



Size Reduction and Bandwidth Enhancement of a UWB Hybrid Dielectric Resonator Antenna for Short-Range Wireless Communications

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Abstract:

In this paper, a novel hybrid dielectric resonator (DR) antenna for Ultra-wideband (UWB) short-range wireless communications is proposed. The proposed antenna consists of a microstrip fed monopole loaded with a half cylindrical dielectric resonator antenna of Rogers RO3010 mounted on RT5880 substrate with a finite ground plane. The microstrip line fed monopole antenna is on the other side of the substrate. Compared to the conventional circular cylindrical DR mounted on a finite ground plane (reference antenna), the proposed antenna has a reduction in the antenna size by about 30% with a bandwidth increase by about 22% than the reference antenna. The proposed antenna has a good impedance bandwidth. In addition, the proposed antenna has a quite higher and more stable gain than that of reference antenna. Moreover, the antenna has a good omni-directional radiation patterns in the H-plane. The proposed antenna is considered a good candidate for UWB short-range wireless communication systems.

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