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Design and Analysis of MIMO Antenna with High Isolation and Dual Notched Band Characteristics for Wireless Applications

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Abstract
A very compact Superwideband multiple-input–multiple-output antenna with dual notched band characteristics is presented. Superwideband characteristics is obtained by means of radiating patch and high isolation between two input ports are obtained by using T-shaped stub in ground plane. Two rejection bands (wireless interoperability for microwave access (WiMAX)/C-band and wireless local area network) are obtained by etching two elliptical slots on radiating patch. Antenna offers large measured useable bandwidth of 2.60–20.04 GHz. Diversity performance is studied in terms of envelope correlation coefficient, diversity gain and total active reflection coefficient. Antenna also offers desirable radiation pattern, gain and radiation efficiency which makes proposed antenna quite suitable for different wireless applications.

Keywords Superwideband · Multiple-input–multiple-output · ECC · DG · TARC

1 Introduction

In existing planar technology in the field of antenna, transmission does suffer from high reliability, high data rate/reduction in co-channel interference and also improvement in channel capacity when single antenna element is used. However, by use of multiple antennas termed as multiple-input–multiple-output antennas (MIMO) antenna overcomes the above said problems. A MIMO antenna offering circular polarization (CP) for frequencies centered at 4.80 GHz, 5.20 GHz and 5.80 GHz WLAN applications with pi-shaped circular patches shows good diversity performance [1]. MIMO antenna with rotated semicircular stepped patch and rectangular ground plane with slots/stubs (for high isolation) working in UWB bandwidth also encounters interfering bands by using mushroom EBG (electromagnetic band gap) structures and unipolar square plus EBG [2]. Inverted-A monopole working in UWB ranges is designed to suppress interfering bands (LTE-A/C-extended band and IEEE802.11ac) and also mutual coupling by using techniques such as DGS (defected

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