

Phase shift oscillator xp 2020-12-19.  
2020 ipro 1122v05a.  
2020-12-19.

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The experiment tested the output of the board with various loads.

# 1 Schematic.

Fig.1 shows the KiCad schematic used to make the board.

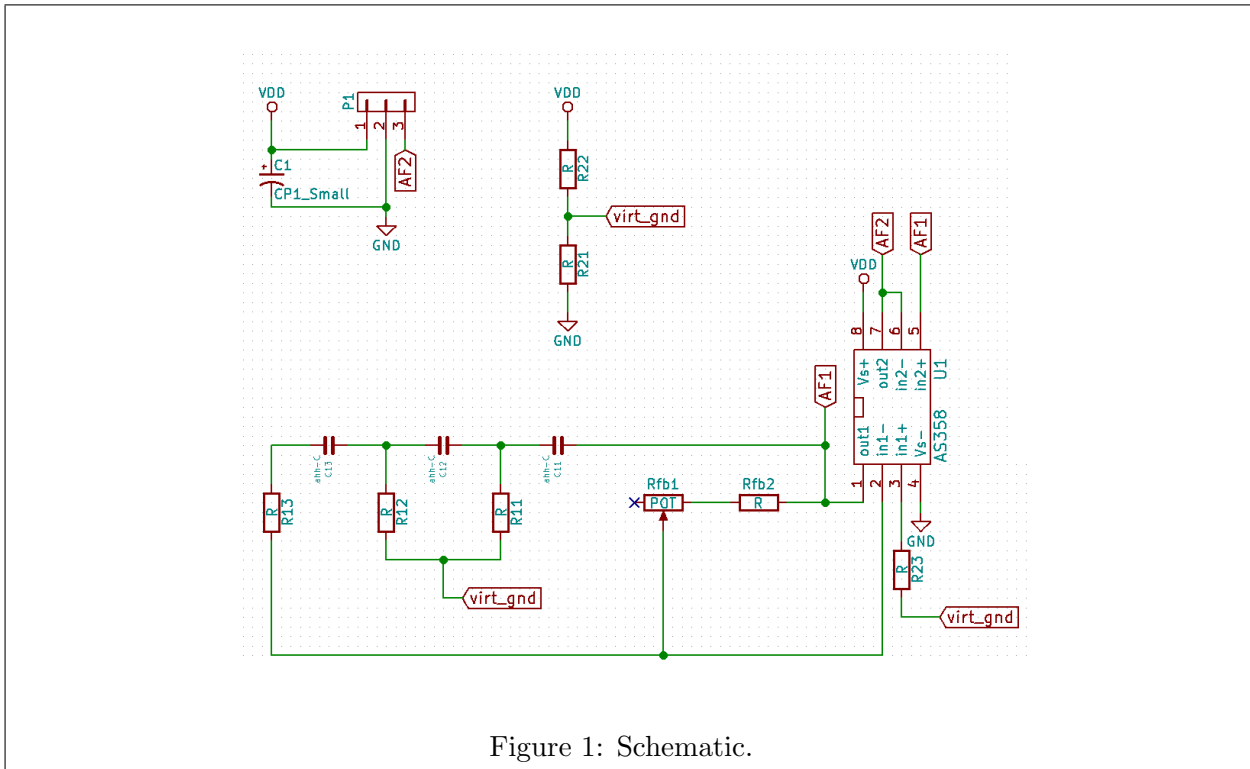


Figure 1: Schematic.

