

From: Elizabeth Belding

To: Jose Trevino

Date: August 31, 2010

Subject: FCC file number 0220-EX-PL-2010

Message:

1) Please explain why your company need entire frequency band. Please send additional details on how the system works.

MOMENT lab's experiments aim to evaluate the feasibility of transmission over white space frequencies for rural area internetworking. Signal propagation is subject to fading due to different environmental impacts: distance, vegetation, terrain. Our goal is to identify the most appropriate transmission frequency for each of encountered environments. Thus, it is essential to conduct thorough experimentation over the whole frequency band. In the first part of our experimentation we will transmit known PN sequences over selected frequencies and measure the channel response at the receiver. In the second part we will evaluate PHY and MAC layer protocols we are developing over the white space links. The evaluation will consist of packetized transmission under different protocols settings (e.g. different data rates, channel widths), and scenarios (different packet sizes, packet departure times). The evaluation tests will be conducted under strictly controlled conditions, making sure that the transmission frequency and power limits are in the limits proposed in the license application.

2) It will cause interference to land mobile stations that are operating in these bands on the areas, what your company will do to prevent this issue?

We plan to protect the incumbent users through a two-fold approach. First, we will compile the list of the regional spectrum users for Santa Barbara county. We will not transmit in frequencies that are allocated to stations nor in a guard band of 6MHz (one TV channel) around those frequencies. Before the experiments are conducted, with Radio Mobile tool, we will make sure that our transmission does not propagate outside of the area for which we have the station list analyzed. Second, before each transmission we will scan the channel and defer from the transmission and mark the frequency as used if any signal is sensed (defined as a 10dB spectral power over the noise floor).

3) How many units is your company planning to deploy at consumers premises?

For now we plan to deploy four units in total. The coordinates of the units are given in the original license application. Two units will be deployed at the MOMENT lab on the second floor of the Harold Frank Hall building at the UC Santa Barbara campus, Goleta, CA; one unit will be deployed on the roof of the Harold Frank Hall building; while the last unit will be deployed at The Storke Family Apartments complex, Goleta, CA.

4) How long will this test run?

The tests will be run during the whole research cycle. We are currently in a process of finalizing a reserach proposal that has a two year time frame. None of the experiments will include transmissions that continuously last for more than five minutes on the same frequency.

5) What will become of the user-installed equipment?

The equipment is a property of the MOMENT lab, in the Department of Computer Science at UC Santa Barbara. The only node that will reside outside of the lab will be installed at one of the lab members

home. When the experiments are finished the equipment will be dismantled and brought back to the lab.

6) Please send the statements to identify the test uses for experiment only, not for deployment.

The equipment consists of Ettus research USRP devices and commodity PCs. The hardware limitations of the equipment make it unsuitable for high-quality wireless communication. The throughput achievable by USRPs is not comparable even to that of a commodity WiFi equipment (refer to Enabling MAC Protocol Implementations on Software-defined Radios by Nychis et al, NSDI 2009). We plan to profile signal propagation at different frequencies and test the feasibility of flexible wireless protocols in white spaces. The test transmissions in the experiments will carry only randomly generated payload, thus cannot be of commercial (or any other) interest to anyone.

7) Who will be a point of contact if interference occurs? (including name and telephone number).

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