ECE478 Lab 9 Report

Digital Shift Keying Generation and Detection

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ABSTRACT:

The following lab explores various shift keying schemes using TIMS Hardware. Specifically, we generate and demodulate ASK, BPSK, and QPSK signals.
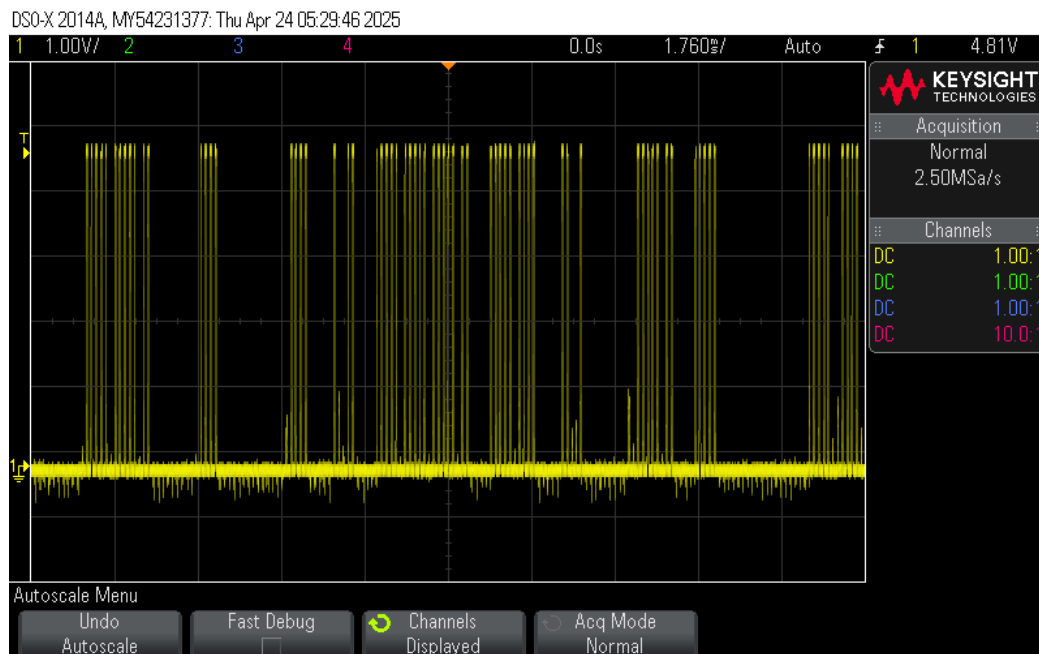
Experiment

ASK

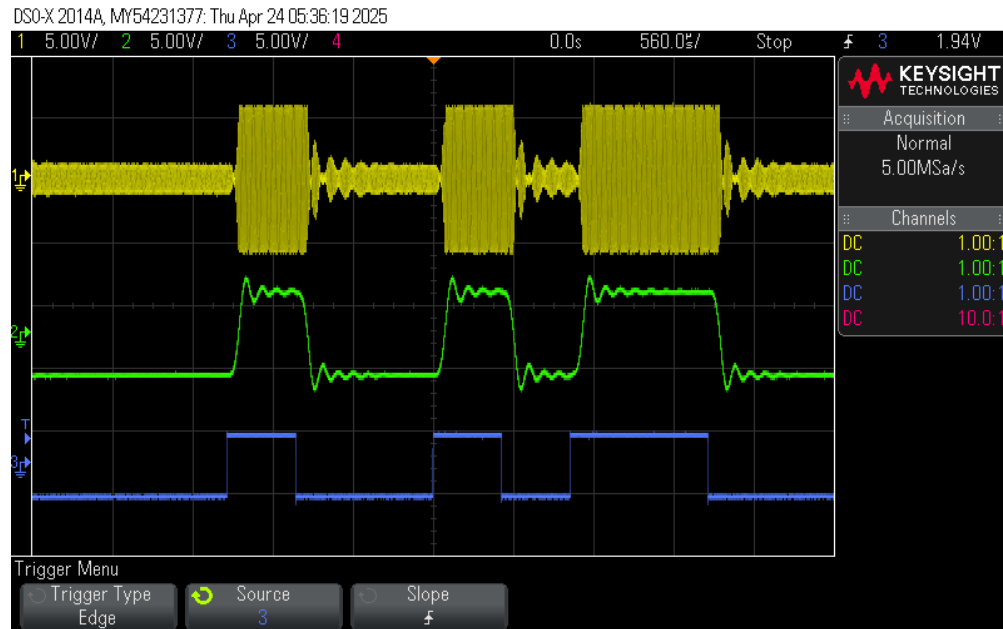Figure 1: ASK Generated Signal via Method A

