Design and analysis of circular shaped patch antenna with slot for UHF RFID reader

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ABSTRACT

This paper presents an analysis of microstrip circular shaped antenna with slot for ultra-high frequency (UHF) portable radio frequency identification (RFID) reader applications. The fabricated antenna is designed to work with UHF RFID system in Malaysia with frequency allocated from 919 to 923 MHz. The antenna design was made with circular patch and rectangular slot that has the dimension of 122 mm × 122 mm. Moreover, the FR-4 material used in this project has thickness of 1.6 mm with dielectric constant of 4.7 and loss tangent of 0.019. Thus, it is easily connected to the portable RFID reader module together with the antenna characteristics of easy fabrication, low profile and simple structure. From the results, the antenna has the reflection coefficient (S_{11}) less than −10 dB along the bandwidth of 3.6% (903–936 MHz) for operating frequency at 921 MHz.

KEYWORDS

Microstrip antenna; Radio frequency identification; Ultra high frequency; Return loss

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