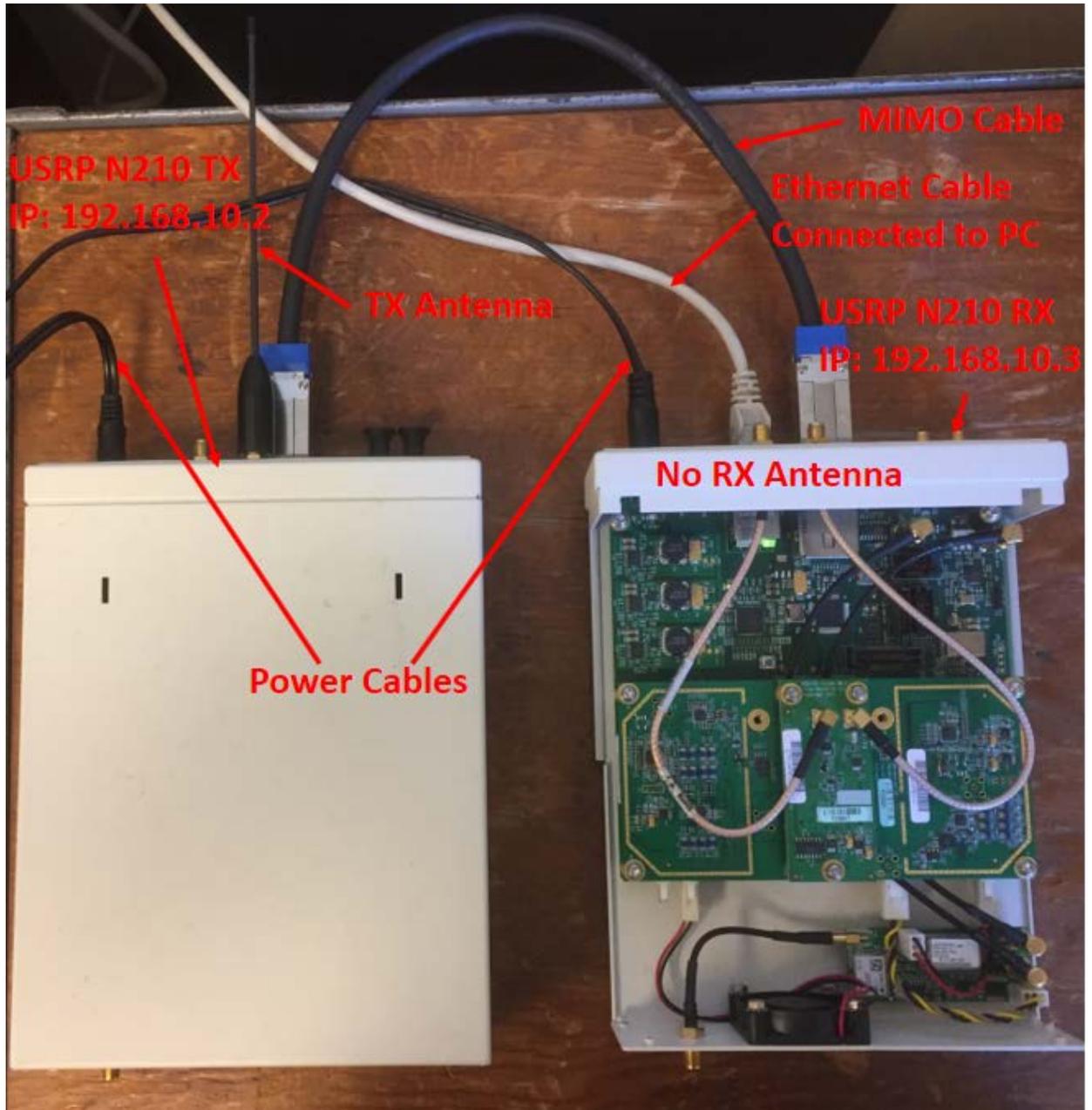


- 1) The TX.vi and RX.vi are saved in Labview 2015. You should have Matlab with Communications System Toolbox installed on your PC.
- 2) Hardware used in the testbed are shown below. We are using MIMO cable so only 1 PC with Gigabit ethernet is required

