

## **ABSTRACT**

*The development of communication system technology is increasing, causing the demand for internet access speed to be higher. Now wireless communication with MIMO antenna system is being developed, because it has a high spectral efficiency.*

*The MIMO antenna system requires low mutual coupling and correlation values so that the elements do not affect each other. So it takes several methods so that it can be achieved, one of which is the polarization diversity technique. This final project aims to analyze the performance of MIMO antenna channels based on the polarization diversity technique, by looking at its effect on the spectral efficiency. This final project is focused on analyzing the effect of the arrangement of circular polarization by considering the mutual coupling between antenna elements to see its effect on the spectral efficiency. Several existing antenna configurations have been simulated from previous studies, using the Matlab application. The antenna polarization configuration to be carried out is on the transceiver side.*

*The MIMO antenna that will be tested is 4 elements, for the type of polarized co-polarized and cross-polarized. The performance of the channel that will be analyzed is spectral efficiency. After simulating all polarization array scenarios, the largest spectral efficiency value is when the co polarization array has a low correlation with the lowest value of 53 bps/Hz. The arrangement of polarization affects the value of the spectral efficiency.*

**Keywords:** *polarization diversity, MIMO antena, spectral efficiency*