

## ABSTRACT

In this final project designed and realized microstrip antenna MIMO  $4 \times 4$  for applications on LTE technology at a frequency of 2.3 GHz. Medium MIMO (Multiple Input Multiple Output) is a communication system using a multi antennas both on the transmitter and receiver. With MIMO technology, four microstrip antenna will be realized so that the resulting bandwidth  $\geq 50$  MHz. This antenna will work at 2.3 GHz operating frequency that can be applied in the LTE (Long Term Evolution).

In this final project designed and realized a  $4 \times 4$  MIMO antenna for LTE at a frequency of 2.3 GHz with achieving  $\geq 3$  dBi gain and bandwidth reaches  $\geq 50$  MHz. By using rasion EMC (electromagnetically coupled) which uses two substrates in order to increase the bandwidth of the antenna.

On the results of the measurement antenna VSWR  $\leq 2$  is obtained.  $\geq 50$  MHz bandwidth on all antenna. The first antenna gain at 3.38 dBi at both 3:34 dBi antenna, the third antenna is 3.35 dBi, and the fourth 3.27 dBi antenna. Radiation pattern is generated when the simulation and measurement is unidireksional. Polarization obtained is elliptical. Based on the dimensions and radiation pattern of the antenna generated, then this antenna can be used as an outdoor BTS antenna on LTE technology.

**Keywords** : Antenna, microstrip, MIMO, LTE, EMC