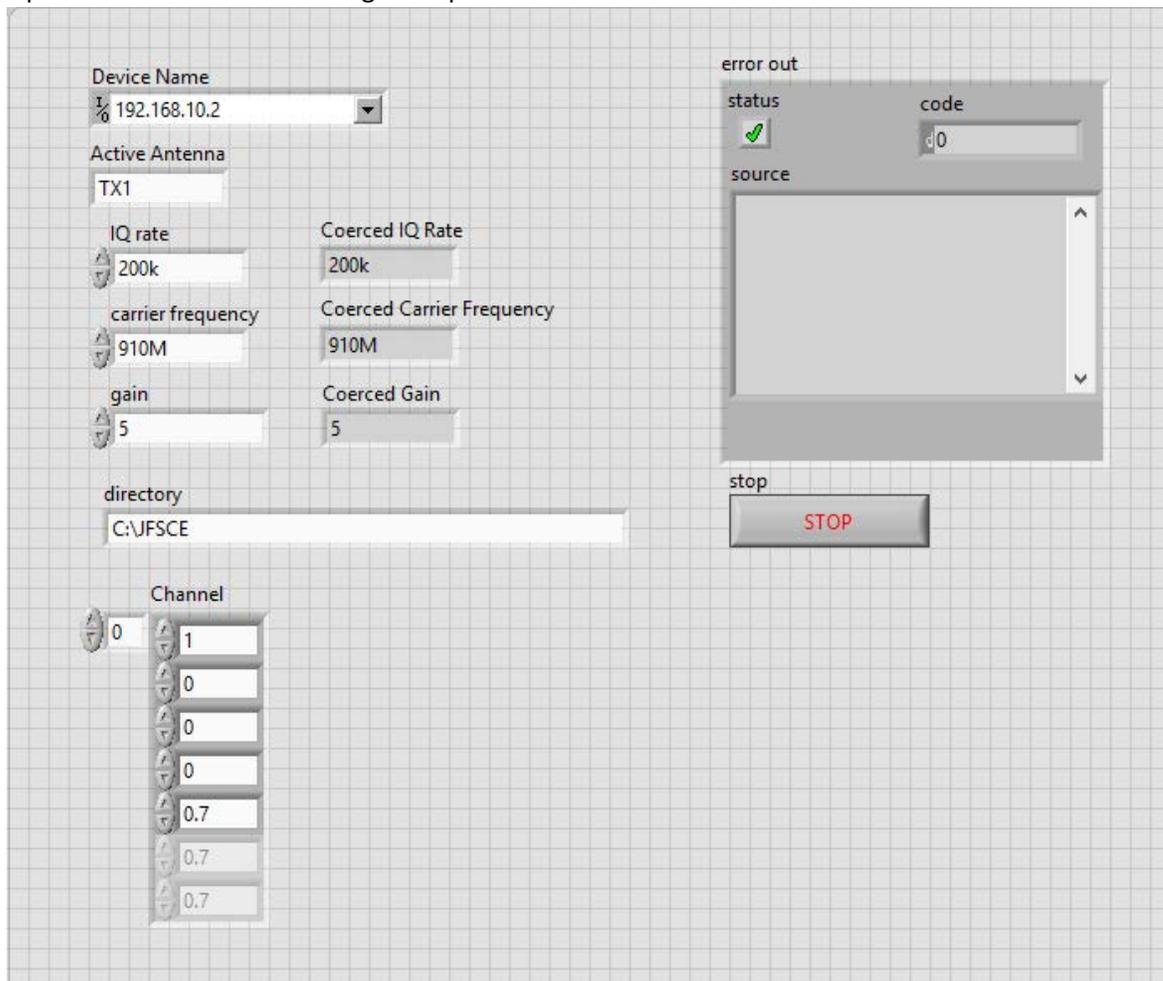


3) The zip file contains following files

- DataDecoder.m
- isIn.m
- modulateddata.mat
- ompC.m
- QPSKTimingRecovery.m
- Readme.docx
- Readme.pdf
- receiver_init.m
- RX.vi
- transmitter_init.m
- TransmitterObject.m
- TX.vi

