

Chapter 3

Lab 3

Orthogonal Frequency Division Multiplexing (OFDM) is the modulation scheme of choice for modern wireless data communications systems such as WiFi and LTE. This scheme offers simple and accurate methods for channel equalization by splitting a wide bandwidth into a set of narrow sub-channels, which can be approximated as flat-fading.

Goal: Implement an OFDM system on an SDR platform using either BPSK or QPSK/QAM.

Since the implementation of this is complex, this lab is broken down into 3 parts.

- Lab 3A: Simulated system synchronized clocks
- Lab 3B: Simulated system with unsynchronized clocks
- Lab 3C: USRP-Based system

In each of these lab assignments, you will build on your previous implementation and paper. The lab report submitted for Lab 3C should explain background information, process, implementation, and results for all three portions of the lab. Any code that you submit should be able to run on another machine and should be well documented. This means adding comments to functions and relevant sections, and including any data files that you used around the USRP. It is also helpful to include a README where you describe how to run your implementation. A sentence or two is fine here.