

Bandpass Filter (5–10 MHz)

Switched from Butterworth to series-first Bessel to allow for DC offset to run opamps.

1/4 duty cycle of Tayloe mixer causes the impedance seen through the switch to be four times the impedance of the bandpass filter/antenna, which is 50Ω.

Op Amps for Gain Control

Need to add same feedback loop on positive side of op amp to keep gain balanced.

Will derive transfer function for op amp.

Tayloe Mixer

Need to choose a different, faster, MUX. With OF = 40.107MHz maximally Period = 25 ns. We sample 4 times per period. Thus, we need switching speed < 6 ns.

74LS153 switching speed = 20 ns.

Simulations done in LTSPICE with voltage controlled switches.

Arduino Nano v3

Need to figure out control signals.

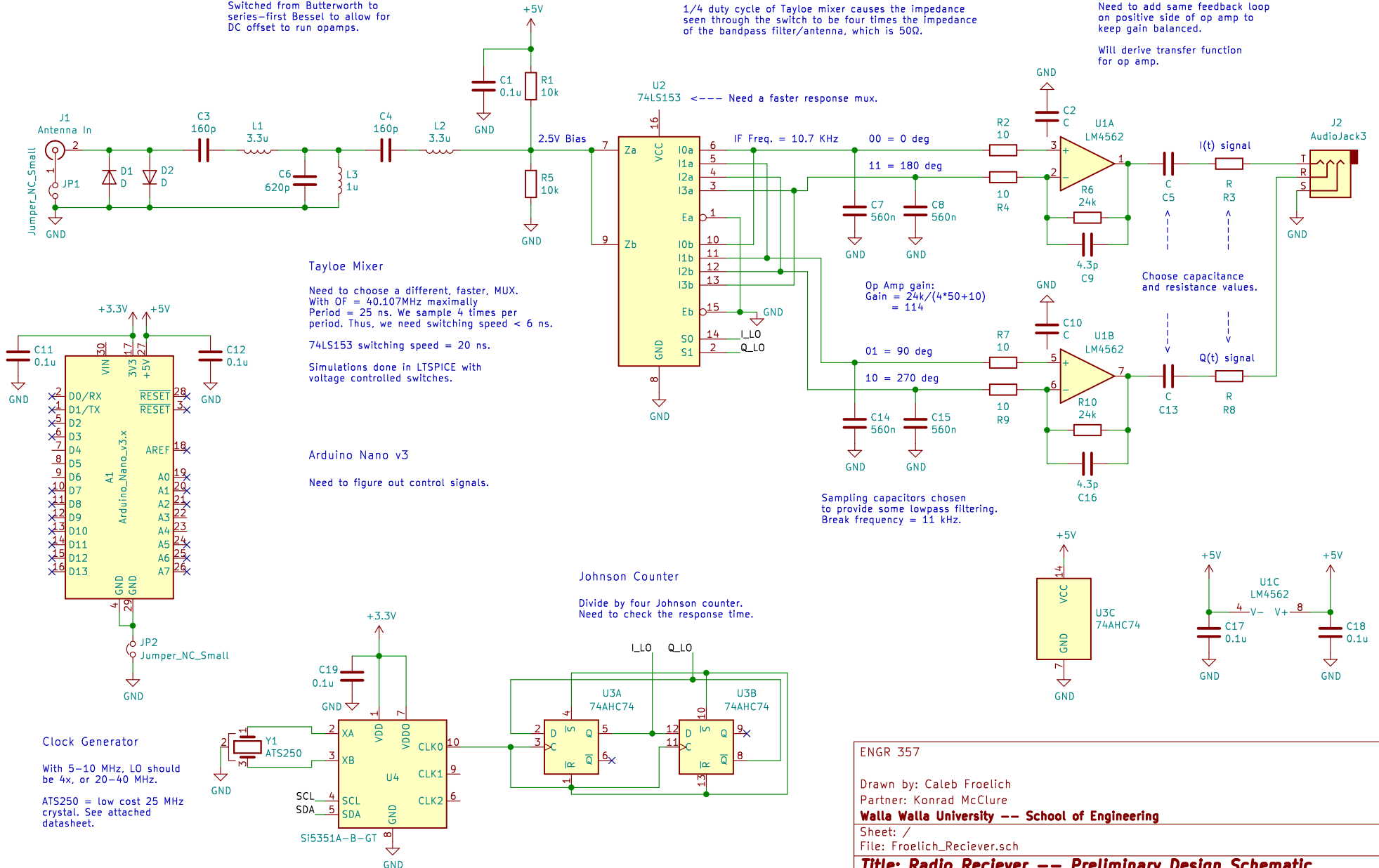
Johnson Counter

Divide by four Johnson counter. Need to check the response time.

Clock Generator

With 5–10 MHz, LO should be 4x, or 20–40 MHz.

ATS250 = low cost 25 MHz crystal. See attached datasheet.



ENGR 357

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Sheet: /

File: Froelich_Reciever.sch

Title: Radio Reciever -- Preliminary Design Schematic

Size: A4 Date: 2020-04-12

KiCad E.D.A. kicad (5.1.5)-3

Rev: 1a

Id: 1/1