Figure 2: ASK Generation via Method B. Yellow is ASK signal, Blue is original sequence, Green is post-LPF sequence
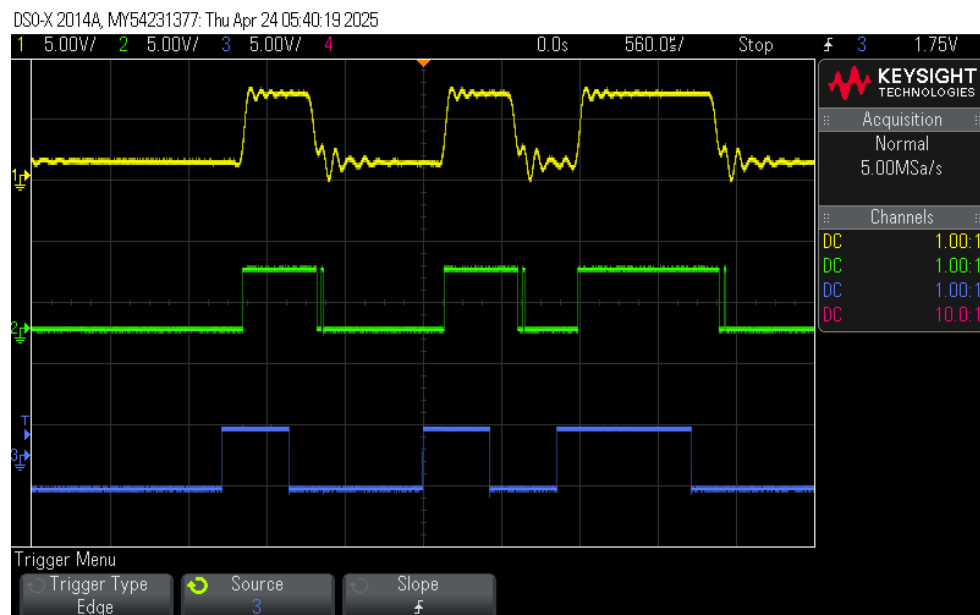

Figure 3: ASK Demodulation. Yellow is post-LPF sequence, Blue is original sequence, Green is post-processed sequence
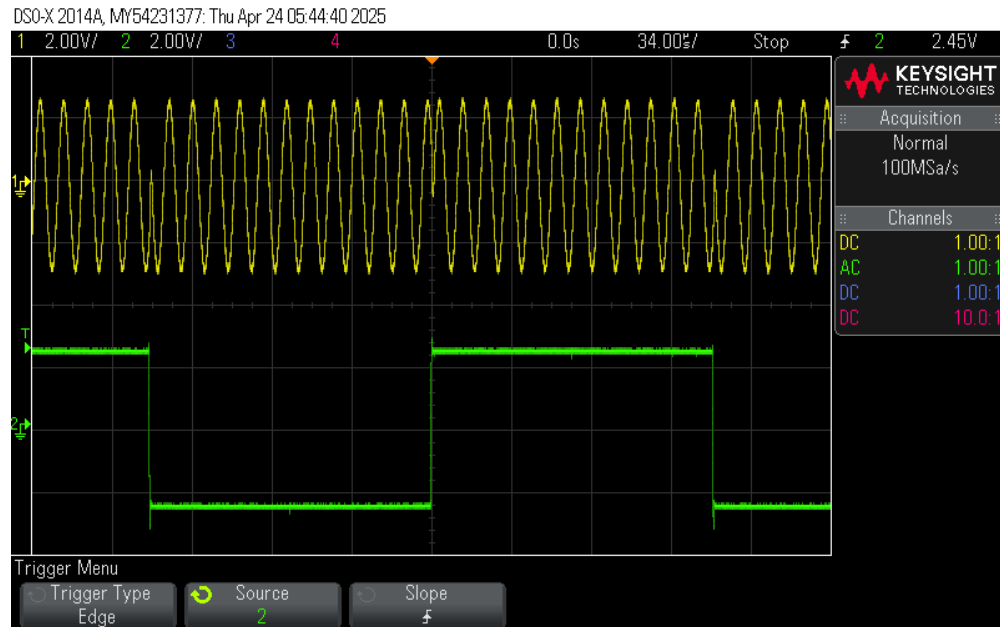
BPSK

