

## ABSTRACT

The development of wireless communication networks is growing. The need for high data rates and greater capacity including communication system technologies such as Wireless Fidelity (Wi-Fi). One of the solutions so that the antenna on Wi-Fi has a good performance is used the Multiple-Input and Multiple-Output (MIMO) antenna system.

This study discusses the design and realization of a rectangular MIMO 4x4 dual band patch microstrip antenna for access points on Wi-Fi applications that work at frequencies 2.441 and 5.8 GHz. In the patch antenna will be used a slot technique so that the antenna can work on the two desired frequencies. From the results of the simulation, a prototype was made and measurements were taken directly which will later be carried out in a comparative analysis between the simulation results and the results of direct measurements.

In this study, the values obtained from the measurement of MIMO microstrip antenna that can work at frequencies 2.441 and 5.8 GHz. The return loss value is  $\leq -10$  dB. Bandwidth  $\geq 40$  MHz for 2.441 GHz and  $\geq 100$  MHz for 5.8 GHz. Gain  $\geq 3$  dB. Mutual coupling  $\leq -20$  dB. The resulting of radiation pattern for frequencies of 2.441 GHz and 5.8 GHz is unidirectional. The resulting of polarization for frequencies 2.441 GHz and 5.8 GHz is elliptical polarization.

**Keywords :** *antenna, microstrip, Wi-Fi, mimo, slot , patch rectangular*