

DESIGN AND ANALYSIS OF RECTANGULAR  
PRINTED LOOP MICROSTRIP PATCH  
ANTENNA FOR WIRELESS  
COMMUNICATION AT 2.4 GHz.

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## Abstract

A rectangular microstrip loop patch antenna for wireless communication system at 2.4 GHz operating frequency is proposed and analyzed. 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,  $\epsilon_r$  equal to 5.0 and tangent loss 0.025. 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. The antenna has return loss of -14.781 at 2.401 GHz for simulation and -13.692 to 2.513 GHz for measurement. The voltage standing wave ratio, VSWR is 1.443 for simulation and 1.521 for measurement. The antenna has an omni-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.

*Keywords - microstrip loop patch antenna, quarter wave impedance matching, Computer Simulation Technology, Vector Network Analyzer.*

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