

ABSTRACT

Multiple Input Multiple Output (MIMO) systems are technologies that have the potential to be developed in increasing channel capacity. The increase in channel capacity in the MIMO system is not only determined by the number of antennas used, but is determined by the characteristics and concept of antenna preparation. MIMO antenna design requires a low mutual coupling aspect. Referring to the mutual coupling between antenna elements affected by antenna polarization orientation, it is necessary to arrange polarization to reduce the level of coupling between elements in MIMO antennas.

This Final Project analysis of the effect of circular polarization preparation on the performance of the MIMO antenna system based on channel capacity achievements. This final project also uses a rectangular patch microstrip MIMO antenna that works at a frequency of 5.188 GHz using corner truncated techniques and coaxial probe units. The antenna design uses Roger Duroid RO4003C substrate which has a thickness of 0.813mm and $\epsilon_r = 3,38$. The first step in this Final Project designed a one-element antenna, after which an eight-element antenna with the configuration of Left Hand Circular Polarization (LHCP), Right Hand Circular Polarization (RHCP) and configuration of RHCP and LHCP.

The results show that the polarization of each cross-polarization antenna element with RHCP-LHCP configuration results in low mutual coupling, while the highest spectral efficiency is co-polarization with LHCP configuration. An antenna co-polarization with LHCP configuration produces an estimated channel capacity of 11,578 bps/Hz when it is at the lowest Signal to Noise Ratio (SNR) of 5 dB.

Keywords : *antenna, MIMO, polarization, channel capacity*