

## ABSTRACT

Wireless telecommunication technology advances very rapidly and thus require devices that can offset these advances. One of the major wireless telecommunication device is an antenna. To keep pace with technological developments are then needed a smart antenna that is able to work on a needs basis.

In this final assignment will be designed two antennas for MIMO. To create a microstrip MIMO antenna, the first thing to do is create a single antenna to determine the direction of radiation from the antenna so that it can be determined the location or position of the second antenna and also the location of excitation, so the results of the antenna with another antenna radiation has the opposite direction.

The result of this final assignment has been designed and realized two microstrip antennas for MIMO form a square fractal patch. This antenna works on a frequency of 2.4 GHz with a bandwidth of 15 MHz for  $VSWR \leq 2.3$ . VSWR of MIMO antenna is still less good at around 1.8. The resulting radiation pattern leads to four opposite directions. Coupling produced by the two antennas is equal to -39.13 dB. The results of inter-patch distance of the antenna is one lamda. This antenna is measured in three conditions in which the change is the distance inter- patches that is, the shortest distance  $\lambda/7.5, \lambda/2, \lambda$ .

**Keywords: smart antennas, microstrip antennas, fractal, MIMO, VSWR, radiation pattern, coupling**