 24.239; *Service Rules for 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, WT Docket No. 99-168, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, FCC 00-224, at paras. 60-66 (rel. June 30, 2000).