

ABSTRACT

Through-wall Radar (TWR) is a non-destructive technique that is used to determine targets behind visually obstructed areas. A common problem caused by this system is the reflection of objects in the environment. In this paper, the author discusses the performance produced by the Multiple Input Multi Output (MIMO) antenna in TWR. MIMO antenna together with Vector Network Analyzer (VNA) as a wave generator that is used to perform multiple scans and then combine them into the graphical display of the target. MATLAB is used to translate frequency waves generated by VNA into Time Domains so that they can produce output in the form of impulses.

The MIMO-Radar that will be applied to the Radar Wall provides a backup in supporting the necessary objects behind the wall. With the accuracy of the object detection results will produce performance on the system Through the Wall Radar (TWR) the maximum.

This experiment is carried out by comparing the image matrix of the B-Scan image detection results obtained by Single Input Single Output (SISO) antennas with using Multiple Input Multi Output (MIMO). The results get maximum amplitude results from objects that have been reflected by waves. With MIMO system the radar can detect of the distance between wall with the object in this eksperimen 1 m and length of the object is 40 cm.

Keywords : *Through-wall Radar, Single Input Single Output (SISO), Multiple Input Multi Output (MIMO)*