

1 Objectives

The objective for this lab is to construct a sequence of shaped pulses and examine the role of pulse shape on intersymbol interference and the effect of noise.

During this lab we will look at 4 different types of line code:

- Polar
- On-Off
- Bipolar
- Duobinary

2 Procedure

2.1 Pulse Types

During this lab we will be using a variety of pulse shapes. Below are the different pulse shapes that I used.

2.1.1 Raised Cosine Pulse

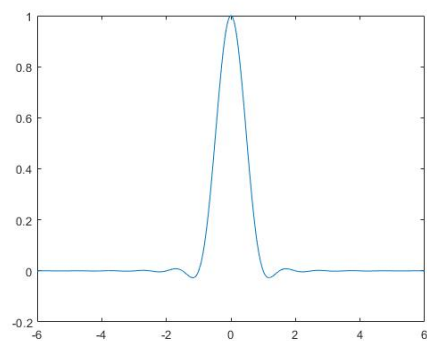
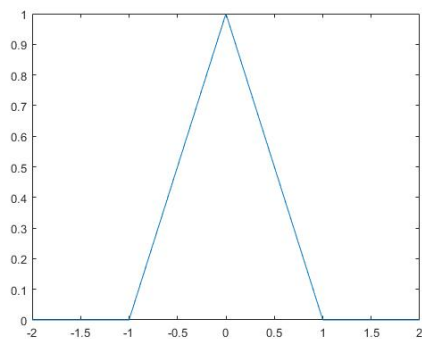
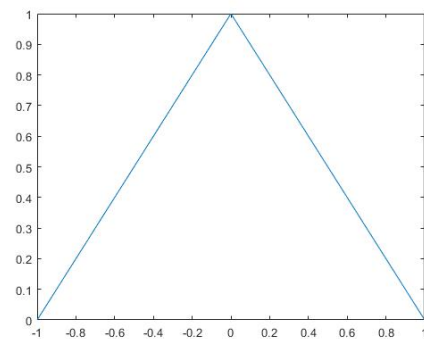


