MICRO STRIP PATCH ANTENNA FOR COMMUNICATION- A REVIEW

[1]K.Sugapriya, [2]Ohmkumar
SCSVMV University Kanchipuram, Tamilnadu, India,
Email:[1]dhivyasuga@gmail.com

Abstract— The Micro strip patch antenna (MPA) plays a major role in communications. This article deals with the broad review of Micro strip patch antenna design parameters, various slots for different applications i.e. designs, development of output factors etc. In this modern world a dual band and triple band antenna with notch characteristics plays a vital role in wireless communications like UWB, WLAN, WiMAX etc. In this paper we study about the dual band and triple band characteristics and applications. The good impedance bandwidth, efficiency, Radiation pattern, VSWR can be improved by using the different slots, feeding techniques, resonance frequency, and dielectric substrate.

Index Terms—Micro strip Patch Antenna, Ultra Wide Band.

I. INTRODUCTION

Antenna is transmitting and receiving an information effectively. It is a transducer to convert electrical to RF field in the transmitting side and RF field to electrical in receiving side process is done in Microwave communication. In this communication the Micro strip patch antennas are used for various applications. The technology used for this design is Printed-circuit board. This antenna must provide big performance in small packages, especially for modern fixed and mobile wireless devices. Also it must provide high gain, or light weight, or handle high power levels. The choice of circuit-board laminate material plays a key role in the size and performance of a printed-circuit antenna, such as achieving maximum gain at RF and microwave frequencies.

II. LITERATURE REVIEW

Pritam S. Bakariya et al. [1] investigated a compact ultra-wideband planar monopole antenna with triple band-notched Characteristics. The gain of the proposed triple band notched antenna is relatively stable across the operating frequency band except at notched bands and thereby making the proposed antenna suitable for practical UWB applications. Yasser Ojaroudi et al. [2] designed an ultra-wideband (UWB) monopole antenna with extended bandwidth and dual band-notched properties. From the result the found that Good return loss, antenna gain and radiation pattern characteristics are obtained in the frequency band of interest. Ganga Prasad Pandey et al. [3] studied on antenna with tunable characteristics, wide notch frequency band, and reduced cross Polarization. The experimental and simulation results match upto acceptable limit.Praveen Naidu et al. [4] investigated two compact rupee shaped coplanar waveguide fed monopole antennas for WLAN and WiMAX applications. They have good impedance bandwidth and stable radiation patterns, indicating them to be good candidates for WLAN/WiMAX applications. Yingsong Li et al. [5] proposed a coplanar waveguide-fed circular slot antenna with wide tunable and reconfigurable frequency rejection characteristics. The simulation and experiment results shows that antenna could be a good candidate for UWB communication and cognitive radio applications. Rajesh Singh et al. [6] presented a novel compact planar monopole

antenna covering both Bluetooth and UWB unlicensed frequency bands with dual band notched characteristics. Nearly stable radiation patterns and appreciable gain behavior is obtained. Tsai, L. C. [7] designed a microstrip fed slot antenna for triple band operation. A 50 × 50mm2 CPW fed slot antenna with operating band from 1.9 to 2.75 and 3.65–6.75GHz. The slot is H-shaped and the lower cut off frequency obtained was 2.4GHz. Jyoti Ranjan Panda et al. [8] Presented A Compact Printed Monopole Antenna (PMA) for Dual-band RFID and WLAN Applications. The proposed antenna exhibits broadband impedance matching, consistent omni directional radiation patterns and appropriate gain characteristics (>2.5 dBi) in the RFID and WLAN frequency regions. Mohammad Ojaroudi et al. [9] Investigated on compact printed monopole antenna for UWB applications. This antenna exhibits good radiation behavior within the UWB frequency range. Kyungho Chung and Jaemoung Kim [10] studied the Wideband Microstrip-Fed Monopole Antenna Having Frequency Band-Notch Function. In this design the substrate used is Teflon substrate (RO4350b), the slot is inverted U slot is designed to get the notch characteristics. The characteristics is varied by changing the length of U-slot. The rejection band is 5 to 5.9GHZ. Mohammad Ojaroudi and Nasser Ojaroudi [11] designed the Ultra-Wideband Small Rectangular Slot Antenna With Variable Band-Stop Function is achieved by the inverted T-shaped conductor backed plane, the 50 Ω Microstrip feed-line is used, they found that by variying the resonance wider impedance bandwidth is achieved.Young Jun Cho and Ki Hak Kim [12] found that a Miniature UWB Planar Monopole Antenna With 5-GHz Band-Rejection Filter and the Time-Domain Characteristics. In this design half-bowtie radiating elementis used in the staircase-shape and a modified ground plane structure. They used the substrate FR-4 with a thickness of 1mm and relative permittivity of 4.6. They investigated the tuning parameters affected by antenna performances and the U-shaped slot gives a wide bandwidth. Also they achieved good gain and Radiation pattern by using the Microstrip feed-line.Ki-Hak Kim and Seong-Ook Park [13] researched that the Analysis of the Small Band-Rejected Antenna with the Parasitic Strip for UWB. In this design by using the Microstrip feed-line, parasitic –strip the band notched characteristics, good impedance bandwidth and good VSWR is achieved. Qing-Xin Chu and Ying-Ying Yang [14] Investigated that a Compact Ultrawide band Antenna With 3.4/5.5 GHz Dual Band-Notched Characteristics. In this paper two nested C-shaped design provides the dual band notched characteristics, good VSWR, Radiation pattern and impedance bandwidth is achieved by using the 50 Ω Coplanar Waveguide transmission line. In UWB communication systems, one of important issues is the design of a compact antenna while providing wideband characteristic over the whole operating band. However, most of the proposed designs for these antennas suffer from narrow bandwidths for UWB communication applications by enhancing their bandwidth. Accordingly, a number of microstrip printed antennas with various geometries have been experimentally characterized by Ojaroudi et al. [15].

III. CONCLUSION

The Microstrip patch antenna design is compact and very small size, so it is convenient for all communication applications. This review article deals with the survey of dual band and triple band notched characteristics of different slots as well as feeding techniques. This review paper deals about the improvement of bandwidth, radiation pattern, voltage standing wave ratio, gain and band-notch characteristics. This Microstrip patch antenna is mostly used for WLAN, WiMAX and ultra wide band applications. Further we can improve the return loss, gain and band-notch characteristics by using the various slots.

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