

## ABSTRACT

In the fifth generation (5G) era, the use of wireless communication technology is predicted to increase. One of the problems encountered in wireless communication is wave reflection caused by multipath environmental conditions. Reflection of waves in a multipath environment causes the waves received by the receiver to have different polarization and timing so that communication between the sender and receiver becomes ineffective. The solution that can be used to overcome this problem is to use a reconfigurable antenna with the ability to vary the polarization of the antenna as needed. Therefore in this final project will be designed and realized a reconfigurable antenna that has the ability to vary the polarization of the antenna.

In this final project, a reconfigurable polarizing antenna is designed and realized using a circular patch with slots where two mutually perpendicular rectangular slots located on the edge of the patch antenna are added to the circular patch antenna to form circular polarization. To make changes to the polarization configuration, it is done by activating and deactivating the switch device located on the antenna feedline. The antenna is designed to work on one of the 5G frequency candidates in Indonesia, namely at a frequency of 3.5 GHz. The designed antenna is capable of changing the polarization by Right Hand Circular Polarization (RHCP) and Left Hand Circular Polarization (LHCP).

Based on the simulation results for the RHCP configuration antenna, the return loss value is -16.488 dB and the axial ratio value is 2.842 dB. For the simulation results of the LHCP configuration antenna, the return loss value is -13.4 dB and the axial ratio value is 1.996 dB. As for the measurement results, the RHCP configuration antenna obtained a return loss value of -11.7653 dB and an axial ratio value of 1.815 dB. For the measurement results of the LHCP configuration antenna, the return loss value is -3.150 dB and the axial ratio value is 1.587 dB.

**Keywords:** *Reconfigurable antenna, reconfigurable polarization antenna, 5G, slot antenna, circular patch*