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 $\varepsilon_r = 4$). 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.

References

1. T.G. Ma, S.K. Jeng, “Planar miniature tapered-slot-fed annular slot antennas for
2. C Y Huang, W C Hsia, “Planar elliptical antenna for ultra wideband communications”,
2005.
5. A. K. Gautam, R. Chandel, B. K. Kanaujia, “A CPW-fed hexagonal shape monopole like
7. Raj Kumar, K.K Sawant, “Design of CPW fed fourth iterative UWB fractal antenna”,
International Journal of Microwave and Optical Technology, vol. 5, no. 6, pp. 320-327,
November 2010.
8. P Li, J Liang, X Chen, “Study of printed elliptical/circular slot antennas for ultra-wideband
2007.
dual-aperture-coupled annular ring microstrip patch for wireless router MIMO antenna system”,
IEEE, Antennas and Propagation Society International Symposium (APSURSI), Orlando, FL,
pp. 368-369, 7-13 July 2013.
12. Jin-Sen Chen, “Dual Frequency Annular ring slot antenna fed by CPW feed and
569-571, January 2005.
multi-band circular antennas”, IEEE, International Conference on Open Source Systems and
Technologies (ICOSST), Lahore, pp. 52-55, 18-20 December, 2014.
15. Y.Y Sun, S.W. Cheung and T.I. Yuk, “Design of a very compact UWB monopole antenna
with microstrip fed”, Microwave and Optical Technology Letters, vol. 55, no. 9, pp. 2232-2236,
September 2013.
wireless USB dongle application”, IEEE Antennas Wireless Propagation Letter, pp. 596-599,
November 2012.
17. Yongseok Seo, Hyeonjin Lee and Yeongseog Lim, “Design of a circular ring monopole
antenna with inverted T-strip line for dual band operation”, Microwave and Optical Technology
Multi-band, Annular Ring Microstrip Antenna, Defected Ground Structure, Microstrip line feed.