

## ABSTRACT

Dual frequency antenna is an antenna used for systems that work on two far different frequency channels. The frequency used is in accordance with the IEEE standard for 802.11n wifi. One way to improve the quality of WiFi is from the antenna. The technique used to increase performance capacity uses MIMO techniques.

In this final project the MIMO microstrip patch dual band frequency band of 2.4 GHz and 5 GHz frequency is designed and realized using slot technique by comparing the rationing method. Rationing techniques that will be compared rationing Inset Feed and EMC (Electromagnetically Coupled). The substrate used is FR-4 Epoxy with a relative permittivity value of 4.4. To determine the dimensions of the antenna before doing theoretical calculations and the optimization process with the simulator.

The results obtained for the antenna can work on dual band frequencies with a frequency of 2.4 GHz and 5 GHz. In rationing the inset feed produces the largest mutual coupling value of -29.90 dB at a frequency of 2.4 GHz and -29.01 dB at a frequency of 5 GHz. Compared with EMC rationing technique, the biggest mutual coupling value is -10.38 dB at 2.4 GHz frequency and -12.68 dB at 5 GHz frequency. The maximum limit of desired mutual coupling value is -20 dB. The results of the two feeds that fit the mutual coupling value specifications are the inset feed rationing techniques. The inset feed feeding technique has better performance results than the EMC rationing technique.

**Keyword :** MIMO Antenna, *Rectangular patch, Dual Band, Wifi, EMC, Inset Feed*