*ABSTRACT*

*5G is a new generation technology that is predicted to be launched commercially in 2020. This technology is designed to be able to cope with the growing number of user needs. By 2020, it is predicted that every single user will have more than one device connected to the network, even all objects are enabled to connect to the network. Therefore, one of the 5G technology criteria is having the ability to adapt, adapt to weather conditions as well as the number of users who use them. The on / off technique of the antenna is one of the techniques considered to support the antenna's adaptiveness.*

*In previous study, design and isolation analysis has been evaluated between massive MIMO cross polarization antennas with single polarization that works at 60 GHz frequency. Then, design of dual frequency antenna works at 28/38 GHz has been evaluated. In those previous studies, design of planar microstrip massive MIMO that works at 28 GHz, connector simulation, and on/off technique has not been evaluated.*

*In this final project, the design of massive MIMO cross polarization antenna that works at 28 GHz frequency has been evaluated with on / off technique scenario and connector simulation for the analysis. The designed antenna is a microstrip antenna totaling 64 antennas with circular patch and unidirectional radiation pattern, using roger duroid 5880 substrate and proximity coupled feeding technique. Optimization is done at each stage of arrangement of antennas (1 antenna, 4 antennas, 16 antennas, and 64 antennas) by changing the dimensions of the antenna.*

*Based on the study, obtained the antenna massive MIMO cross polarization with average S-Parameter value below -15 dB, gain 18.76 dB, and bandwidth 801 MHz. After the design, then testing the on /off technique to see the differences on antenna parameters that have been made before.*

*Keyword: Massive MIMO, Antenna, 5G, Cross Polarization*