

1. Question 1

1.1.  $2^{bits} = 256$

1.2.  $\frac{V_{SFR}}{n_{max} - n_{min}} = \frac{2,5}{244 - 14} = 10,87 \text{ mV}$

2. Question 2

2.1. This is the binary output at 0 times the quantizing resolution

$$15 \cdot 10,87 \text{ mV} = 165,1 \text{ mV}$$

2.2. The SFDR is greater than 6dB (assuming the plot is in dBs) as this is the highest peak of the Spurs or noise generated purely by the ADC. We cannot decide the metric of S/N as we do not know the peak of the 80kHz signal.

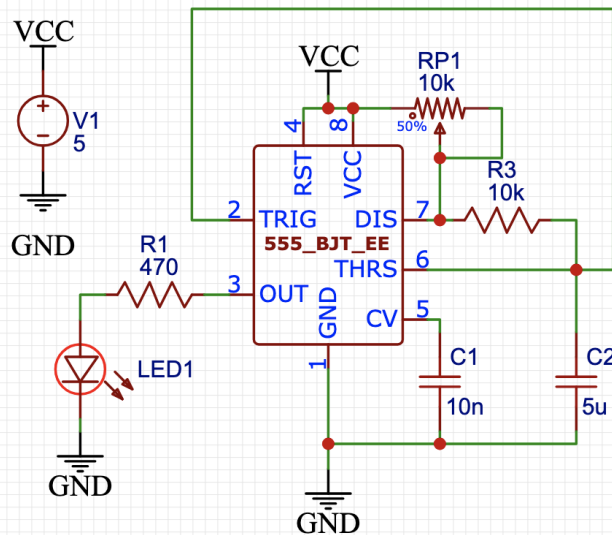
3. Question 3

3.1. Frequency is how often a full wave repeats/occurs. Duty cycle is how much of one period is the wave HIGH

3.2. Duty Cycle

3.3. We cannot interpret changes in light that fast so we just take the average value of the light over time as its brightness, which means PWMing the light can effectively change its brightness we perceive.

3.4.



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