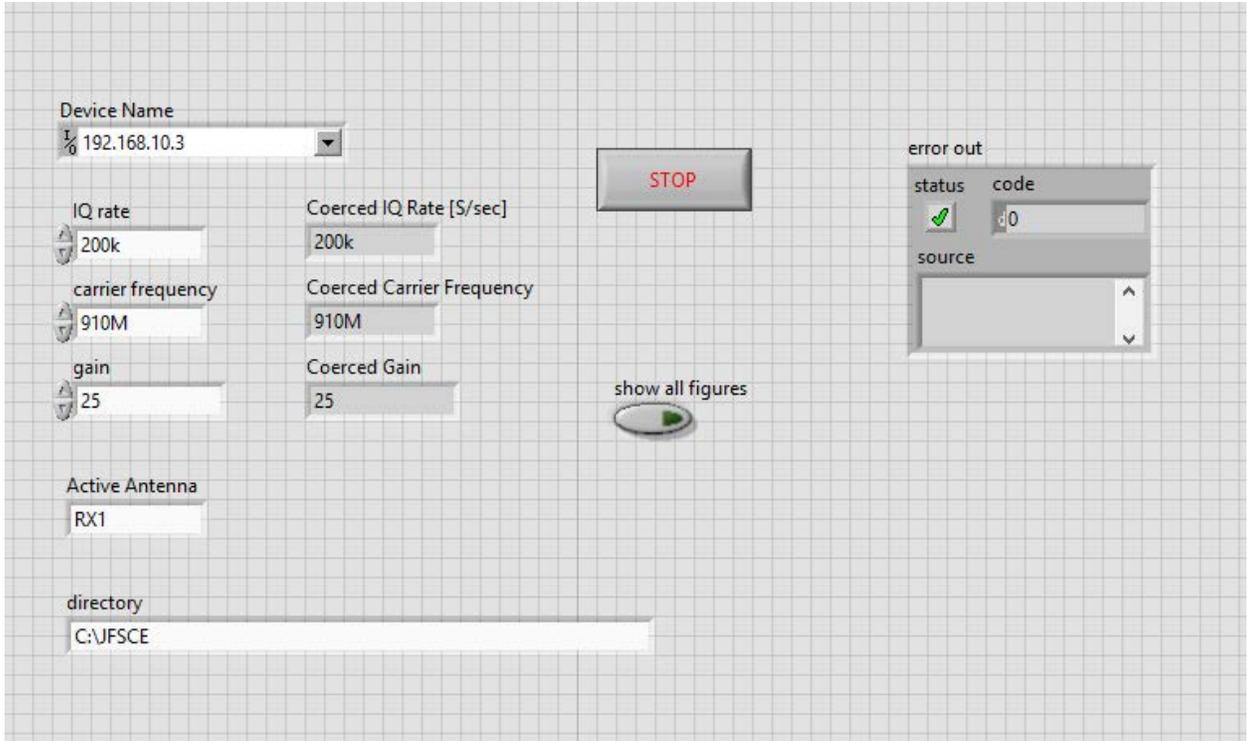
4) Extract the files into a folder such as C:\JFSCE

5) Open TX.vi. It has the following front panel



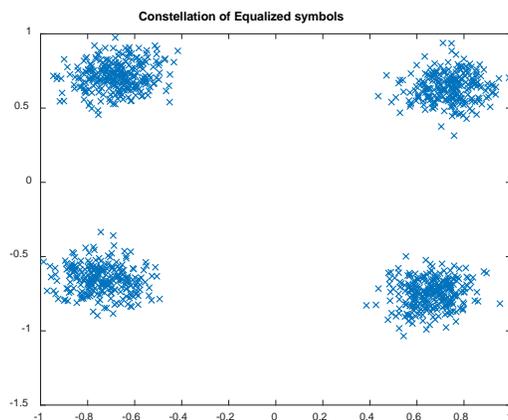
Make sure IP address matches with the IP address of your TX USRP device. Active antenna should be TX1 or TX2 based on which port you use for the antenna. Channel is the manually inserted sample spaced channel impulse response.

