Assymetric Fed Compact Size Wide Slot Monopole Patch Antenna for S-band, X-band & Ku-band Application

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Abstract: This research article illustrates the design and performance of asymmetric microstrip feed compound shaped compact size wideslot monopole patch antenna. The overall size of antenna is 28 mm × 32 mm × 1.59 mm. Performance of antenna has been optimized by CST Microwave studio 2014 simulator. Proposed antenna provides triple impedance bandwidth in three different bands such as S-band, X-band and Ku-band which is extended between frequency ranges of 2.44-6.02 GHz, 7.23-12.54 GHz and 14.42-16.99 GHz with flat gain (close to 3-5 dBi).This antenna may be a useful structure for modern wireless communication systems.

Keywords: Assymetric feed, Wideslot Monopole, Bandwidth, Gain

INTRODUCTION

In recent year, compact microstrip patch antennas with multiband characteristics have much attention. Designing of S-X-Ku bands antennas wrapping low profile, compact size and asymeetric feed characteristics is a demanding tasks. Microstrip patch antenna working in S-X -Ku bands are incorporated in numerous applications, including mobile phones, WLAN & WI-Max bands applications, Wireless Medical Services, Broadcast Satellite Services (BSS), fixed satellite services (FSS) and weather forcasting [1-6]. Due to various splendid applications, many researchers have extreme interest in designing S-X-Ku bands antennas [7-9]. In this communication [7], a miniature planar patch antenna with ability to operate in frequency range of Ku and K bands applications is reported. The better antenna performance in higher bands is obtained using DGS technique. Microstrip feed line is manipulated through a proximity-fed technique. A very compact dual polarized microstrip patch antenna has been reported for Ku-band applications. The overall dimension of this porposed antenna is 15×15 mm and achieved 950 MHz bandwidth in Ku band with maximum gain of 7.6 dB [8]. A compact dual wideband semi-circular shape patch antenna is reported for Ku/K band applications. The gain of this antenna is low due to ringing resonating frequencies in lower operating band [9]. The proposed asymetric feeding structure is provided higher gain and wider impedance bandwidth. The CST Microwave Studio 2014 is utilized for the simulation analysis of antennas while antennas are tested by using Vector Network Analyzer (R&S-ZVA 40) & RF signal generator. The simulation analysis of proposed design is discussed in section 2. Discussion & conclusion are included in section 3 and section 4 respectively.

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