Figure 4: BPSK Generation. Green is the original sequence, Yellow is BPSK signal
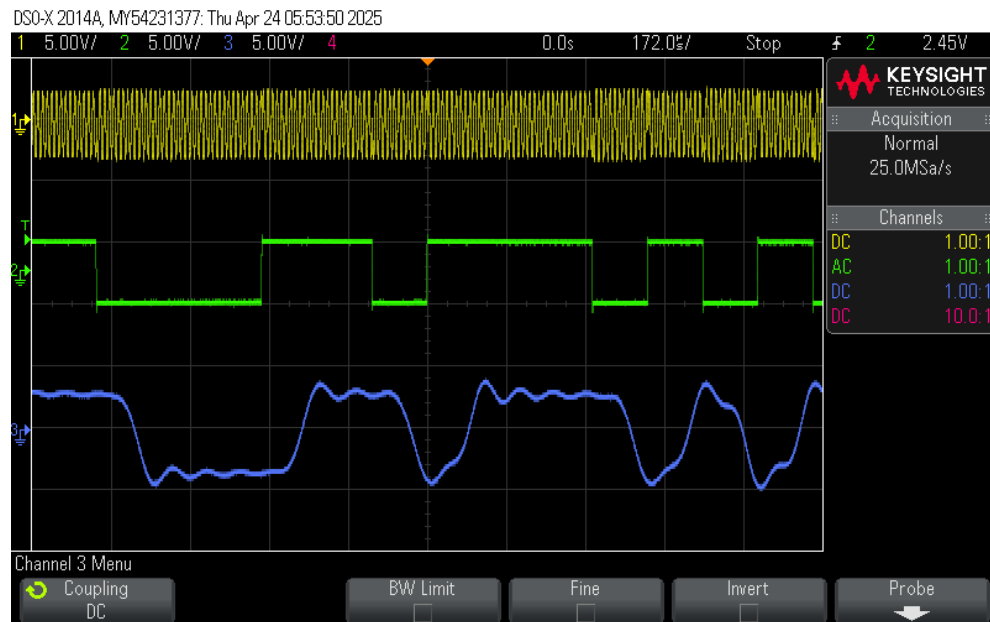

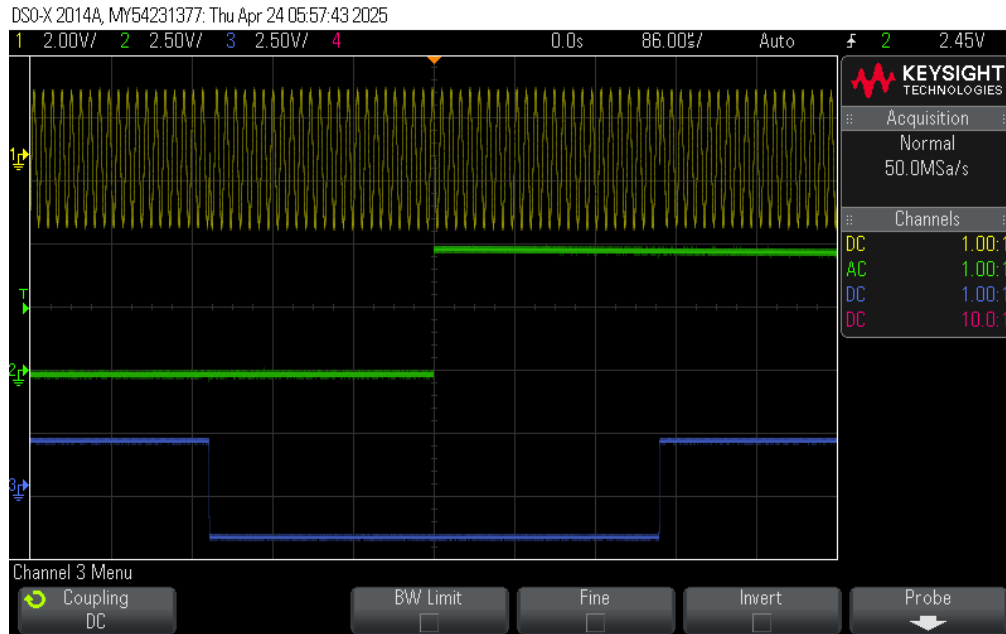Figure 5: BPSK Demodulation. Blue is demodulated signal.

