Design and Comparison of U -Slot Micro Strip Antennas with Different Slot Widths

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Received: 23 November 2011 Accepted: 18 December 2011 Published: 30 December 2011

Abstract

A Abstract -This paper presents design and comparison of two U slot microstrip antennas of different dimensions fed by a coaxial probe. A coaxial feed microstrip antenna is proposed for linear polarization. These antennas are implemented on glass epoxy dielectric substrate with ?r =4.4, h=1.6mm and resonant at 2 GHz. The simulations are carried out using Zeland IE3D software.

Index terms— U slot MSA, Micro strip, patch antenna, VSWR, IE3D

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MSA in its simplest form consists of a radiating patch on one side of a dielectric substrate and a ground plane on the other side. Most commonly rectangular shape is used, however, other shapes, such as the corner truncated square, circular, triangular, semicircular, and annular ring shapes are also used. Radiation from MSA can occur from the fringing fields between the periphery of the patch and the ground plane. To enhance the fringing fields from the patch, which accounts for the radiation, the width W of the patch is increased. The fringing fields are also enhanced by decreasing the ?r or by increasing the substrate thickness h. Due to its advantages such as low weight, low profile, low fabrication cost and capability to integrate with microwave integrated circuits technology, the microstrip patch antenna is very well suited for applications such as wireless communication systems, cellular phones, pagers, radar systems and satellite communication system [1,2]. (1) After designing and simulation of U slot MSA with 1.5 mm slot, the return loss obtained is -39 db whereas U slot MSA with 2 mm slot gives a return loss of -28 db at the same designing parameters. Also, the VSWR for both the geometries is below 2 at the resonant frequency. The resulting data are presented in following figures It is observed that a coaxial feed, linearly polarized U slot MSA with different slot widths has been designed, simulated and compared. After comparison the U slot MSA with less slot width gives better results as compared to that of with more slot width. Both the antennas are suitable for implementing compact arrays, thus achieving even higher gain over specified bandwidth.L = Leff -2?L**(2)**?L =**(3)**? eff = (? r +1)/2+[(? r -1)/2](1+12h/W) -1/2 (4) f =**(5)** [1] [2]

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Figure 1: Figure 1 :

2 I.

Figure 2: Figure 2 :

3 INTRODUCTION

Figure 3: Figure 3 :

4578 II.

Figure 4: Figure 4 :Figure 5 :Figure 7 :GlobalFigure 8 :

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Figure 5:

TENNA GEOMETRY AND DESIGN

Figure 6:

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Figure 7:

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