EXPERIMENT # 6
M-ary Frequency Shift Keying MFSK

INTRODUCTION

Rather than using a digital information sequence to change the amplitude of a carrier, the frequency of the carrier can be changed by the data sequence to be transmitted. The resulting digital bandpass signaling method is called frequency shift keying (FSK). **MFSK** is a variation of frequency-shift keying (FSK) that uses more than two frequencies. MFSK is a form of M-ary orthogonal modulation. M is usually between 2 and 64.

For example, the frequency of the carrier signal changes according to two consecutive bits in the information stream as shown in Figure 1.

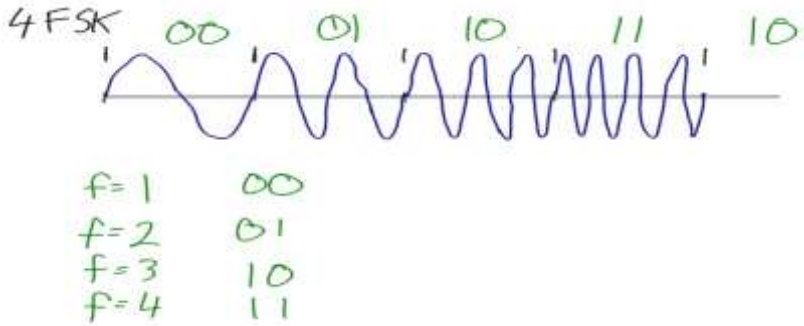

Figure 1: 4-FSK modulated signal.

Laboratory Procedure:

- Connect the circuit of MFSK in Figure 2, which consists of two units; DAC and VCO.
- Apply a digital sequence and verify circuit's operation.
- Observe the output signal.

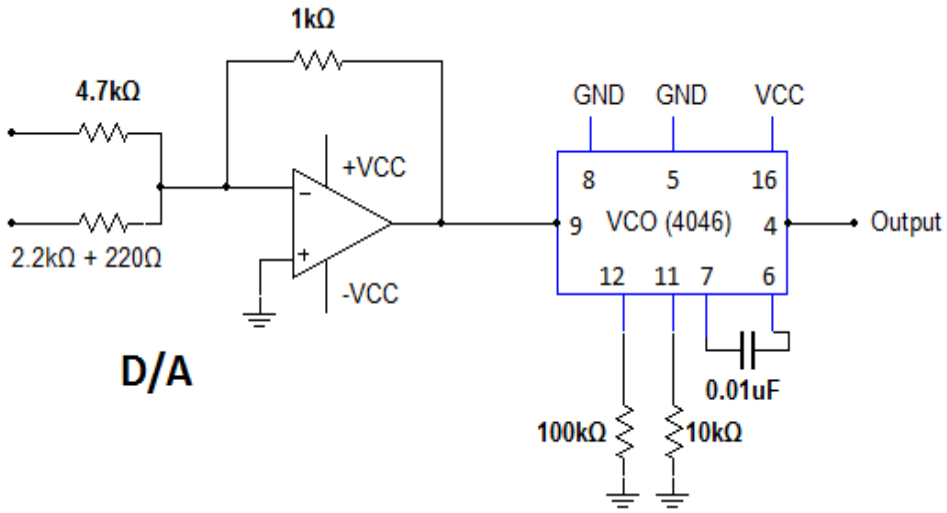

Figure 2: Circuit of 4FSK modulator.

Report:

- Explain the circuit operation
- Does the circuit produce CPFSK or discontinuous phase FSK signal.
- Plot the spectrum of the output signal.
- Plot a block diagram of 4FSK demodulator.