Figure 6: BPSK Generation with Line Coding. Yellow is BPSK, Blue is Sequence. (Green is Sync)
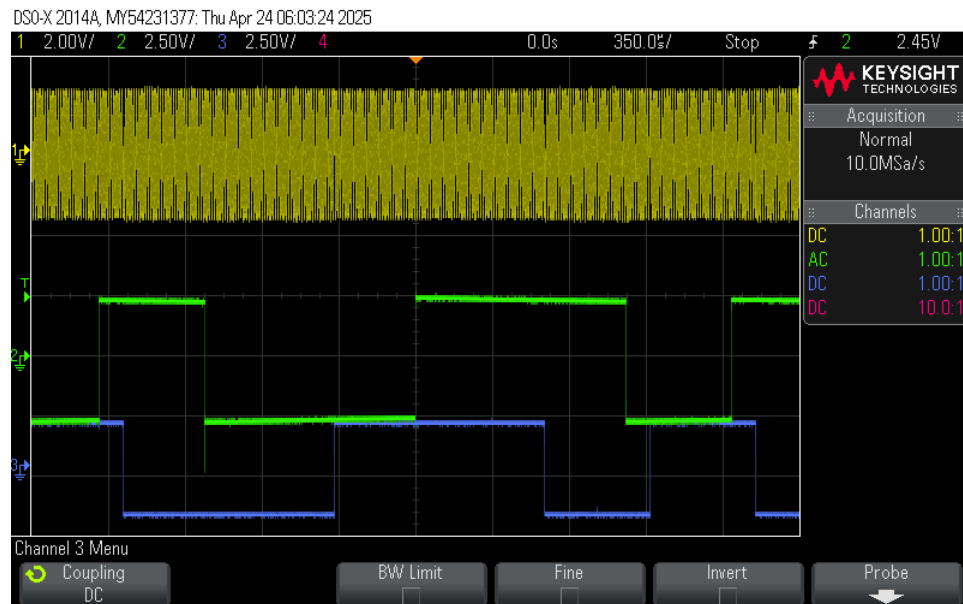

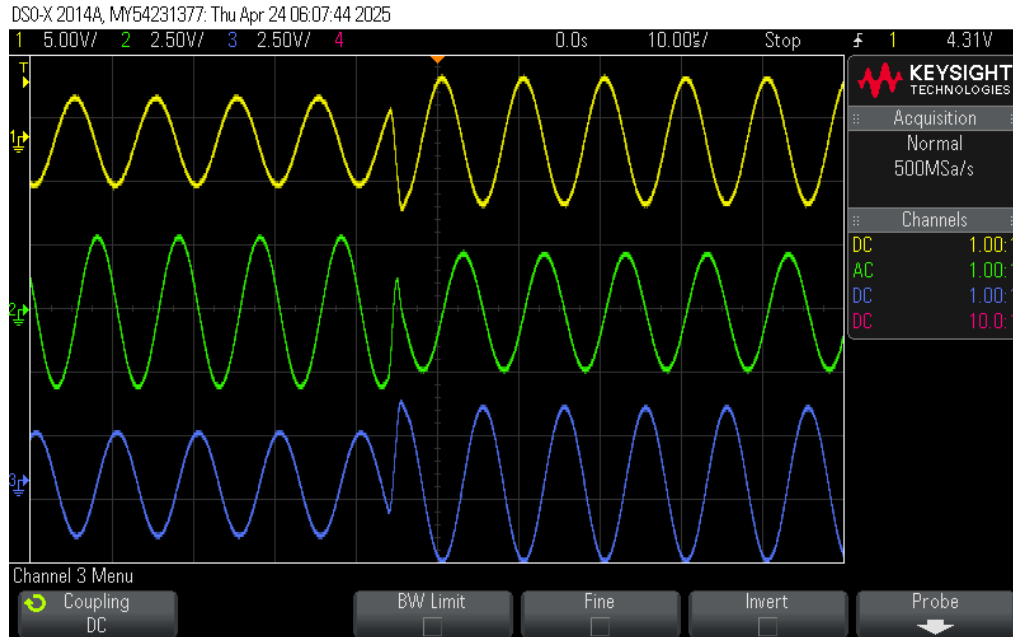Figure 7: BPSK Demodulation. Green is demodulated signal.

