

Ultra-wideband DRA Integrated with Narrow-band Slot Antenna

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Abstract: A new ultra-wideband (UWB) antenna integrated with a narrow-band (NB) antenna has been designed and fabricated. The UWB antenna consists of a U-shaped dielectric resonator fed by a microstrip line. In addition, the proposed structure integrates an NB slot with the same polarization. The electromagnetic analysis is carried out by using two commercial software tools. To validate the proposed concept, experimental measurements have also been performed. The measured results show that the dielectric resonator antenna (DRA) provides a wide bandwidth from 2.94 to 11.34 GHz (covering the UWB spectrum, 3.1–10.6 GHz) while the slot antenna provides a 2:1 voltage standing wave ratio bandwidth for 5.71–6.13 GHz. Moreover, the proposed design allows an efficient integration with very good isolation between the two ports (transmission coefficient $S_{21} < -20$ dB in the whole operating frequency band).

Keywords : ultra-wideband (UWB) antenna, Integrated antenna, DRA