

Low-profile U-shaped DRA for ultra-wideband applications

I. Messaoudene, T. A. Denidni, A. Benghalia

Abstract : In this paper, a microstrip-fed U-shaped dielectric resonator antenna (DRA) is simulated, designed, and fabricated. This antenna, in its simple configuration, operates from 5.45 to 10.8 GHz. To enhance its impedance bandwidth, the ground plane is first modified, which leads to an extended bandwidth from 4 to 10.8 GHz. Then by inserting a rectangular metallic patch inside the U-shaped DRA, the bandwidth is increased more to achieve an operating band from 2.65 to 10.9 GHz. To validate these results, an experimental antenna prototype is fabricated and measured. The obtained measurement results show that the proposed antenna can provide an ultra-wide bandwidth and a symmetric bidirectional radiation patterns. With these features, the proposed antenna is suitable for ultra-wideband applications.

Keywords : Ultra-wideband applications, Dielectric resonator antenna, Low-profile antenna, Measurements