ABSTRACT

Radio Detection and Ranging (RADAR) used to detect position, shape, and moving direction from any object detected by using electromagnetic wave method in rdio frequency signal. Radar system consist of antenna, transmitter, receiver and data decoder. Frequency Modulated Continous Wave (FMCW) is one of many Continuous wave radar system. FMCW radar generate wider range and higher resolution to detect small displacement. Aside of, FMCW has simple design and needs low power to radiate signal.

Software Defined Radio (SDR) used to develop radar technology. SDR devices work instead of hardware that funtions as mixer, filter, modulator / demodulator and etc. Then, SDR technology ease in develop radar system and spend lower cost. One of SDR technology implementation is Blade RF. Blade RF work instead transmitter, receiver and provide wide bandwidth. Operation system that used to implement FMCW radar is GNU radio software that used for signal processing.

The experiment of FMCW radar system can be done with specific frequency 1.5 KHz and bandwidth 2 MHz. This experiment takes 10 measurements and every measurement shows different result of electromagnetic wave that comes from receiver. From the experiment shows that small displacement was detected by seeing differencies in phase calculation from transmitted signal and receiver signal. This method is called by phase processing detection, which the data can be extracted to get the position fron an object.

Kata Kunci: Radio Detection and Ranging (Radar), Software Defined Radio (SDR), Frequency Modulated Continuous Wave (FMCW), GNU Radio, Blade RF X115.