### ELEC 5705 RF Systems Design: Assignment #4

Due March 29th, 2021

In this assignment you will continue working with the same RF signal that was provided in assignment #3 and you will need to make use of the models that you developed in assignments #1 and #2.

Find Bryan using a superhetrodyne radio with a first LO at 110MHz. Use the highest NF, phase noise, lowest linearity etc. that you can. The lower the performance requirements of your radio the better you will do. This radio may be used to receive other channels at other times that are located anywhere from 90-100MHz.

As much as possible calculations should be used to help explain all design choices and should be compared against simulation. Include in your report a block diagram of your radio which includes performance specifications (power consumption, IIP3, NF, etc.) for all the blocks (LNAs, filters, mixers, etc.) for all blocks used.

Also find Justin using an ideal radio of your choice.

Hints/Tips:

As a start you will need to determine what SNR is required to hear Bryan. This will need to be done experimentally by increasing the SNR until Bryan is no longer detectable. This will set your maximum SNR for this assignment.

**Note: All submissions must include an audio file recording of both Bryan and Justin singing.**