

ABSTRACT

Antenna equipment is a very important component in the telecommunications sector. Currently the use of a lot of research on MIMO antennas to support the technology, because it can increase channel capacity by using multiple antennas on the Tx and Rx sides. However, because the MIMO antenna uses many antenna elements, it is necessary to adjust each antenna element to reduce the mutual coupling effect. High mutual coupling values between antenna elements can reduce antenna performance such as power reception that is not optimal. When there are antennas with the same frequency and the same polarization close together, this results in a very large mutual coupling value.

Based on this, this final project proposes techniques for improving the value of mutual coupling that can minimize the effect of mutual coupling. The technique used is the addition of an isolation wall placed between antenna elements measuring 2x4 with a frequency of 3.5 GHz. The antenna arrangement used is 2x4 with circular co-polarization and cross-polarization polarization. Then an isolation wall is added between the antenna elements, then the mutual coupling value obtained will be analysed.

The results showed that the arrangement of the polarization of the cross-polarization antenna with the L-R-R-L configuration (configuration 4) using an isolation wall resulted in the lowest mutual coupling value with a value of -52.399 dB between elements 3 and 8 with a frequency of 3.5 GHz. Before the isolation wall was added, the value of the mutual coupling produced was -44,378 dB. This proves that the addition of an isolation wall can make the mutual coupling value lower.

Keywords: Circular polarization, isolation wall, mutual coupling