Conference Proceedings 2023 IEEE International Symposium on Antennas and Propagation, ISAP 2023 Pages 1 - 2

The Design Evolution of Trio-Band Vivaldi Antenna With Meander-Line-Fed Shape for Ground Penetrating Radar Application

Abstract

This paper is proposed based on considerable reviewed design techniques. It works at 200MHz, 800MHz and 1,200MHz named as “Trio-Band” with the fixed size of 300mm×300mm×1.6mm of the FR4 substrate. The antenna application is for Ground Penetrating Radar (GPR) with targeted depth range is from 10cm to 1,000cm. The combination of slotted shapes which is Half-circle, Staircase, Quarter-eclipse and Circular-Ring are applied to achieve the Trio-Band with the parametric analysis to determine the appropriate size. The final Vivaldi antenna achieves the reflective coefficient (S11) with -30.05dB (200MHz), -12.05dB (800MHz) and -15.35dB (1,200MHz) as well as 50Ω of impedance matching.

Keywords

Circular-Ring; Ground Penetrating Radar (GPR); Half-circle; Meander-line-fed; Quarter-eclipse; Slotted Antenna; Staircase; Tri-Band; Trio-Band