World Academy of Science, Engineering and Technology
International Journal of Electronics and Communication Engineering
Vol:13, No:08, 2019

Design and Parametric Analysis of Pentaband Meander Line Antenna for Mobile Handset Applications

Authors : Shrinivas P. Mahajan, Aarti C. Kshirsagar

Abstract : Wireless communication technology is rapidly changing with recent developments in portable devices and communication protocols. This has generated demand for more advanced and compact antenna structures and therefore, proposed work focuses on Meander Line Antenna (MLA) design. Here, Pentaband MLA is designed on a FR4 substrate (85 mm x 40 mm) with dielectric constant (єr) 4.4, loss tangent (tan) 0.018 and height 1.6 mm with coplanar feed and open stub structure. It can be operated in LTE (0.670 GHz-0.696 GHz) GPS (1.564 GHz-1.579 GHz), WCDMA (1.920 GHz-2.135 GHz), LTE UL frequency band 23 (2-2.020 GHz) and 5G (3.10 GHz-3.550 GHz) application bands. Also, it gives good performance in terms of Return Loss (RL) which is < -10 dB, impedance bandwidth with maximum Bandwidth (BW) up to 0.21 GHz and realized gains with maximum gain up to 3.28 dBi. Antenna is simulated with open stub and without open stub structures to see the effect on impedance BW coverage. In addition to this, it is checked with human hand and head phantoms to assure that it falls within specified Specific Absorption Rate (SAR) limits.

Keywords : coplanar feed, L shaped ground, Meander Line Antenna, MLA, Phantom, Specific Absorption Rate, SAR
Conference Title : ICAEAT 2019 : International Conference on Applied Electromagnetics and Antenna Technology
Conference Location : Montreal, Canada
Conference Dates : August 05-06, 2019