

## Single Notched-band UWB Antenna For WLAN Environment Using Complementary Split Ring Resonators CSRR and Spiral Resonator CSR

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Ultra-wide band (UWB) technology has become more popular due to various applications such as ground penetrating radar, medical imaging and sensor networks. The antenna is one of the key components of UWB systems and has drawn much attention in recent years. In this paper we propose the design of UWB monopole antenna, providing single notched-band for WLAN (5-6) GHz to avoid interference signals, using complementary split ring resonators CSRR and spiral resonator CSR. It consists of a microstrip patch with modified radiating element and ground plane, while the desired notch-band characteristic is achieved by etching separately CSRR and SCR in the radiating patch, in Fig.1. Investigations on the parameters of the CSRR were performed to obtain the same performance of CSR in high frequency keeping away its second resonance. Fig.2 shows simulated and measured return loss of proposed single notched-band UWB monopole antennas, compared to the antenna without filtering property. It can be seen that the monopole antenna covers the whole UWB band (3-11 GHz) with a good rejection of WLAN band for notched-band antennas. Also a good response is observed in high frequency of UWB band. For the antennas gain, it varies between 3dBi and 5 dBi. From its performances, The proposed antennas are a good candidate for UWB applications where notch-band for WLAN is required. All results indicate that the investigated CSRR works effectively to introduce a single notch-band characteristic for the UWB antenna, like CSR performances.

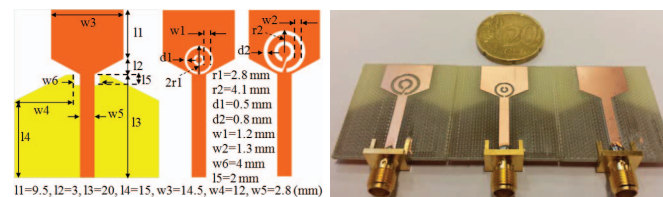


Figure 1. Geometry of the proposed antennas (left). Photograph of fabricated antennas using F4 substrate with dielectric constant of 4.4 and thickness of 1.6 mm

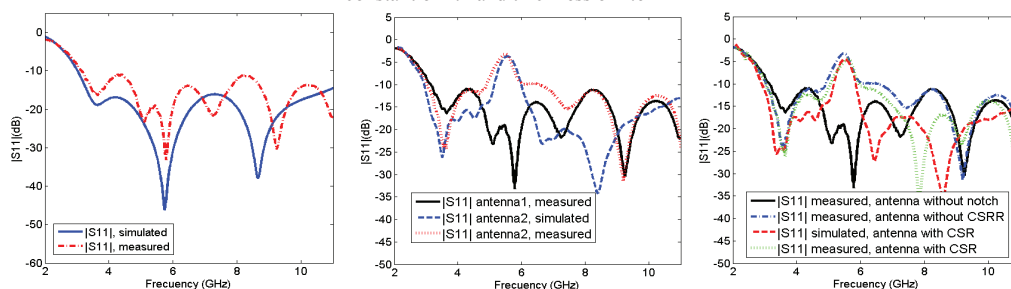


Figure 1. Measured and simulated SS1 of proposed UWB monopole antennas, antenna without notch, antenna with notched-band using CSRR, antennas with notched-band using CSR.