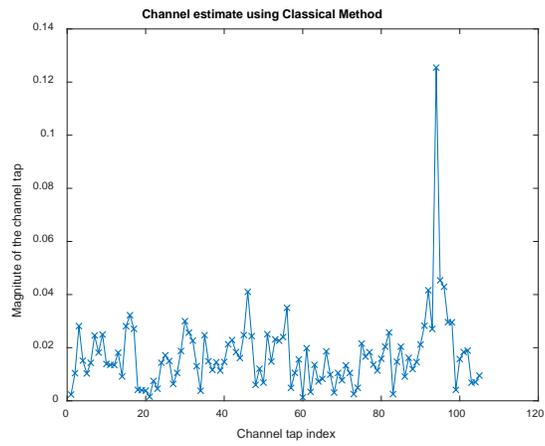
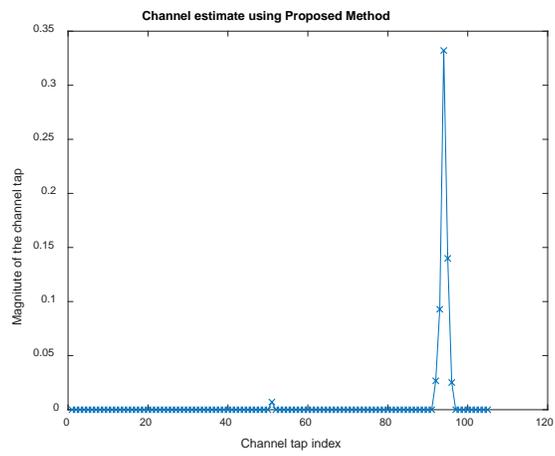
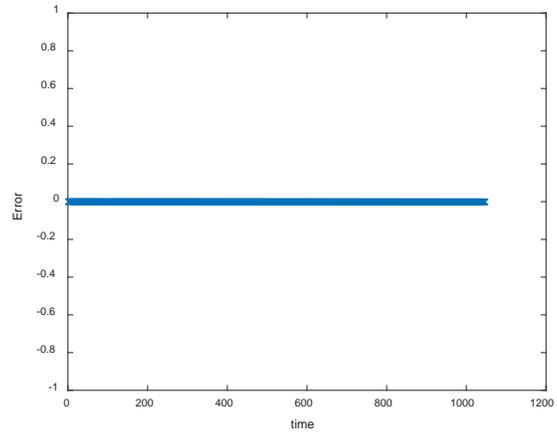
6) Open RX.vi. It has the following front panel

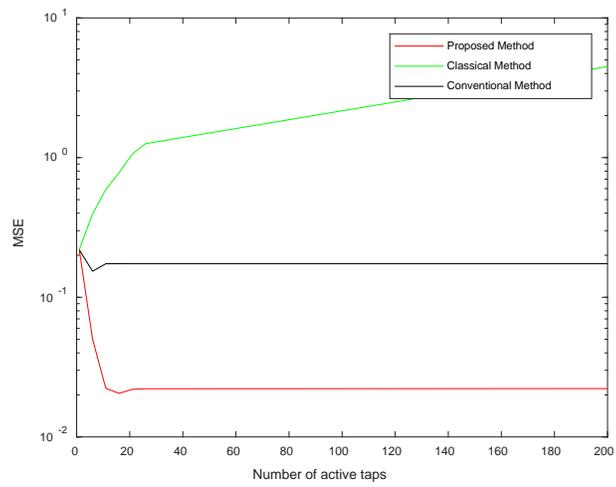
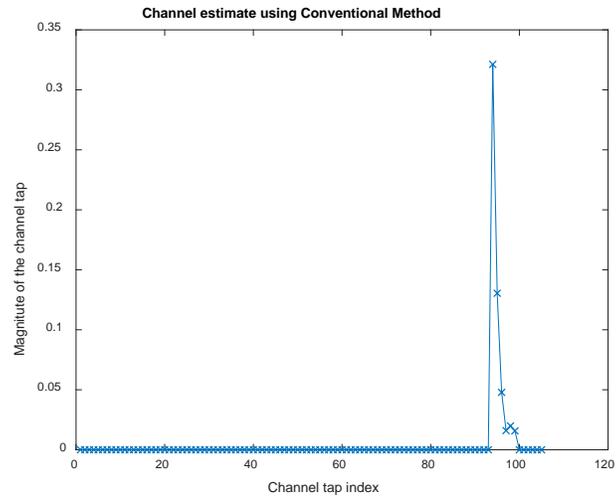


Make sure IP address matches with the IP address of your RX USRP device.

7) Run TX.vi first. Wait 15-20 seconds then run RX.vi. The TX.vi should start transmitting before RX.vi is run. You should see figures similar to figures below







8) To debug further you can push show all figures button on RX.vi front panel which shows the signals in several stages of time and frequency synchronization.