

My project was to build and test two circuits from a website called “esp” about sine wave oscillators: the “Oscillating Bandpass Filter Oscillator”, and then “Basic Phase Shift Oscillator”. During the building process, I experimented with different resistors or capacitors to find an interesting sound, as the circuits are made for relatively pure sine generation. I implemented the circuits on breadboards, using a MyDAQ for powering op amps and used ¼” jacks for output into a theremin amplifier (weird, I know, but perfect for these oscillators). Here are the circuit diagrams:

<https://sound-au.com/articles/sinewave.htm#s2>

Figure 1, Oscillating Bandpass Filter Oscillator:

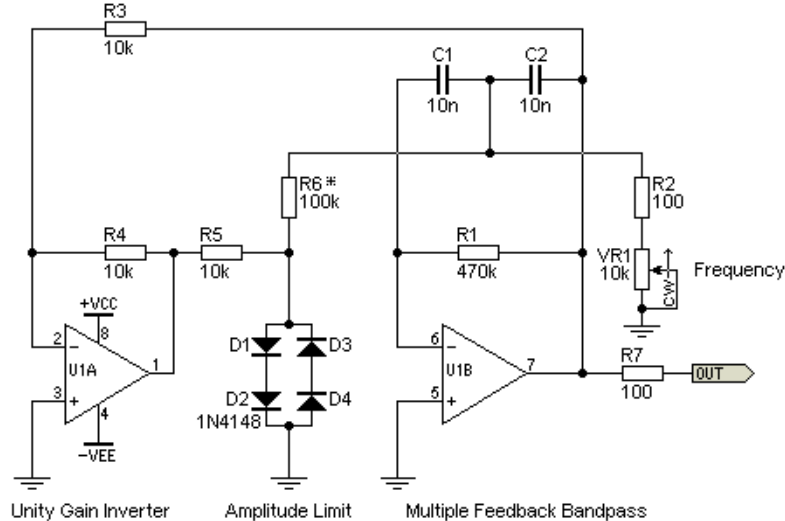
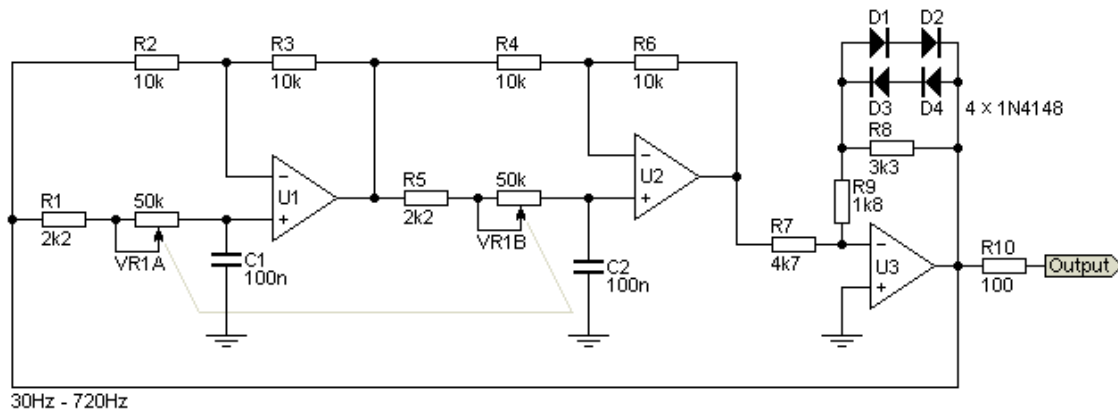
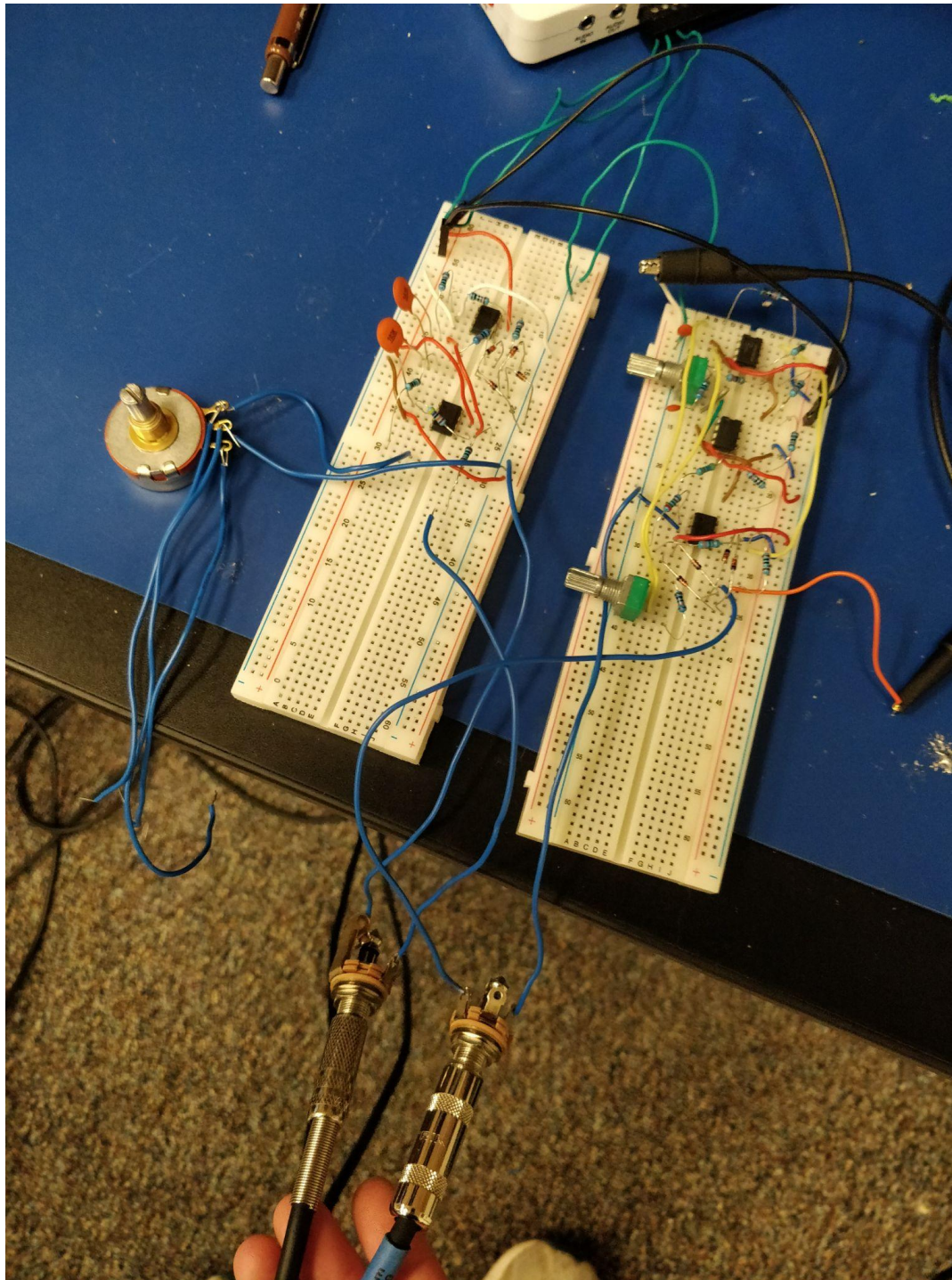


