

From: Marojevic Vuk

To: Behnam Ghaffari

Date: March 18, 2021

Subject: FCC File No. 0266-EX-CM-2020

Message:

Dear FCC,

Please find our response to your comments in our recent correspondence below and let me know if you have any questions or concerns, or if I need to modify my experimental license request.

Thank you,
Vuk Marojevic
Associate Professor, Mississippi State University

A) CBRS: We have discussed with Federated Wireless on the ways to find and operate on a free frequency channel between 3.55 and 3.7 GHz. We understood that there are no fixed satellite services (space-to-earth) operating in 3600-3650 MHz in our area, and the PAL users, if any, will be limited to 3550-3650 MHz. Our primary experimental site is an agricultural field, Mississippi State University's extensive North Farm, which is isolated---off campus and off town---and is less likely to have GAA users nearby.

For the same above reasons, we will have a high probability of finding user free channels in the upper 50 MHz (3650 - 3700 MHz) of the CBRS band. Our platform has the capability of spectrum monitoring, and we will do "self spectrum monitoring and coordination" to find a channel that is free from any incumbent and grandfathered users in this band before the experiments. We will avoid using the CBRS bands entirely when we detect activity in those bands.

B) 3700-4200 MHz: Regarding the potential interference with incumbent/FSS earth stations, we thank you for the useful link. We looked up the FSS earth stations in our vicinity and the closest to where we plan to conduct our outdoor wireless experiments (North Farm, Mississippi State University, N33.47428718, W-88.78830036) is 3.8 km away at N33.45226389, W88.82011667. The next earth stations are 5.9 km and 12.5 km away.

We reviewed their receiver parameters from their license and calculated the worst-case interference that we could theoretically generate at all these stations. For that, we assumed the 10 W transmission power and ERP that we requested, the FSS earth station antenna pattern and orientation towards our experimental site---in reality it is oriented in another direction---and the free space path loss, as if we had direct line of sight, which is not the case in reality. Under these worst-case assumptions, their main antenna beam would still be way above our area of operation. The calculated worst-case interference that we would cause at the nearest FSS earth station antenna is -95 dBm, whereas its thermal noise floor is -85 dBm. The other FSS earth stations would receive -98 and -104 dBm signal power under the same worst-case conditions.

Note that the actual signal powers at any of these FSS earth station receivers coming from our experimental radios when using their true antenna orientations and realistic path loss will be much lower than above figures. We therefore conclude that our experimental radios will not create interference to the FSS earth stations.

We will regularly check the FCC data base for new FSS stations that may be deployed in our area and will be happy to share our calculations in more detail if desired.

