ABSTRACT

Radio Detection and Ranging (Radar) is an electromagnetic wave system that is useful for detecting, measuring distances and mapping objects that work by emitting electromagnetic waves and processing reflected signals to find out information from targets, including position, speed, direction, and shape. Radar has been widely used in everyday life, one of which is to detect the presence of movement, but still experiencing problems, especially in terms of the price required to make a radar system. Software Defined Radio (SDR) technology can be a solution for building a radar system.

Software Defined Radio (SDR) is software that can develop radar technology. To implement SDR, the GNU Radio software is used. GNU Radio has the function of providing a signal processing module to implement a radio communication system. In this Final Project, Frequency Modulated Continuous Wave (FMCW) Radar is used, which is one type of continuous wave radar. FMCW was chosen because of its simple design and lower complexity.

In testing the FMCW radar system using GNU Radio that can be done with a modulation frequency of 1.5 KHz and a sampling rate of 5 MHz. In this simulation using delay to get the engineering distance and movement of the object. The delay used is worth 300 ns, 500 ns and 700 ns. When the delay is changed, the result of the movement detection also changed, as seen from the FFT output signal. The greater delay, then the amplitude is getting higher and the frequency range will be wider.

Keywords: Radar, FMCW, Motion, GNU Radio.