Tasks for this week:

In class Homework discussion session. Bring your work to class.


Study Material with links on the class web page:

IEEE Paper “HF-VHF-UHF IQ Mixer with a Single SPDT Switch”
European Microwave Week Paper “Project-Based RF/Microwave Education”
MicroR1 Receiver Description
2nd, 3rd and 4th order All-Pass Filter design papers
IQx2 paper
Commercial IC Example: Basic Radio IC
2Q4 all-pass prototype

Homework--All-Pass Network Design and Simulation:

Using the procedure described in the 2Q4 paper, design and simulate an all-pass filter with $a = 6.2$ at $\omega = 1$ and $1 \, \Omega$ drive impedance. Bring a plot of the LTspice output showing opposite sideband suppression to class.

Next, scale the prototype to a reasonable baseband frequency that includes the frequency range 400 - 2000 Hz, and a drive impedance of 1.0k as in Figure 2 of the European Microwave Week paper. Simulate in LTspice using the Figure 2 circuit.

Midterm exam date:

In Class February 24. Closed book, no notes, no calculators. Note, this is a very late exam, and covers all to the lecture material in the class. By the middle of February we will be working on our contributions to the class project.

Final class project. We will design and build individual contributions to the block diagram receiver. The final report will be a 4 page description, including design strategy, circuit details, measured results, and integration into the complete class project, with field testing. There will be as many blocks as students in the class, and they may be interconnected LEGO fashion into different receivers.