ABSTRACT

Radar is a vital technology is used for military or commercial aviation. With radar, could be know the position of objects around us by utilizing the reflection signal. Besides an active radar with its own antenna, There is also a passive radar that utilizes electromagnetic waves beam are nearby. One of the wave that can be used is a cellular wave. Therefore the passive radar is also commonly called cellular radar. Cellular signals that can be exploited is the signal of WCDMA base stations. By utilizing the cellular system design can be more quickly and efficiently because using the existing infrastructure.

In this final project will be simulate the mechanisms of sending and receiving signals on the cellular radar, analyzes the influence of distance and delay to the signal received, analyzes the influence of noise and velocity to signal received and the accuracy of radar,. In addition, also will be calculated the propagation loss that might occur and the effect of WCDMA bandwidth to the maximum range of cellular radar. Objects are detected in the form of a ship in a state of silence.

From the simulation results, it was found that the signal received by the radar receiver has a characteristics of amplitude, frequency and phase differences itself which caused by the change conditions of channel. In addition, the greater of delay pilot bit that received, then getting away object from radar. SNR is large and low-velocity objects would cause the detection more accurate. When using the bandwidth 5 MHz and 20 dB SNR, so the system can only be used for the short range, which is about 1351 meters from the receiver antenna. So, it is suitable for observation of shipping traffic situation just around the port.

Keywords : *cellular radar, range, bandwidth, WCDMA, BTS, SNR*