

## ABSTRACT

Mutual Coupling is a common of antenna system. Effect of Mutual Coupling at the field of antenna usually in MIMO system. The effect can change parameters of antenna, like impedance, VSWR, radiation pattern desired, and also bandwidth of antenna. So far, research of mutual coupling emphasis on change mutual impedance parameters with each element spacing  $\lambda/2$  against increase dimension radius of the antenna

In this final task, will be experiment and simulation of two microstrip antennas rectangular with varying the positions of the two antennas, both distance and angle variation using High Frequency Structure Simulator ( HFSS ) which the result of variation can provide a view on the influence of the coupling of the two adjacent antennas, to obtain the shortest distance from both antennas to minimize the influence of coupling.

The result of simulations show that change position and distance between the antennas was a big influence on parameters of antennas like impedance, VSWR, and radiation pattern. From the results obtained, it is known in order for position  $0^0$ : condition of active and non active antennas, the shortest distance from two antennas who not have coupling at  $1\lambda$ ; condition of active and active antennas, the shortest distance from two antennas who not have coupling at  $3\lambda$ . For position  $90^0$ : condition of active and non active antennas, the shortest distance from two antennas who not have coupling at  $1/2\lambda$ ; condition of active and active antennas, the shortest distance from two antennas who not have coupling at  $2\lambda$ . For position  $180^0$ : condition of active and non active antennas, the shortest distance from two antennas who not have coupling at  $2\lambda$ ; condition of active and active antennas, the shortest distance from two antennas who not have coupling at  $2\lambda$ . Observation and analysis in the final task more emphasis on the parameters of impedance, VSWR, and radiation pattern. Also accompanied with return loss and transmission loss when both of antennas are in active condition.

***Key Word : Mutual Coupling, HFSS, Rectangular Antenna Microstrip***