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Experimental Investigations of Ultra-Wideband Antenna Integrated with Dielectric Resonator Antenna for Cognitive Radio Applications

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Abstract: In this paper, an ultra-wideband (UWB) patch antenna integrated with a dielectric resonator is proposed for cognitive radio applications. The patch antenna is fed by a coplanar waveguide (CPW) line, and it consists of a rectangular monopole having an elliptical base, and operates from 2.44 to 12 GHz. This UWB antenna is intended to collect the information. Moreover, the proposed structure integrates a narrow-band rectangular dielectric resonator antenna (RDRA) for operation, with very good isolation between the two ports (transmission coefficient S_{21} less than -20 dB). The RDRA provides a bandwidth from 5.23 GHz to 6.11 GHz. The electromagnetic analysis is carried out using tow commercial software tools. Furthermore, to validate the proposed concept, experimental measurements are also performed.

Keywords : Integrated UWB/NB antenna, Cognitive radio applications