ANALYSIS OF 2 BY 2 RECTANGULAR MICROSTRIP PATCH ARRAY ANTENNA AT 2.4 GHz FREQUENCY FOR WIRELESS LOCAL AREA NETWORK APPLICATION

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ABSTRACT

Antenna is the primary part of communication system. Rapid developments in wireless local area(WLAN) network also parallel with advancements in compactness and efficiency of antennas. This paper discusses on the analysis of 2 × 2 Rectangular Microstrip Patch Array Antenna. The study concentrates on frequency of 2.4 GHz for WLAN application. The objectives of this project are to design and analyze both simulation and measurement results for the proposed antenna to make comparison. The design is fabricated on FR4 substrate of dielectric constant, ε_r equal to 4.9 and thickness of 1.6mm respectively. A combination of several equations and technique are used to get the initial geometrical parameters. The antenna can operate at 2.4 GHz within the desired specification by adjusting the dimensions. A combination of several equations and technique are used to get the initial geometrical parameters. The antenna has return loss of -14.672 at 2.4 GHz for simulation and -21.657 at 2.58 GHz for measurement. The antenna has an directional characteristic. The design and simulation are done using Computer Simulation Technology CST Microwave Studio software and the measurement using Vector Network Analyzer (VNA). The design procedure, simulated and measured has been discussed in this paper.

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