

Parametric Analysis of Water Lily Shaped Split Ring Resonator Loaded Fractal Monopole Antenna for Multiband Applications

Authors : C. Elavarasi, T. Shanmuganatham

Abstract : A coplanar waveguide (CPW) feed is presented, and comprising a split ring resonator (SRR) loaded fractal with water lily shape is used for multi band applications. The impedance matching of the antenna is determined by the number of Koch curve fractal unit cells. The antenna is designed on a FR4 substrate with a permittivity of $\epsilon_r = 4.4$ and size of $14 \times 16 \times 1.6 \text{ mm}^3$ to generate multi resonant mode at 3.8 GHz covering S band, 8.68 GHz at X band, 13.96 GHz at Ku band, and 19.74 GHz at K band with reflection coefficient better than -10 dB. Simulation results show that the antenna exhibits the desired voltage standing wave ratio (VSWR) level and radiation patterns across the wide frequency range. The fundamental parameters of the antenna such as return loss, VSWR, good radiation pattern with reasonable gain across the operating bands are obtained.

Keywords : fractal, metamaterial, split ring resonator, waterlily shape

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020