

Study and Design of Novel Structure of Circularly Polarized Dual Band Microstrip Antenna Fed by Hybrid Coupler for RFID Applications

Authors : M. Taouzari, A. Sardi, J. El Aoufi, Ahmed Mouhsen

Abstract : The purpose of this work is to design a reader antenna fed by 90° hybrid coupler that would ensure a tag which is detected regardless of its orientation for the radio frequency identification system covering the UHF and ISM bands frequencies. Based on this idea, the proposed work is dividing in two parts, first part is about study and design hybrid coupler using the resonators planar called T-and Pi networks operating in commercial bands. In the second part, the proposed antenna fed by the hybrid coupler is designed on FR4 substrate with dielectric permittivity 4.4, thickness dielectric 1.6mm and loss tangent 0.025. The T-slot is inserted in patch of the proposed antenna fed by the hybrid coupler is first designed, optimized and simulated using electromagnetic simulator ADS and then simulated in a full wave simulation software CST Microwave Studio. The simulated antenna by the both softwares achieves the expected performances in terms of matching, pattern radiation, phase shifting, gain and size.

Keywords : dual band antenna, RFID, hybrid coupler, polarization, radiation pattern

Conference Title : ICCTE 2020 : International Conference on Communications and Telecommunications Engineering

Conference Location : Boston, United States

Conference Dates : April 23-24, 2020