



# Design of Half Elliptical Ring Monopole Antennas with Elliptical Slot in Ground Plane for Future UWB Applications

O. M. Ahmed, A. Elboushi, and A. R. Sebak

## Abstract:

In this letter, a microstrip fed ultra-wideband (UWB) antenna with different band rejection techniques is presented. The designed antennas consist of a defected ground plane with an elliptical slot and elliptical shaped radiating element. The measured and calculated impedance bandwidth of the proposed antenna ranges from 3 to 14 GHz for a return loss ( $S_{11}$ ) less than  $-10$  dB. Also, it has a relatively stable radiation patterns over its whole frequency band of interest. Two different techniques have been proposed to achieve band-notch characteristic in the 5.0- to 6.0-GHz wireless local area network frequency band. The first one uses L-shaped parasitic strip into the radiating patch, whereas the other one uses two rectangular slits cut away from the ground plane creating defected ground structure. The proposed antenna is considered a good candidate for UWB applications.

## Keywords:

bandstop;defected ground structure;elliptical antennas;L-shaped parasitic strip;rectangular slits;slot antennas;ultrawideband

## Published In:

Microwave and Optical Technology Letters , Vol. 54, No. 1 , pages 181-187