Figure 1: Raised Cosine Pulse

2.1.2 Triangle Pulse



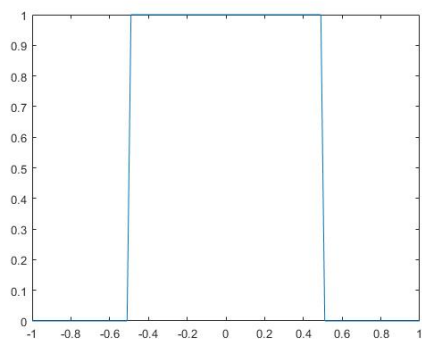
(a) Triangular Half Width Pulse



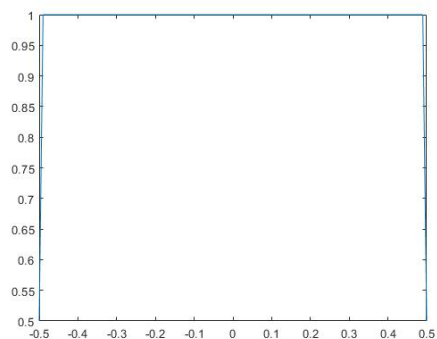
(b) Triangular Full Width Pulse

Figure 2: Triangular Pulse

2.1.3 Rectangle Half Width



(a) Rectangular Half Width Pulse



(b) Rectangular Full Width Pulse

Figure 3: Triangular Pulse

2.1.4 Sinc

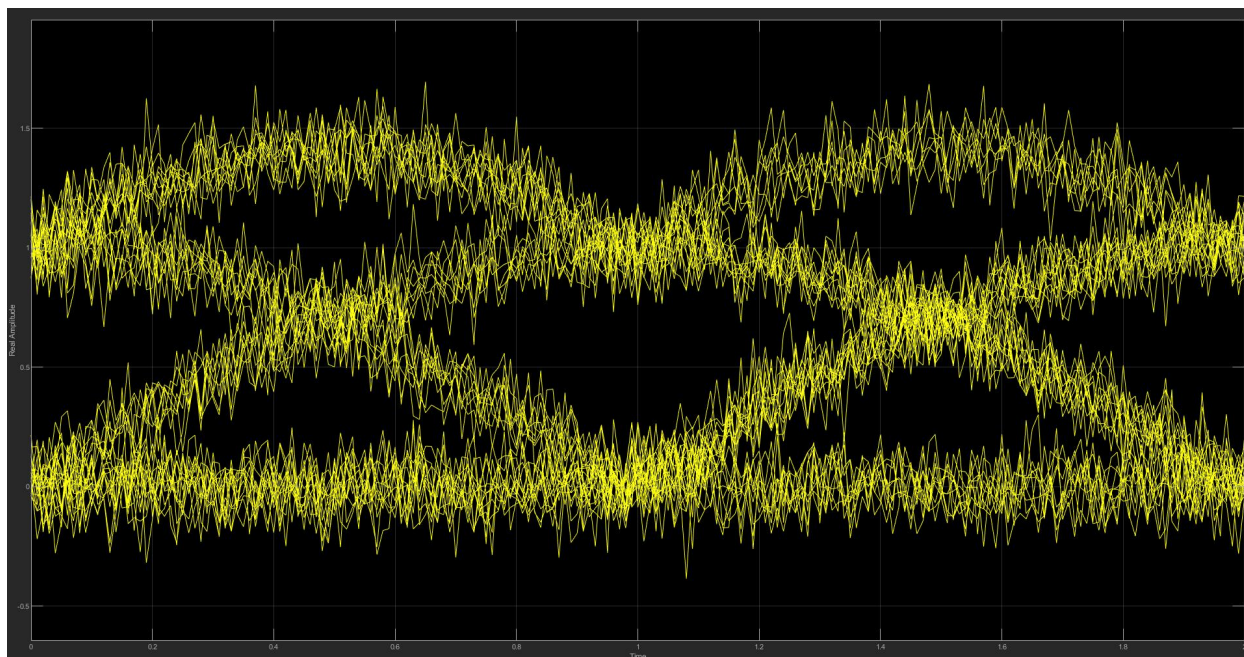


Figure 4: Raised Cosine Pulse

2.1.5 Sinc Squared

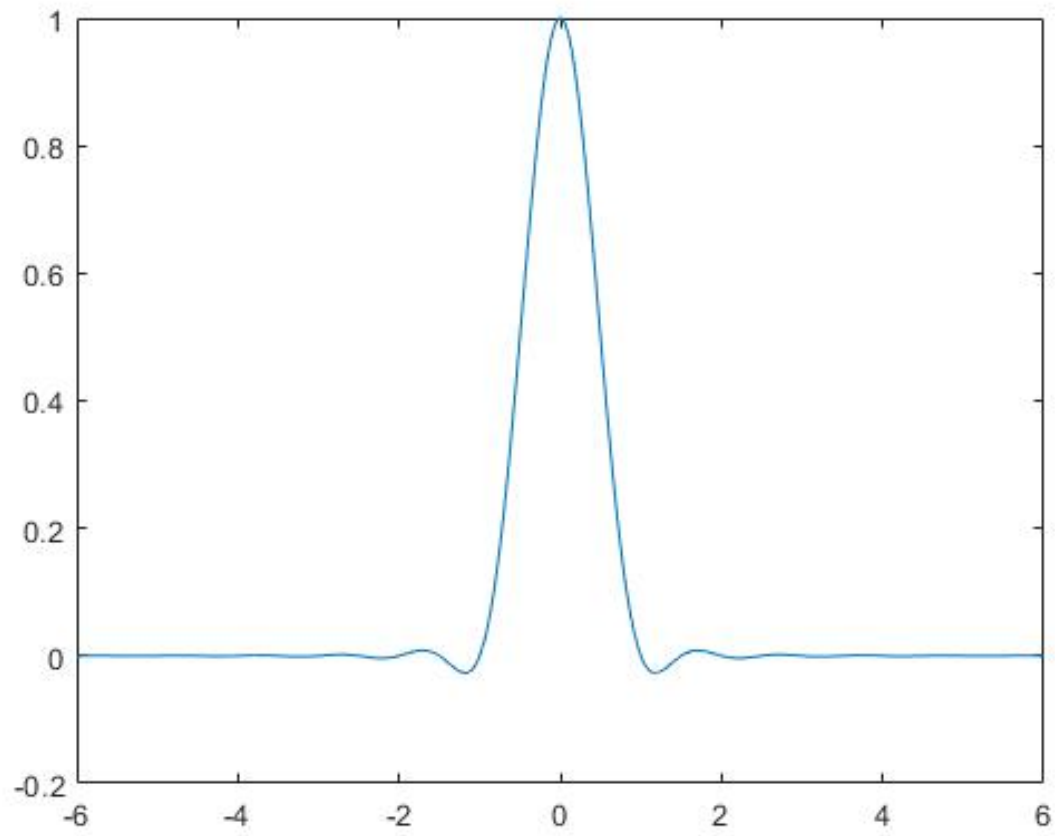


