ABSTRACT

Nowadays, wireless communications has become a major public interest due to flexibility of its utilization from end user so that many people preferred it. One of the main device in wireless technology is antenna.

Antenna in which communication is an important part of the wireless mobile technology, is a device that directly connected with transmission media.

In this final assignment, I've designed and implemented a loadless four star rhombic antenna using parallel twin wires. It is specified that this antenna work within range 300MHz - 3000 MHz, with calculating its dimension theoretically and then compared using Ansoft HFSS 9.2 software. Other parameter that also calculated is VSWR ≤ 1.5, radiation intensity is omnidirectional and has linier polarization. The achieved gain in this final assignment is not more than 5.0 dBi. To provide a match transition impedance between antenna and coaxial, so this antenna was designed using annular ferrite ring.

Based on the measurement of antenna realization and simulation is obtained that is equal with the early spesification. In realization of loadless rhombic antena is obtained bandwidth about 2799.0568 MHz in VSWR < 1.5, and from the simulation is obtained about 1260 MHz in range 1440 MHz - 2700 MHz. The result of impedance realization is 50Ω that is 51.551-j6.7277 Ω. and the result of simulation is 63.21 - j6.78Ω. The result of gain measurement is 8.209 dBi and simulation is 6.23 dBi for frequency 2000 MHz. The pattern of radiation based on the realization result is omnidirectional, and from the simulation result is multi directional. Based on the result of realization is obtained that polarization is eliptical and from simulation result is linear.

Keywords : Reengineering unloaded rhombic antenna four star.