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Design of modified e-shape micro strip patch antenna with stripline feed for wireless communication

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Abstract
In this paper, high bandwidth linearly polarized microstrip antenna is presented. The feeding of this antenna is given by stripline. This antenna provides 43.33% bandwidth at 3.70 GHz resonance frequency. The geometry parameters are optimized for best performance and proposed antenna is simulated using IE3D software. This antenna can be used in WiMax and Wireless communication.

Keywords: microstrip antenna, microstrip feed line, smith chart, return loss, 3-D view, IE3D software

Introduction

Microstrip antenna have been used for about three decades in many applications in millimeters and microwave systems because of many attractive features such as low profile, light weight, conformal shaping, low cost, high efficiency, simplicity of manufacturing and easy integration to circuits. This paper presents the microstrip antenna of modified E-shape microstrip patch antenna. In contrast, the modified E-shape microstrip patch antenna has been the subject of only a handful of investigations.

Design principle and antenna geometry

In this paper the bandwidth is enhanced by the microstrip line feed and. The design circuit is shown in figure (1). A microstrip patch antenna was simulated by using the IE3D simulation software. Simulated return loss and smith chart characteristics were shown in figure (2) and figure (3) respectively. Fig (4) shows the 3-D radiation pattern view of antenna. In this proposed antenna we consider 3.70 GHz resonance frequency then calculated bandwidth is 43.33%. Bandwidth is calculated after reaching the 10dB return-loss.

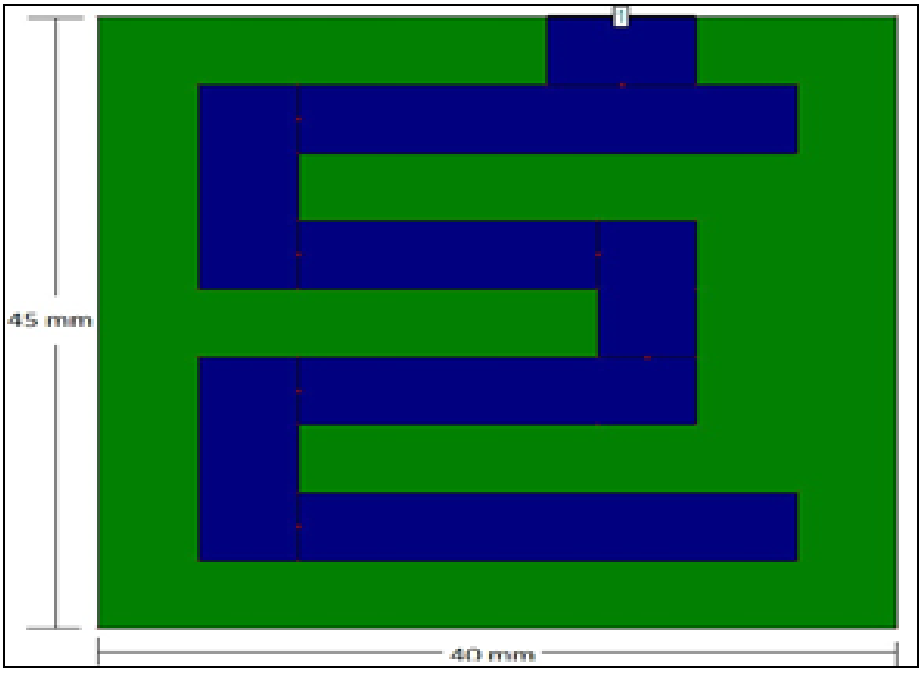

Fig 1: Proposed Microstrip antenna

The microstrip antenna feeding is done by microstrip line. micro strip line feed is used for enhancing the band width. The size of micro strip antenna is 45mm×40mm.The dielectric constant of substrate is around 4.2. The substrate thickness is 1.6mm and loss tangent is 0.0013.

