

## ABSTRACT

The increasing need for faster and larger data transfer in Wifi users encourage the emergence of new technologies and standards. IEEE 802.11n standard has been released, offers higher datarate, wider bandwidth and supports MIMO technology than previous standard. Challenge of using MIMO techniques in user's device is how to design an antenna that has small mutual coupling but do not make the overall antenna dimensions become too large.

In this final project, an 4x4 MIMO microstrip antenna for Wifi will be designed, working in the 5.180 to 5.220 GHz frequency, bandwidth 40 MHz, gain  $\geq 2.5$  dBi, and mutual coupling  $\leq -20$ dB. Antenna port is placed  $90^\circ$  each other to reduce mutual coupling and reduce overall dimensions of the antenna. Simulation using CST Studio Suite 2014 software.

Dimension of realized antenna is 49,475 mm x 49,475 mm, can work at 5,180 to 5,220 GHz frequency. All antenna has VSWR  $\leq 1.5$  and mutual coupling  $\leq -20$  dB. Bandwidth of the antenna 1 to 4 consecutive 92 MHz, 96 MHz, 68 MHz, and 83 MHz. The resulting gain antenna 1 to 4 consecutively 3,306 dBi, 3,428 dBi, 3,38 dBi, and 3,315 dBi. The antenna has unidirectional radiation pattern with elliptical polarization.

Keywords: MIMO antenna, WiFi, rectangular patch