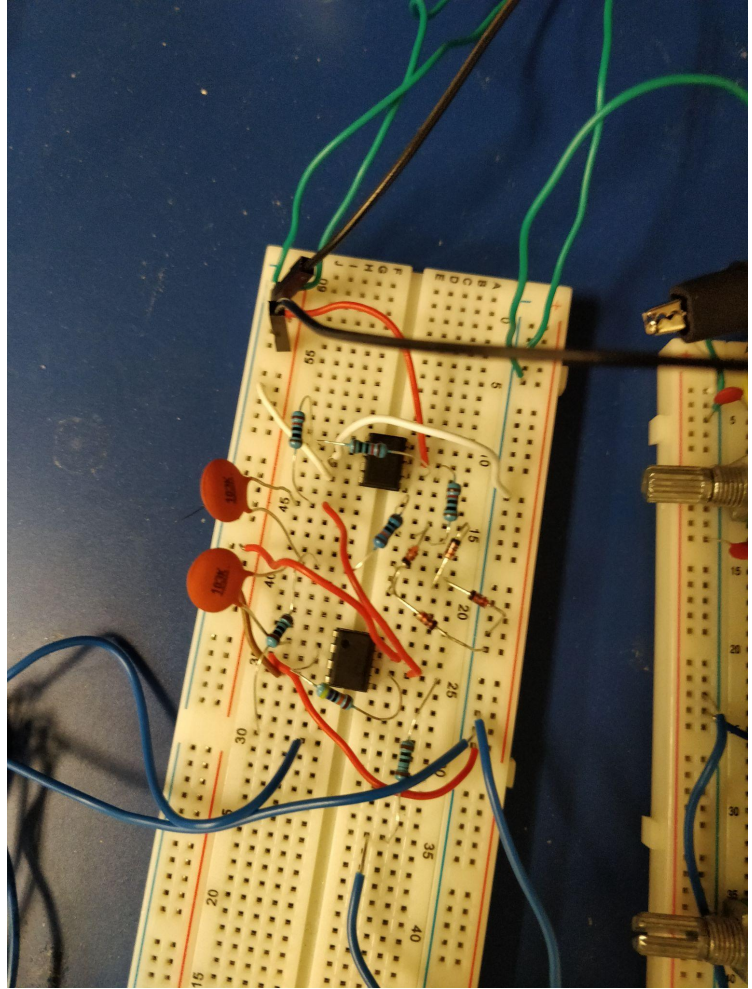
Figure 2, Basic Phase Shift Oscillator



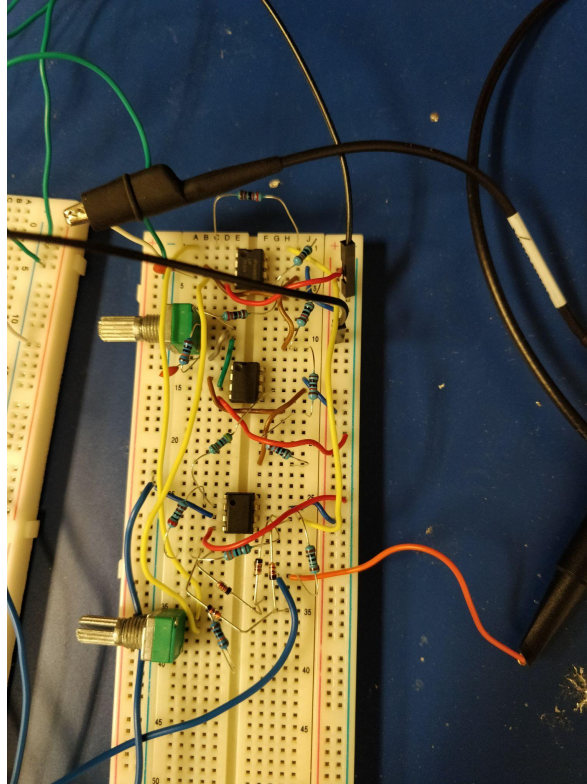
Pictures of my final circuits:



Oscillating Bandpass Filter Oscillator:







Phase Shift Oscillator:

The output of the oscillators both are within a pleasant audio frequency range, and when played simultaneously they allowed for harmonies and dissonances expected in an oscillator used in a modular synthesizer, for example. Future work on these circuits could include creating enclosures for them to be able to be used in a modular setting, but interestingly they would not be voltage-controlled like your typical modular synth oscillator and are instead resistance-controlled. This has the possibility for interesting mappings of knobs, and could be used as a foolproof “this oscillator oscillates all the time” kind of circuit. Overall, I enjoyed building these oscillators and will likely solder them together sometime to use as part of another circuit.

Demo Video:

<https://youtu.be/hlMX-JtRfcw>