QPSK

Figure 8: QPSK Generation. Yellow is QPSK signal, Green and Blue are components of QPSK signal.

Above the yellow trace is the addition of the green and blue traces via the TIMS Adder module.
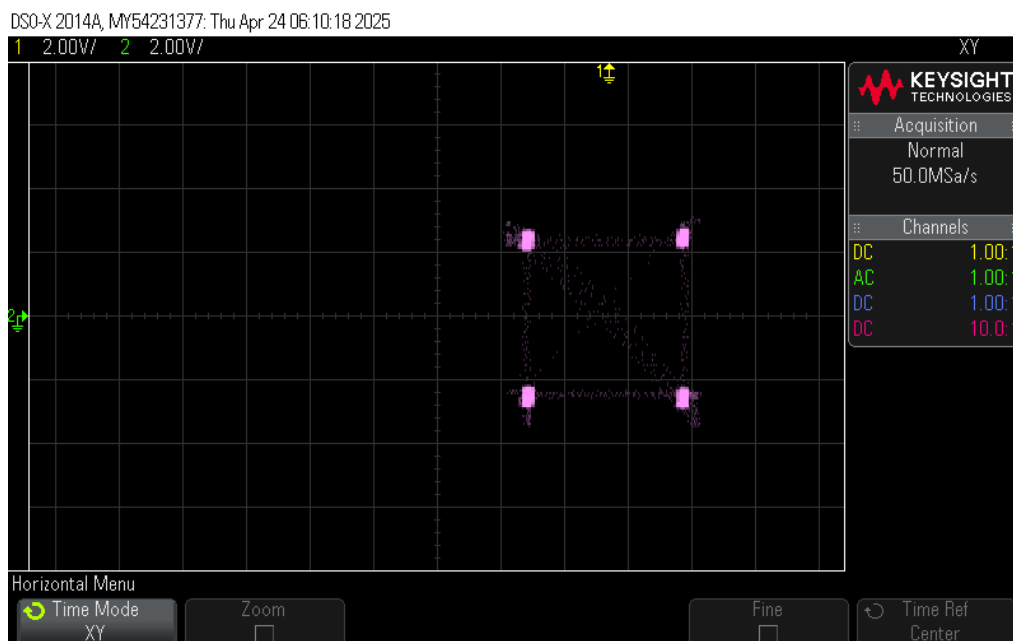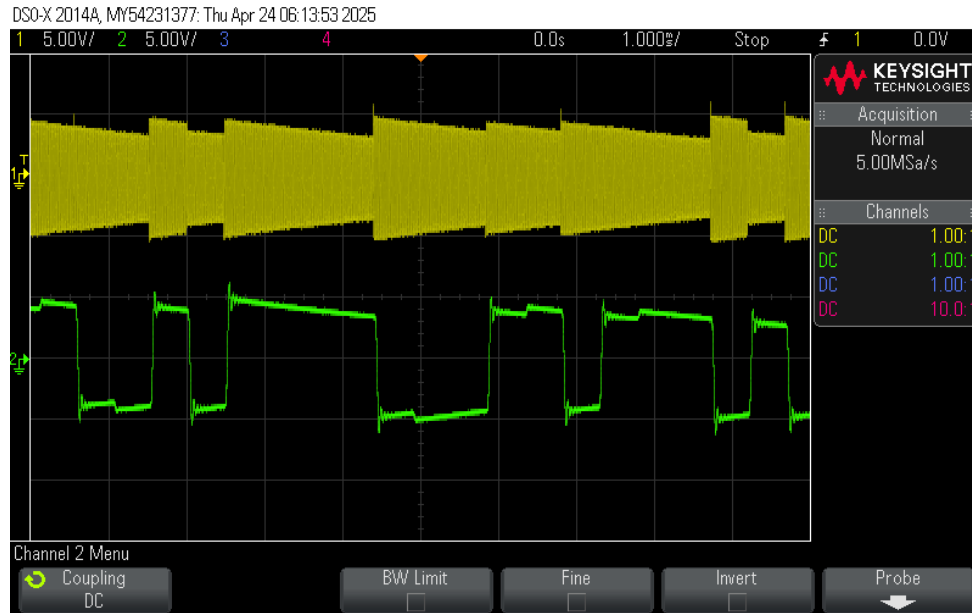

Figure 9: Constellation diagram of QPSK signal in XY-plot mode of scope.

Figure 10: QPSK signal and demodulated signal (green).