

ABSTRACT

These days, everyone uses wireless technology for long-distance communication. The development of wireless technology has touched the fifth generation (5G). When it has been used, wireless technology can be interference. When the wave has been propagated, everything that blocks the wave can interfere with the wave. All of the objects in the world can cause various conditions like scattering or diffraction. Scattering or diffraction can make the wave change. One of them is depolarization.

The solution to depolarization that happens on the wave is to use an antenna that can receive more than one polarization. An antenna that can receive more than one polarization is the reconfigurable polarization antenna. A microstrip antenna has been developed in this final project research with a circular patch and 90° hybrid coupler. For changing the polarization, the antenna used a switch on the hybrid coupler. The polarizations achieved from the antenna are right-hand circular polarization (RHCP), left-hand circular polarization (LHCP), vertically linear polarization, and horizontally linear polarization. With the frequency 3,5 GHz - 3,6 GHz, this frequency is one of frequency 5G band n78 which is 3,3 GHz - 3,8 GHz.

From the simulation result, all of the polarization configurations achieved match with the antenna specification, which is the values of return loss ≤ -10 dB. The axial ratio values in the simulation result for each polarization are RHCP 2,54 dB, LHCP 2,73 dB, and for both linear polarization 40 dB. But for the realization of the antenna, not all of the frequency achieved return loss ≤ -10 dB. And the measurement of the realization antenna *axial ratio* for each polarizations are RHCP 3,64 dB, LHCP 3,14 dB, vertically linear polarization 26,24 dB, and horizontally linear polarization 29,82 dB.

Keywords: *5G, scattering, diffraction, polarization reconfigurable antenna, microstrip antenna, hybrid coupler.*