Kavi Dey
E157 RF Design
Lab Partner: Zoe Worrall
Design Project 2
December 13, 2024

# 1 Summary Information

The secret message is ”HMC”. The maximum range that we predicted our receiver would work at was XX m. The range where the signal reached the noise floor was XX m, and the range where the signal was no longer decodable on the oscilloscope was XX m.

The analytical system temperature was XX K and the measured temperature was XX K. The analytical receiver IIP3 was XX dBm and the measured one was XX dBm.

## 2 Pictures of Received Data

Figure 1: Picture of setup at 3 m range

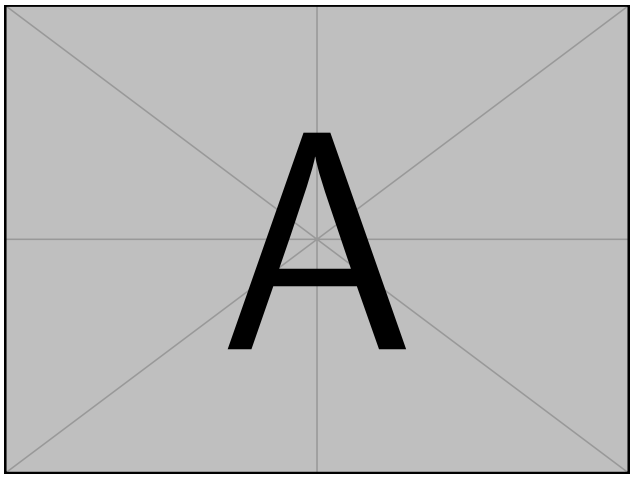


Figure 2: Oscilloscope trace at 3 m range

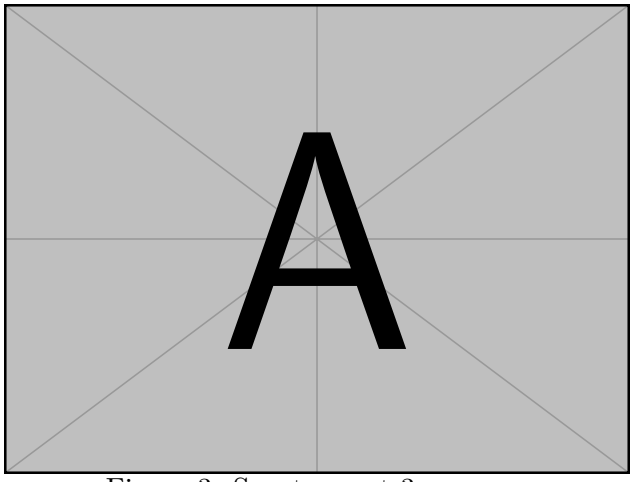

Figure 3: Spectrum at 3 m range

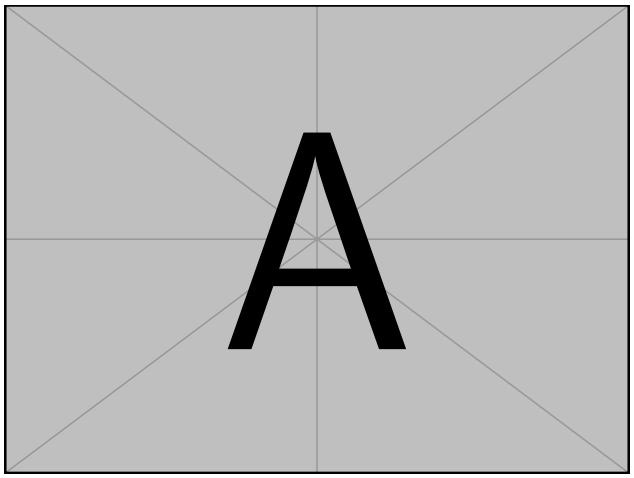

Figure 4: Picture of setup at max range

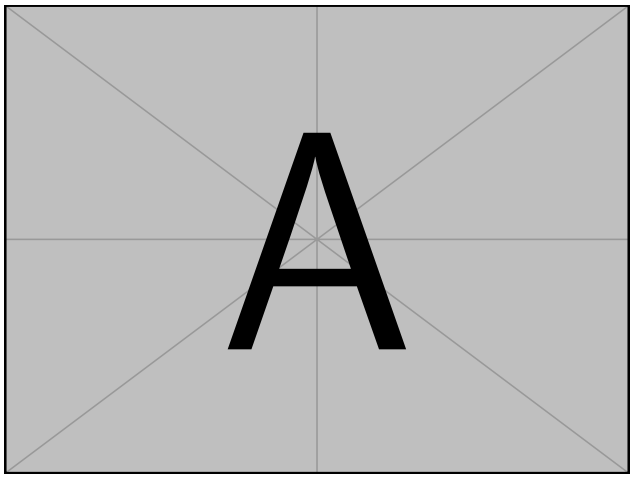

Figure 5: Oscilloscope trace at max range

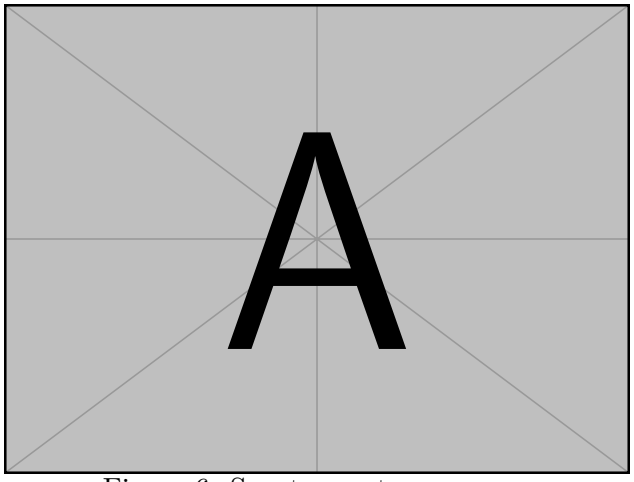

Figure 6: Spectrum at max range

# 3 Oscilloscope Trace Decoding

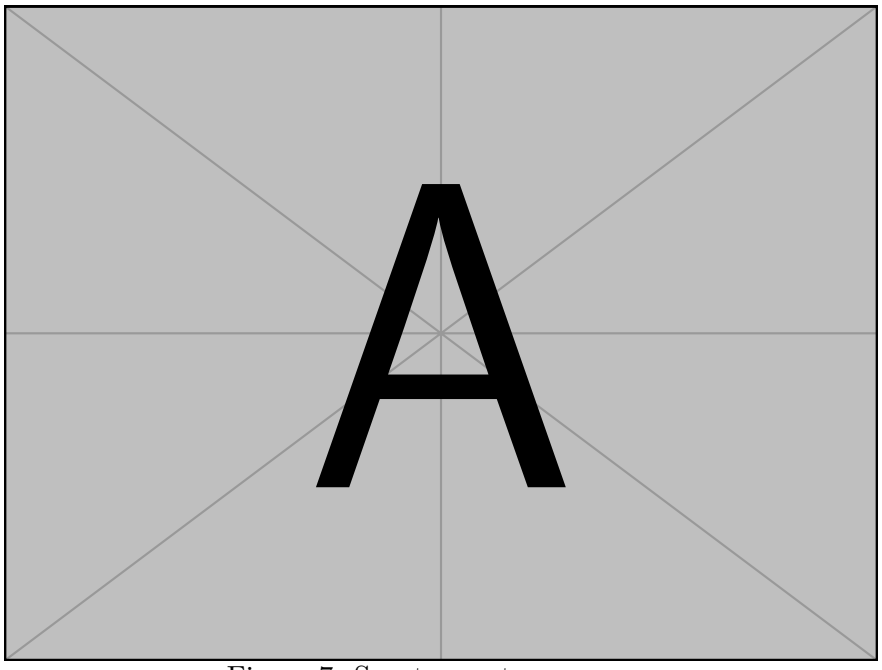


Figure 7: Spectrum at max range

