# ABSTRACT

The existence of an object behind a wall is important information. Especially for evacuation the victims of natural disasters that are behind the ruins of the wall. This can be solved using a Through the Wall Radar (TWR). TWR is application of radar that works on the Ultra Wideband frequency (UWB) so that information received by TWR has a high level of accuracy due to having a wide bandwidth so that it can affect the results of the resolution from TWR. To achieve the high level of accuracy, a characteristic value is needed for each barrier wall material.

In this final project, the experiment for the characterization of each type of barrier wall material in TWR using Vector Network Analyzer (VNA) as a model of TWR. This experiment is carried out in several stages, that is making the experimental system design, retrieval of experimental data, processing of experimental results and analysis of each type of the wall barrier. The variant of the wall barrier is brick wall and wooden wall. At the processing stage, the experimental results are carried out by signal processing so that reference signals can be identified and reconstructed signals are made from each of the effect in the experiment. Based on the results of the reference signal and the reconstruction signal on each effect the wall barrier, the characteristics of the barrier wall can be analyzed.

The form of the experimental results at this Final Project get an analysis of the experiments using and without the deconvolution method from the effect of the barrier wall. The analysis of the experimental results is the signal response of the brick wall was more solid, so the propagation of the TWR is inhibited. It is causes the signal response effect of the brick wall is wider than the wooden wall. While the analysis using the deconvolution method produces a response to the reflected signal objects that are more easily to identified, especially on brick walls.



**Keywords**: TWR, Deconvolution, UWB, VNA.