ECE 484 Project Progress

Limitations of WiFi with the use of Multiple Devices

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Currently only moderate progress has been made on testing the limitations of wireless networks. The primary focus so far has been to try and achieve a working implementation of a WLAN transmitter and receiver in simulink. Once a working model is designed, testing the BER, PER, and SNR should be fairly straightforward. The working model will also be able to be duplicated, allowing the effect of multiple devices on the previously mentioned parameters.

Significant searching went into finding a pre-existing model for the team to use for the project. This search proved less successful than desired but did provide some models that could serve our purposes. The first one was found via the Mathworks examples web page by searching for 802.11. The resulting example, a model of the 802.11n physical layer [1], was complete but did not initially run. Much modification was made in order to get it to work and further testing is needed to verify it is working correctly.

Mathworks also has a WLAN toolbox available that unfortunately was not included in the academic license. Plenty of examples and tutorials exist for this toolbox and will most likely be the prefered method of parameter analysis if obtained. A request has been sent to Mathworks to receive a trial license for the toolbox so it may be used in the project.

The final model tested was one provided by Mathworks. This model was the beacon frame transmitter and receiver [2]. More research is needed to see if this model will work for the scope of the project. This model was the only one to run unmodified and should allow easy testing and measurement if deemed acceptable.

Progress has currently halted as the team waits on a reply from Mathworks concerning the WLAN toolbox. If a trial can not be acquired, the team is willing to purchase it if the other methods fail to perform correctly. The project is on track to be completed by the deadline.

1. “Simulink Model of the IEEE 802.11n PHY Layer model” Tokunbo Ogunfunmi, https://www.mathworks.com/matlabcentral/fileexchange/22137-simulink-model-of-the-ieee-802-11n-phy-layer-model
2. “IEEE 802.11 WLAN - Beacon Frame” Mathworks, https://www.mathworks.com/examples/matlab-communications/mw/comm_product-commwlan80211Beacon-ieee-802-11-wlan-beacon-frame#2