

ABSTRACT

Long Term Evolution, also known as LTE, considered as fourth generation (4G) of cellular technology which developed by Third Generation Partnership Project (3GPP) for improving the performance of previous technology, UMTS/HSPA. The network interfaces are not compatible with 2G and 3G, so the operation should be managed through separated wireless spectrum. LTE has capability up to 300 Mbps for data transfer on the downlink side and up to 75 Mbps on the uplink side. Antenna admitted as one of the vital parts which support for LTE system. Antenna is designed as prototype of transmitter on EnodeB.

Microstrip antenna has low gain, bandwidth and efficiency. To overcome the weaknesses, this final project focussed on designing multilayer parasitic substrate for enhancing the gain of antenna. The distance between first layer parasitic and second layer parasitic has been optimized to maximize electromagnetic coupling and improve antenna main lobe. The microstrip antenna has been modeled and simulated using FR-4 epoxy substrate with 4.2 of dielectric constant and accompanied by aid from Finite Integration Technique (FIT) software.

The results have presented that antenna acquires ellpis polarization with Axial Ratio = 22..16 dB, unidirectional radiation pattern, 70⁰ beamwidth azzimthal, 2.333 – 2.377 Ghz of operating frequency at VSWR ≤ 2, 44 MHz of bandwidth, and Gain = 8.23 dBi. The antenna has also realized with dimension of 151.5 mm x 151.5 mm.

Keywords : *Microstrip Antenna, Multilayer Parasitic, Gain, Long Term Evolution (LTE)*