

HW 6
Lance Go
ME 333

24.1.2) Choose R

R = 10k ohms. Tried to get a lower value resistor but nothing was working as well as the 10k so I kept it.

24.2.1) PWM calculation

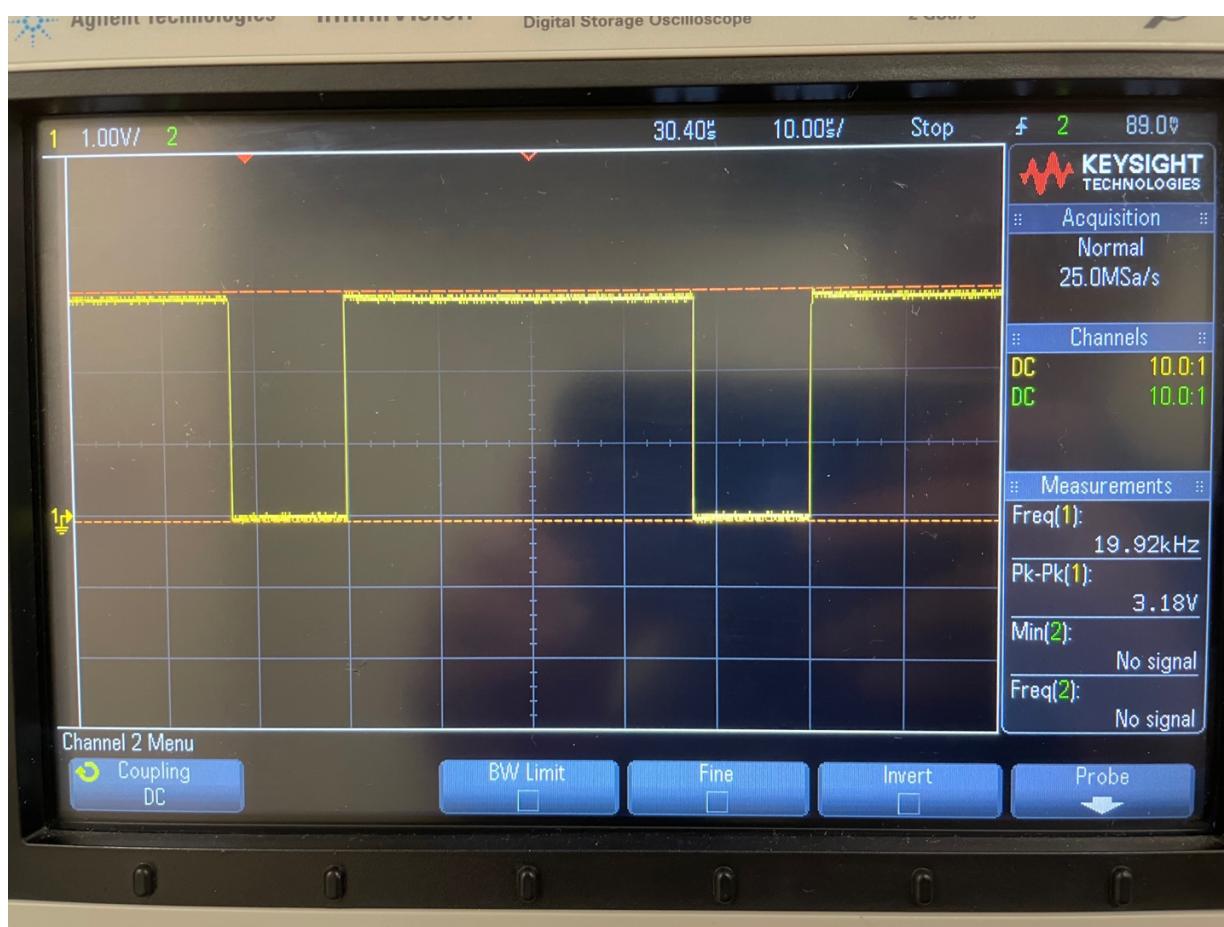
20 kHz, PBCLK = 80MHz, prescale = 1