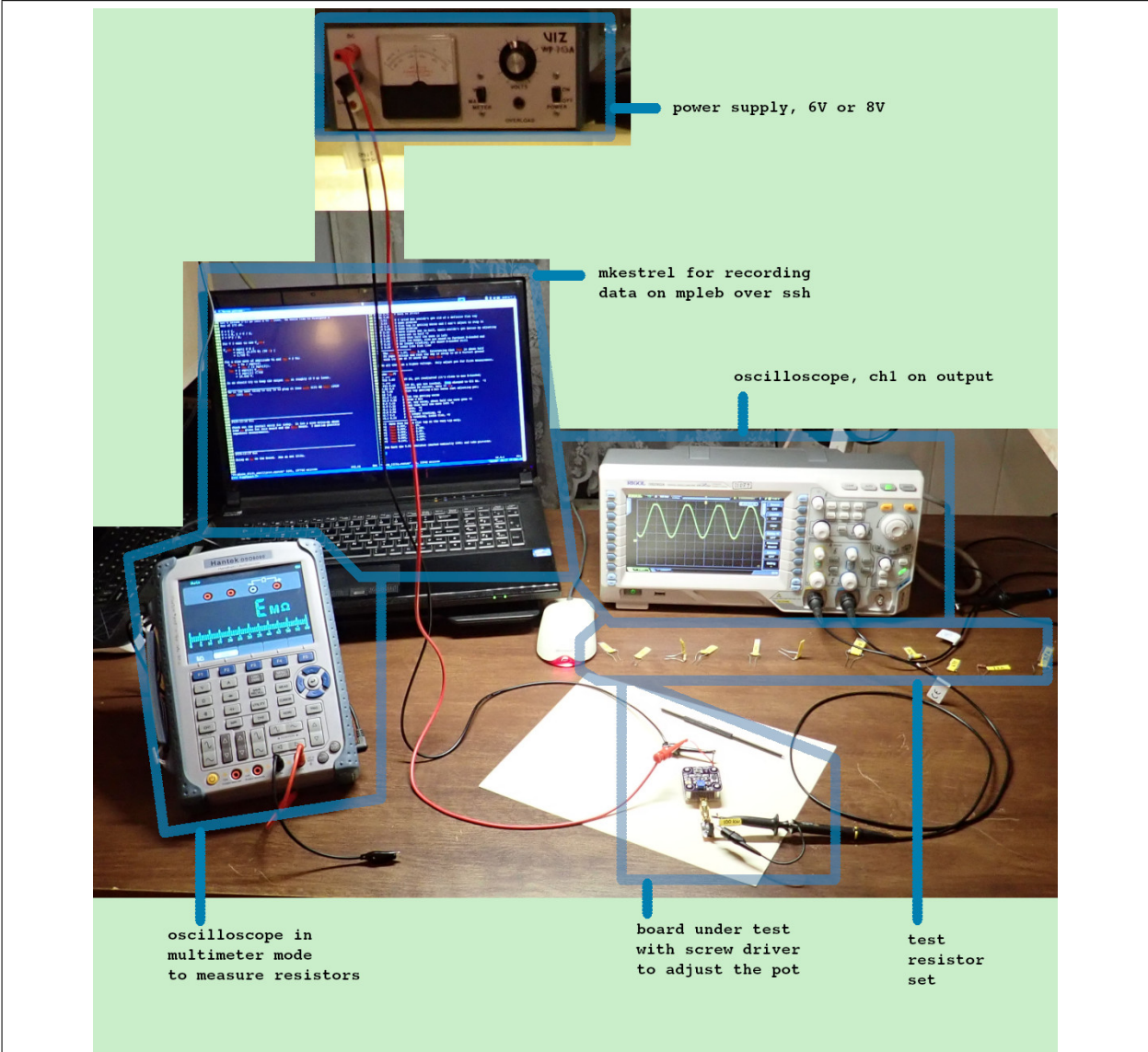


Figure 2: Experimental area.

