

## ***ABSTRACT***

*Many high-frequency candidates will be used for 5G mobile communications to increase traffic capacity, as well as review its capacity and reach. One of those frequency bands is at 15 GHz. Radio access is a technology of its physical connection using radio in communication network. Radio access 5G uses MIMO antenna system (Multiple Input, Multiple Output) to increase data rate.*

*The purpose of this Final Project is to design and realize microstrip antenna with patch H-slot MIMO  $8 \times 8$  which work at 15 GHz frequency with technique of transmission line channeling is microstrip line with insert fed for matching impedance. This antenna is given an H-shaped slot on the patch to widen the bandwidth and beamwidth in the simulation.*

*Work on the simulation in the Final Project there are 2 conditions, the first single patch MIMO  $8 \times 8$  which has a bandwidth of 481.11 MHz with a limit VSWR 1.5 with a gain of 7,724 dB, and the second is the condition of the array 2 patch MIMO  $8 \times 8$  which has Bandwidth of 1.144 GHz with a limit of VSWR 1.2 with an average gain value of 9.612 dB and an average beamwidth value of 890 per element. The realization of this antenna uses Duroid 5880 as a dielectric material on PCB (Printed Circuit Board) which has a permittivity value of 2.2 and 1.575 mm thick. As for the conductor material using copper with a thickness of 0.035 mm. The result of the antenna realization measurement has VSWR below 1.5 in the frequency range 14.5 - 15.25 GHz, directional radiation pattern, elliptical polarization, and gain 9.46 dB.*

***Keywords:*** Radio Access, Antenna Microstrip, MIMO, H-slot