ABSTRACT

LTE or Long Term Evolution is a wireless network that continue 3G network for improving capacity and speeds of this network currently. On the development of LTE, its has advantage for access the internet with high speeds. One of the fundamental technologies used in LTE is MIMO or Multiple Input Multiple Output.

Printed monopole antennas can be seen as microstrip antenna configurations and vertical monopole antennas with vertical cylindrical wire over the ground plane. Monopole Circular Patch 4×4 MIMO Antenna is designed workds on 2,1 Ghz frequency with a microstrip line feeding technique. The early step of antenna design is calculate the antenna dimensions through formulas, then simulation and optimization the antenna with software and analysis the result of the antenna design thus the antenna could work well.

This antenna uses FR-4 Epoxy as substrate material and copper as material for ground plane and patch. By removing the half part of the ground plane could obtain the omnidirectional radiation pattern. The value of bandwidth obtained from the 4 antennas in a row are 300 MHz, 300 MHz, 340 MHz, and 340 MHz has fulfilled the specification (bandwidth ≥ 250 MHz). The value of VSWR from the 4 antennas also has fulfilled the specification (VSWR ≤ 1.5) with value 1.04, 1.06, 1.06, 1.05. The gain value of 4 antennas are 4.19 dB, 4.24 dB, 4.16 dB, dan 4.21 dB. This antenna polarization is circular polarization also the mutual coupling has fulfilled the specification with value < -20 dB.

Keywords: LTE, MIMO, Monopole, Circular Patch