

ABSTRACT

Wall penetrating radar or commonly known as Through-Wall Radar (TWR) has been widely applied in various fields, which is in the evacuation of disaster victims who have been crushed by debris. TWR is an application of radar that works in a wide frequency range or Ultra-Wideband (UWB) so that it has high accuracy in detecting objects behind the walls. The Vivaldi antenna is used to get high-resolution results because it can work on UWB. To produce a high level of accuracy, required parameters or dielectrical characteristics of the type of wall that used.

In this final project, an experiment was made to determine the effect of the walls on detecting respiratory vital signs using a radar system. The radar system are modeled using a Vector Network Analyzer (VNA) and BladeRF. This experiment was carried out in several steps, namely making the experimental system design, collecting experimental data, processing the experimental data, and analyzing the experimental results. The types of walls used in the experiment are brick walls and woods.

The experimental results of this Final Project are to produce determine the effect of walls on respiratory detection. Experiments using VNA generate data for an analysis of the effect of the walls on detecting object. Result of experiments using GNU Radio and BladeRF is proving the presence or absence of the effect of the walls on detecting respiratory vital signs using a radar system.

Keywords: Through-Wall Radar, Respiratory, Obstacle, Walls.