$$1/20000 = (1 + PR3) * 1 * 12.5 \text{ ns}$$

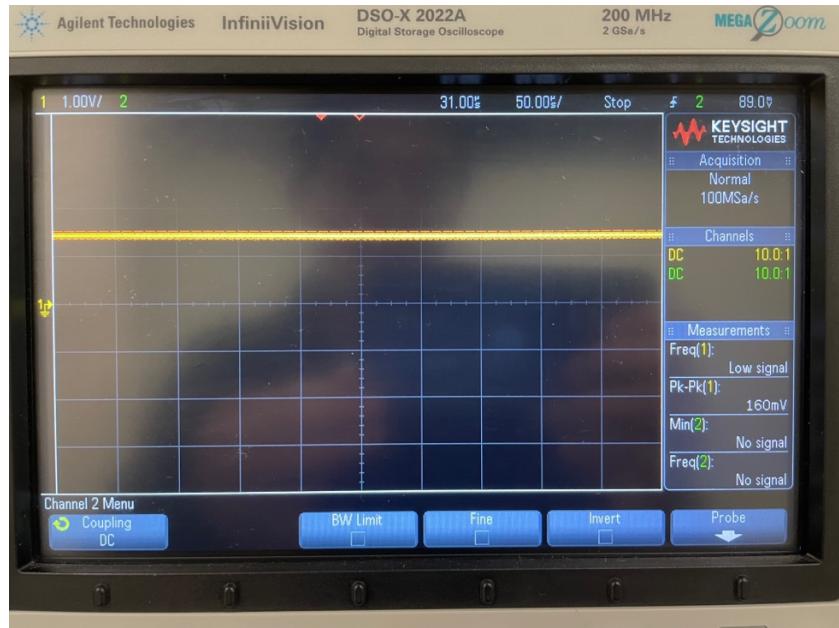
$$\underline{PR3 = 3999}$$

24.2.2) PWM program

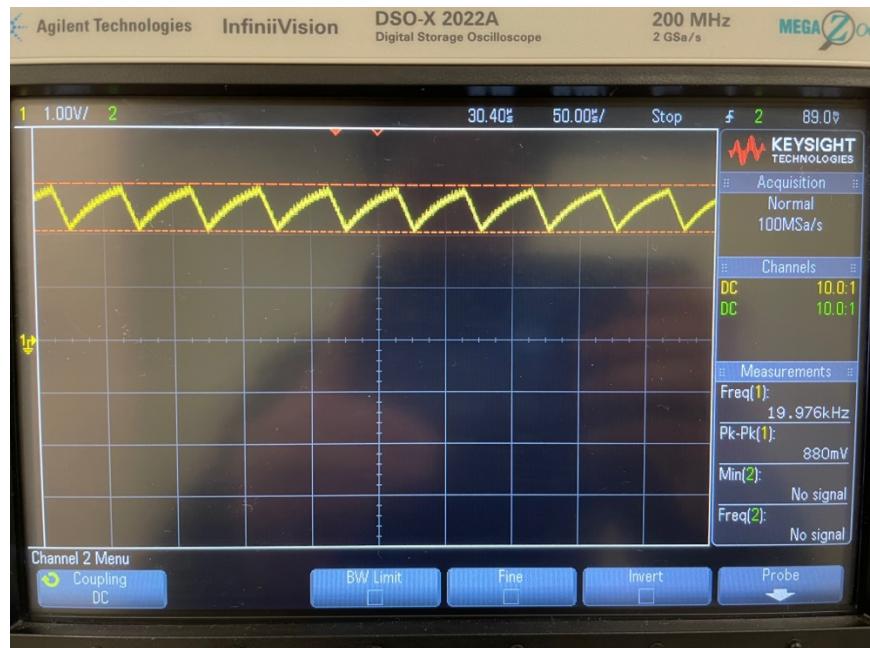
I do not have an nScope so here is an actual oscilloscope that I took pictures of.