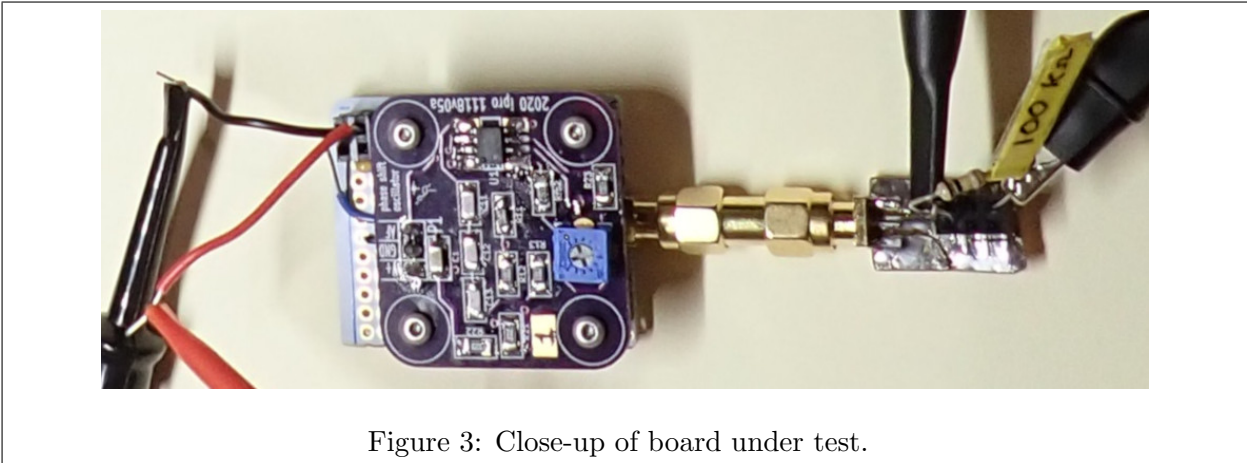


Figure 3: Close-up of board under test.

