Multi-band Annular Ring Microstrip Antenna with Defected Ground Structure for Wireless Communication

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Abstract

An annular ring microstrip antenna (ARMSA) with a defected ground structure for multi-band operation is being proposed. Defected ground structure is produced by integrating a circular slot in the ground plane having different centre with the annular ring radiator patch. Microstrip line feed is used to excite the annular ring patch antenna placed on an FR4 substrate (dielectric constant $\epsilon_r = 4$). Results of the proposed antenna are carried out using Ansoft HFSS simulation software, and compared with the measured results, which shows good agreement. It is observed that the proposed antenna shows four bands at $f_1 = 2.92$ GHz, $f_2 = 5.64$ GHz, $f_3 = 8.21$ GHz, and $f_4 = 10.53$ GHz with an impedance bandwidth of 70%, 50%, 20% and 10% respectively. The proposed antenna is suitable for S, C and X band wireless communication system.

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Index Terms

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Keywords

Multi-band, Annular Ring Microstrip Antenna, Defected Ground Structure, Microstrip line feed.