# 4 Antenna Information

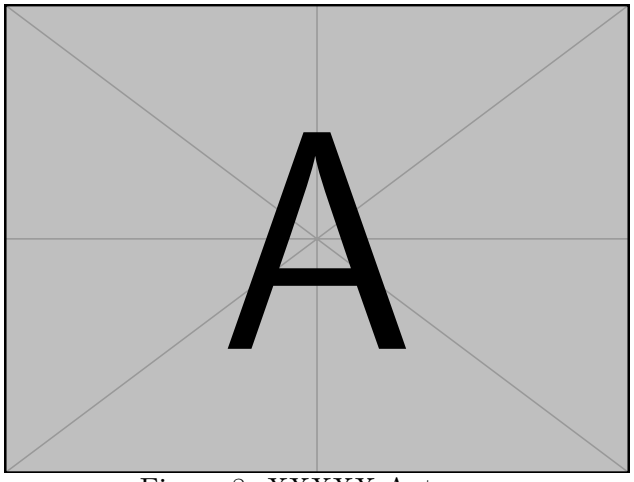

Figure 8: XXXXX Antenna

# 5 Receiver Schematic

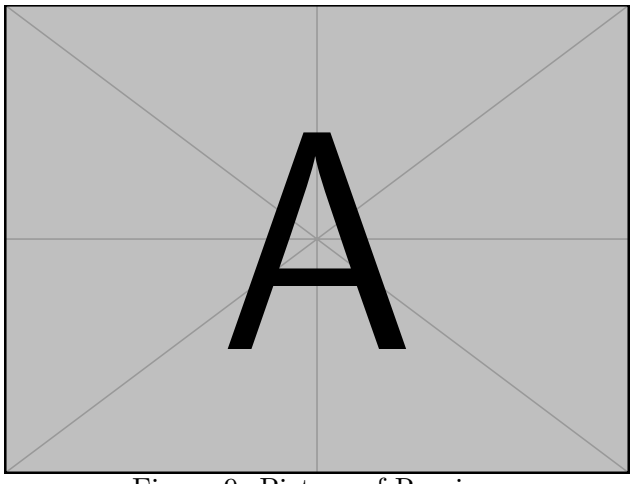

Figure 9: Picture of Receiver

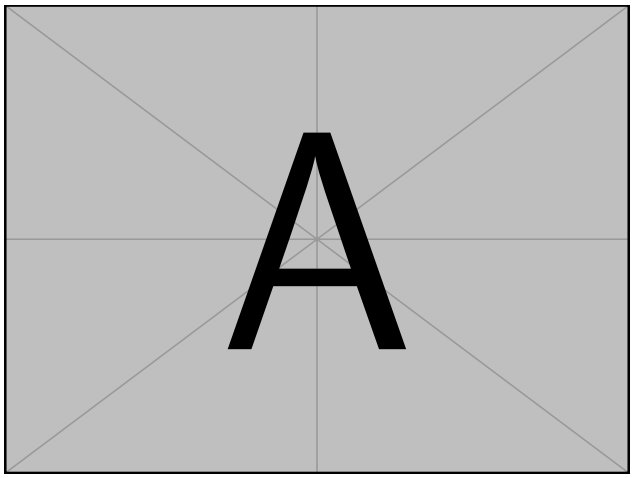

Figure 10: Receiver Schematic

# 6 Receiver Spectra

# 7 Theoretical Signal and Noise Levels

# 8 IP3 Distortion Characterization

# 9 Additional Notes

All of the data, code, and figures are available in this github repo: github.com/kavidey/e157/tree/main/dp_02.

1. `schematics/` has the pretty display schematics made in Altium