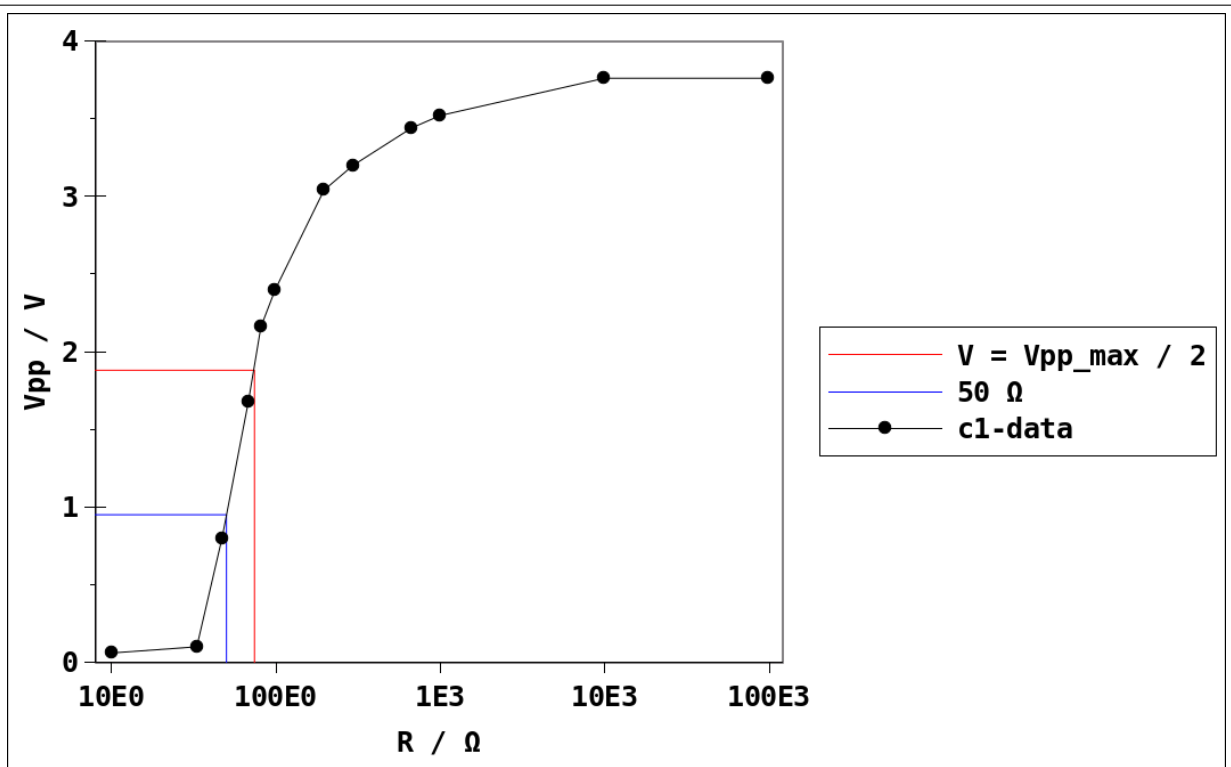


Figure 4: First part. The pot was adjusted only once at the start. Resistors were always tested from high value to low. Ignoring the shape of the curve, the board appears to have an output impedance of  $74\ \Omega$  (red line). But by the time the voltage has dropped that far, the output no longer looks like a sine wave at all.

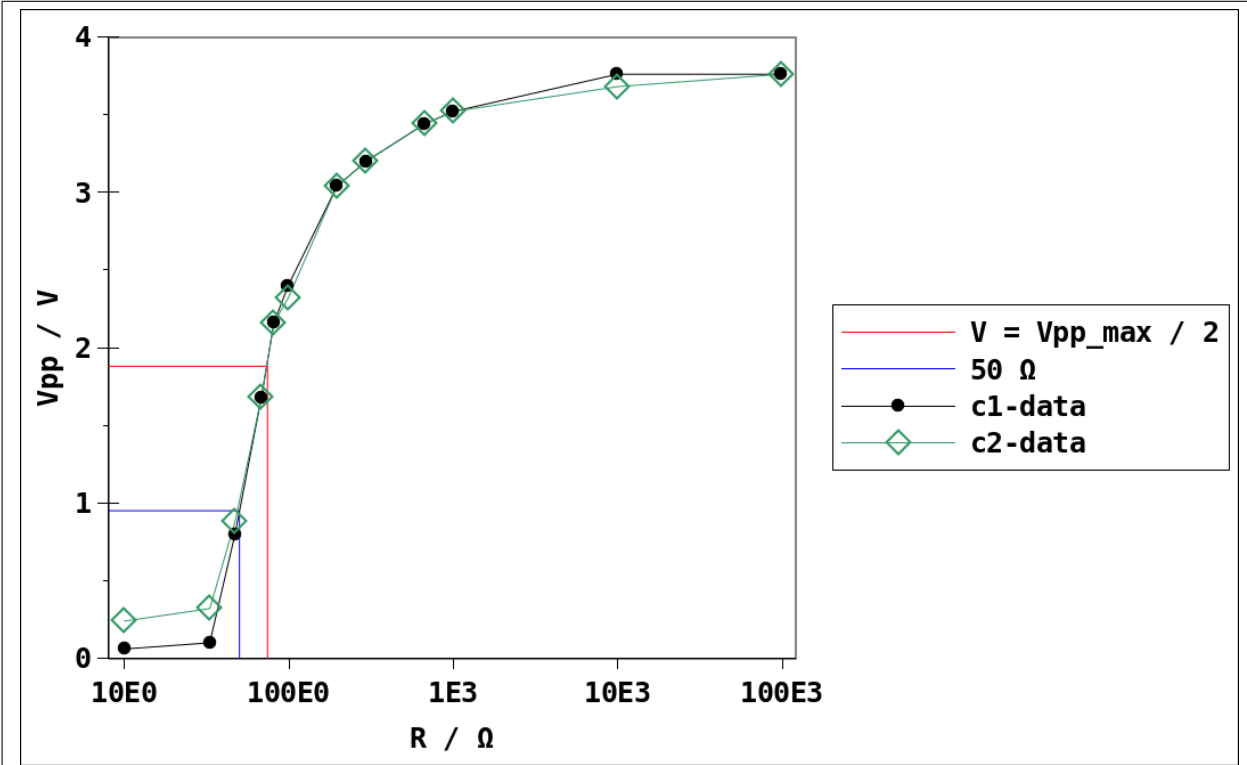


Figure 5: Xp parts 1 and 2. In part 2, the pot was adjusted with every resistor to attempt to get a sine wave without flat topping. But adjusting the pot didn't do much.