Oscilloscope reading of the OC1 waveform

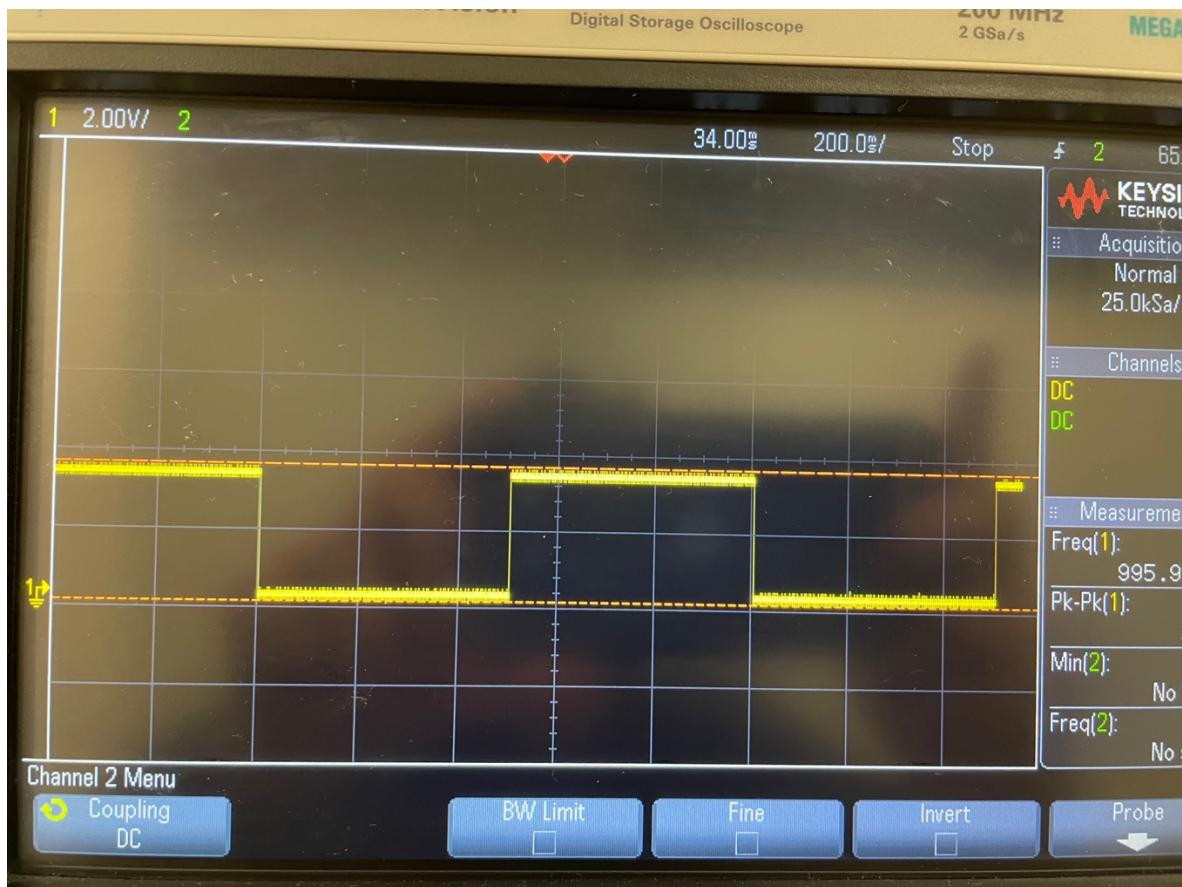


Oscilloscope reading for V_{out}



Oscilloscope reading for V_{out} without the capacitor. The difference is that the signal is significantly noisier without the cap acting as a filter.

24.3.1) Oscilloscope



Oscilloscope reading for V_{out} with the flashing LED

24.3.2) See code attached. I already completed the entire project so all of the other code is there, but it still works for this part.