Abstract

The designing of an antenna is a critical area for the present wireless communication system. It is important to maintain an agreement amongst gain, bandwidth, return loss and VSWR characteristics of antenna. In this paper an exclusive design concept for the circular patch antenna is introduced. Initially a circular microstrip patch antenna is designed and the performance of this new design is enhanced after applying different types of slotted perturbations in one half of antenna. The antenna performance is transformed from single band to multiband by employing shape slotted structures. The proposed antenna represents quad band behavior at resonant frequencies 2.44 GHz, 6.48 GHz, 7 GHz and 8.25 GHz with a good value of return loss of -12.29 dB, -16.48 dB, -15 dB and -27.81 dB respectively. This design also represents VSWR between the specified range of 1 to 2 for the said resonant frequencies with an acceptable value of gain in dB. The antenna is designed and simulated with FEM based electromagnetic field solver. The proposed antenna design is suitable for WLAN, Radio astronomy, Passive sensors and Point to Point defense system wireless applications. The proposed antenna is analyzed for proper coaxial feed location using radial basis function neural networks. The results obtained using RBF neural networks are in a
good agreement to the simulation results obtained using electromagnetic solver. The feed location provided by the RBF neural networks results in six band behavior.


Index Terms

Computer Science

Wireless

Keywords

Hexaband  Patch antenna  Wireless applications  'Y' shape