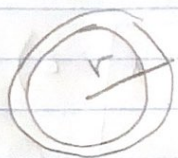


AM Radio

1) We targeted frequencies between 530 & 1710 kHz, specifically 660 kHz. The wavelength would be 454.4 meters and our antenna is much smaller

2) The inductance for the inductor we created was .43mH, with 65 coils of wire around a pvc pipe.



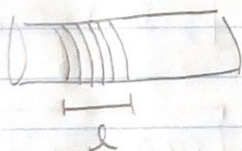
$$r = .04826\text{m}$$

$$l = .028575\text{m}$$

$$N = 65$$

$$L = \mu_0 \frac{N^2 (\pi r^2)}{l}$$

$$= .43\text{mH}$$



3) To reach the target frequency with an inductance of .43mH, we targeted a capacitance of .13nF. We created our capacitor by placing sheets of aluminum inside of a notebook and pressing down.

$$C = K \epsilon_0 \frac{A}{d}$$

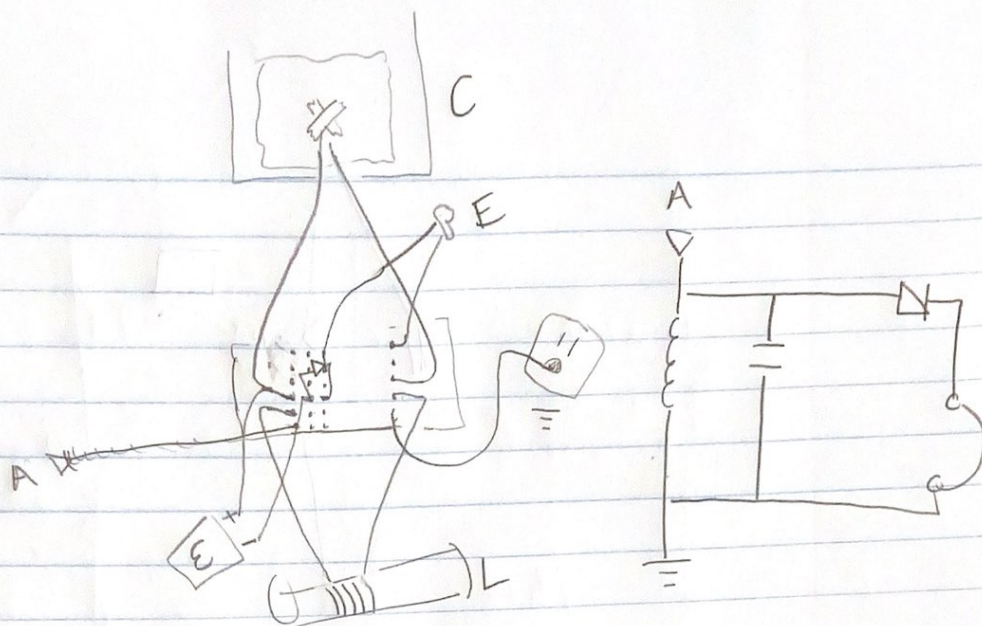
$$d = .0001016\text{m}$$

$$K = 2.3$$

$$\Rightarrow A = .3893\text{cm}^2$$

we reached .13nF with a much larger area than our calculations suggested.

4)



5) We reached a low level of success. Our circuit produced static however we could not hear a radio station. We troubleshooted by changing our capacitance via rotating & cutting the aluminum foil. More precise measures of inductance & capacitance might improve our design.