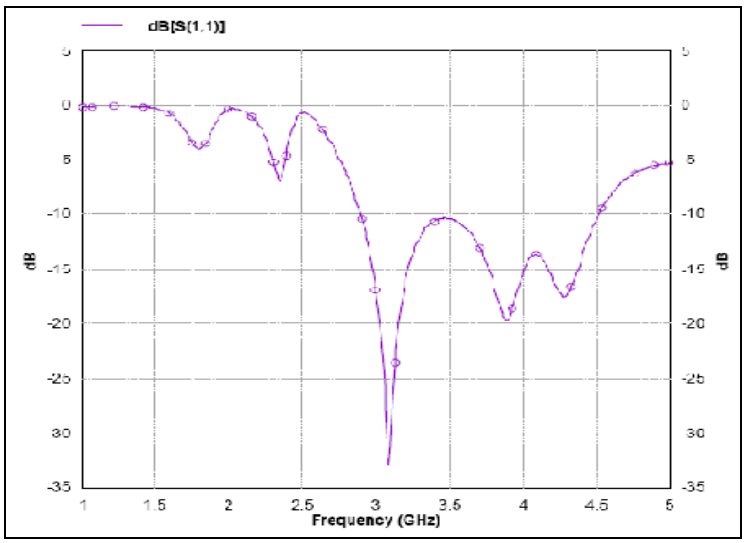

Fig 2: Return loss of the Proposed Antenna

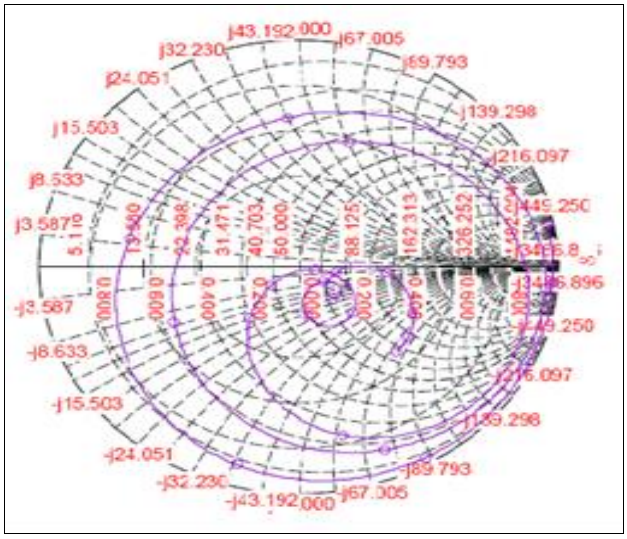

Fig 3: Smith chart of Proposed Antenna

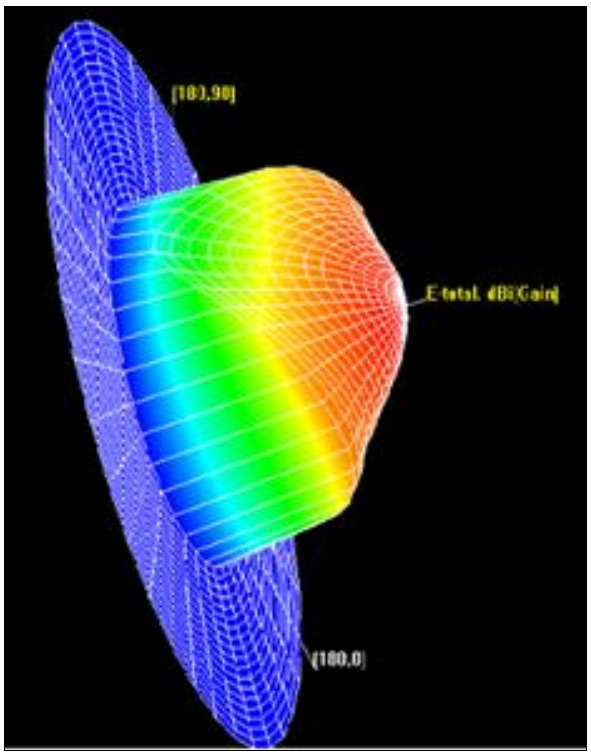

Fig 4: 3-D Radiation Pattern view of proposed antenna

Conclusion

In this paper, the modified E-shape microstrip antenna has given the bandwidth 43.33%.at the resonance frequency of 3.70 GHZ. By using microstrip line feed technique. and the return loss is 33 db.

References

1. Girish Kumar KP, Ray. Broadband Microstrip Antennas, 4th edition, Artech House, London, 2003.
2. Sultan MA, Tripathi VK. The open-ring microstrip antenna, in IEEE Antennas Propagat. Soc. Int. Symp. Dig., 1985, 417-421.
3. Pandey A, Singh AK. Compact H-shaped microstrip antenna with shorting post using IE3D, IEEE Transactions on Recent Advances in Microwave Theory and Applications, 2008, 803-805.
4. Pozar DM, Schaubert DH. The Analysis and Design of microstrip antennas and arrays, 4th edition, Wiley Interscience, New York, 2001.
5. Zhi Ning Chen, Michael YW. Chia, Broadband Planar Antennas Design and Applications, 2nd edition, John Wiley & Sons, New York, 2006.