Figure 5: Raised Cosine Pulse

2.2 Sin Pulse

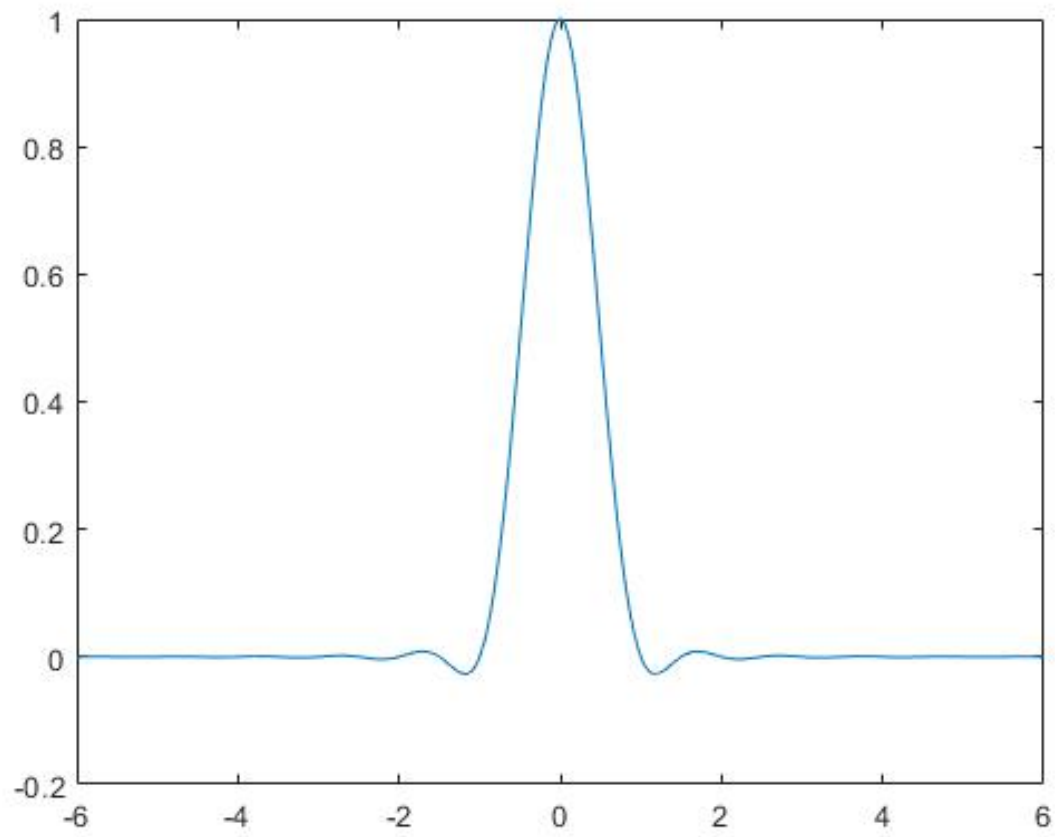


Figure 6: Raised Cosine Pulse

3 Results

3.1 On-Off

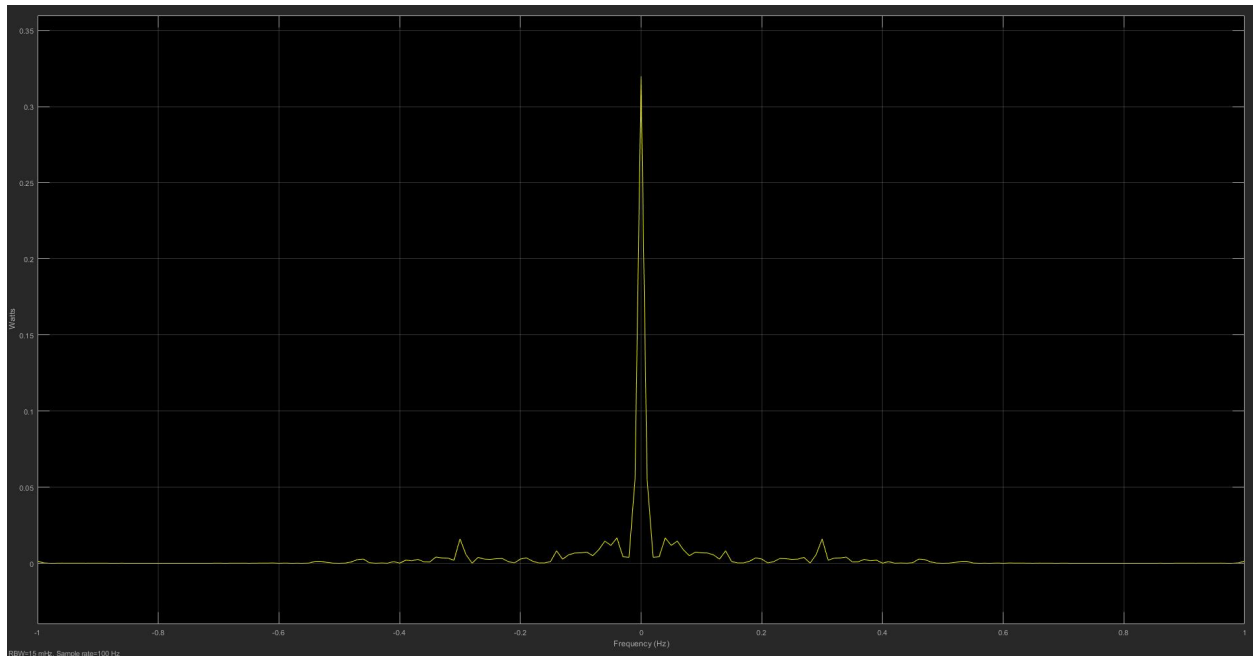


Figure 7: On-Off line Code Results

This figure is a result of the on-off line code. The first plot is of the binary that was generated. The second plot is using the Rectangular Full Width shaped pulse. The third plot is of the received signal with noise on the channel. In Figure 7.

3.2 Polar

3.3 Bipolar

3.4 Duobinary