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# Design, Analysis and Fabrication of Dual Band Microstrip Patch Antenna for (L2) Band GPS and WiFi Applications

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### Abstract

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##### Abstract:

Dual-frequency antennas are popular for many applications in communication systems. This work proposes a dual-band microstrip patch antenna design based on two-layer stacked patch for GPS and WiFi purposes. The targeted antenna is created to maneuver at the frequency range of 1.227GHz GPS L2 band (1.215GHz to 1.239GHz) and the 2.4GHz WiFi band frequency (2.4GHz to 2.48GHz). The antenna is fabricated on substrate of FR4 which dielectric constant 4.4 and the substrate material's height is 1.6mm. The created two-layer stacked patch antenna is compared with a conformist single patch antenna and analyzed the parameters of performance specifications for return loss (RL), bandwidth, VSWR, gain and pattern of radiation. It is recognized that the performance of the fabricated antenna improves when compared to the single-layer conventional antenna.

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I. Introduction

The microstrip patch antenna is the most excellent choice for communication systems because of the benefits such as low profile, lightweight, inexpensive and ease of fabrication. They could also turn out two diverse operating frequency bands. There are also disadvantages of a microstrip patch antenna, such as low level gain value and narrow bandwidth. Dual-frequency antennas are popular for many applications in wireless communication systems. Reading a dual-frequency antenna's advantage is that the single antenna with dual frequencies operation can be used instead of two antennas in many applications. There are three methods for creating a dual-frequency microstrip patch antenna. They are dual-frequency patch antennas in orthogonal mode, multilayer dual-frequency patch antennas and dual-frequency patch antennas for reactively loaded condition[1 – 3].

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