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## Weekly Report #8 – Creating/Installing Out of Tree Modules on GNU Radio

### **Goals**

The goals for this week was completing a fundamental GNU Radio flowchart with cross correlation and phase bias correction that would have obtained rudimentary AOAs. This goal required a successful integration of RF Switching with external noise sources. The pigtail cables did not arrive yet (unless they arrived exactly today), so we will complete this task as soon as they arrive. Instead, work was more focused on perusing existing GNU Radio flowcharts/custom blocks such as the Ettus Blocks on <https://github.com/EttusResearch/gr-doa> recommended by the coherent receiver manufacturer, and Sam Whiting's direction finding project on <https://github.com/samwhiting/gnuradio-doa>.

### **Problems/General Approach**

In order to properly create and install out of tree modules in GNU Radio (<https://wiki.gnuradio.org/index.php/OutOfTreeModules>), we need to understand gr\_modtool and cmake. In our meeting last week, we discussed the possibility of creating our modules from scratch if we continued to receive runtime errors from the github projects mentioned above. However, we would still need to understand how to use gr\_modtool and cmake to create our own blocks in GNU Radio. Therefore, Peidong and I decided to focus our efforts on this specific functionality.

In addition to manual creation/installation methods, we have found a useful library for GNU Radio on the Raspberry Pi called PyBombs which would allow us to install Ettus Blocks automatically; however, this application restricts automatic installations to commonly used GNU Radio out of tree modules. By installing Ettus Blocks automatically, we could follow the steps to obtaining Angle of Arrival measurements from (<https://coherent-receiver.com/getting-started>).