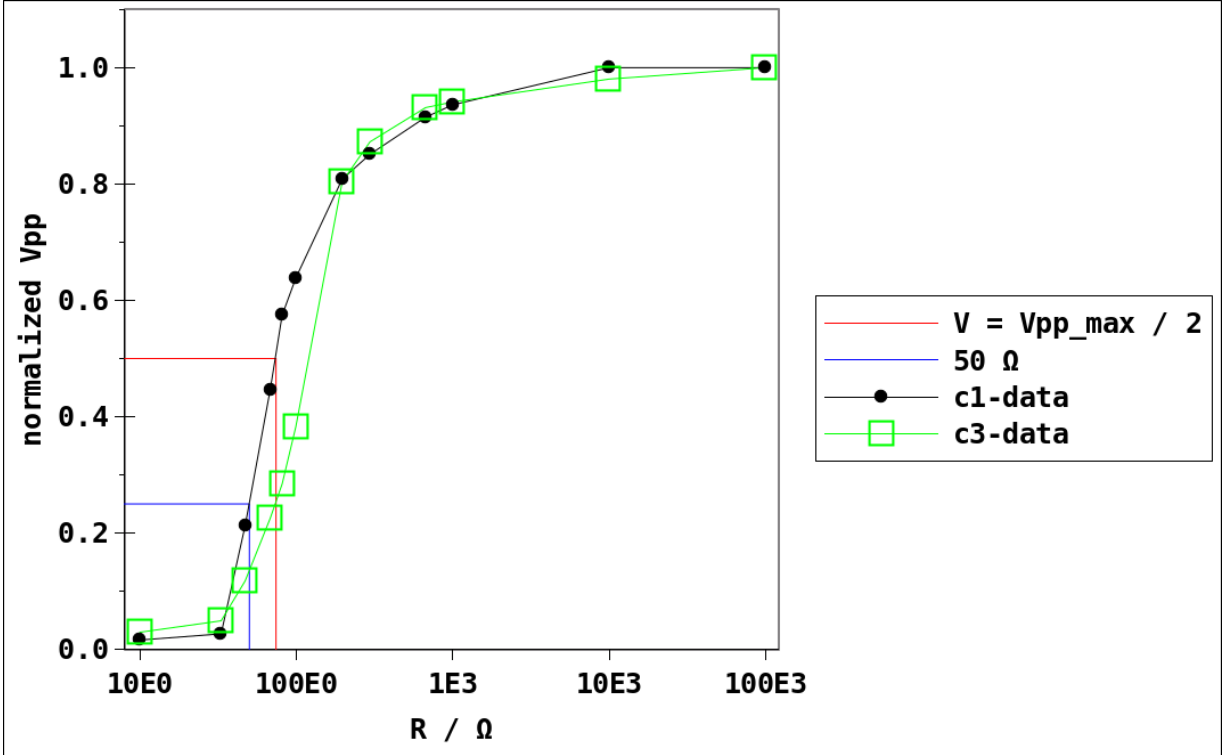


Figure 6: Xp parts 1 and 3, normalized Vpp. In part 1, the power supply voltage was set to 6 V. In part 3, it was set to 8 V. The part 3 Vpp was much higher. In the chart,  $V_{pp} / V_{pp\_max}$  is plotted.

## 2 Xp 1220a.

The next day, I did another quick experiment. I basically did a single set of trials through all the resistors and captured the oscilloscope screen for each on. From that, I have nice waveforms that show what is happening as the load resistance decreases. I also did a bunch of calculations. In general, using a 6V power supply, it looks like I need the load to be at least 40 k $\Omega$  to spend 90% of the time as a sine wave, the remainder being a flat line.

### UNDER CONSTRUCTION

