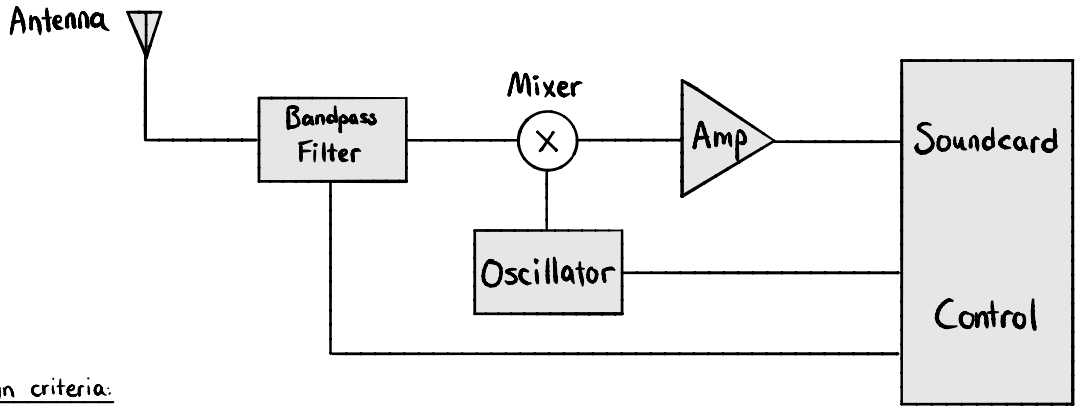
Caleb Froelich
ENGR 357 - Electronics II

Receiver Design Notes

Basic block diagram of SDR reciever:



Our design criteria:

Bandpass Filter: (Butterworth)

- only pass 5-10MHz.
- butterworth (not as sensitive)

Intermediate Frequency:

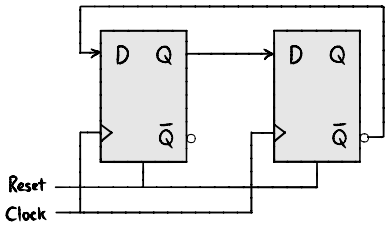
- standard 10.7kHz

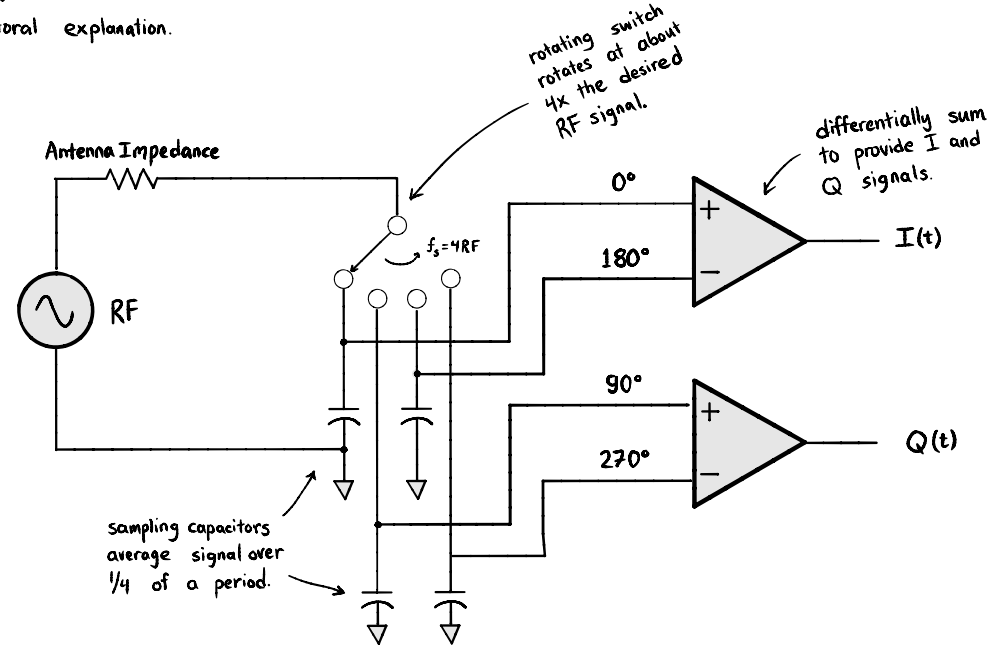
Image Reject Mixer: (Tayloe Mixer)

- generate quarature signals that are 90°
- Tayloe mixer works by sampling the signal 4x a period. Capacitors are used to average the signal value.
- See below for pictoral explanation.

Oscillator:

- Use clock generator controlled by Arduino v3.
- SI5351 A-B-GT ($0.92 Digikey) needs 25.27 MHz crystal
- 4x as fast as RF frequency.
- Divide with Johnson Counter. (see below)





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Receiver Design – Block Diagram