DESIGN OF LOW PROFILE GRID SLOTTED MICRO STRIP PATCH ANTENNA

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ABSTRACT: **This paper represents the well formed rectangular slotted microstrip patch antenna. The proposed antenna is simulated using HFSS tool. The purpose of this paper is to design the rectangular microstrip patch antenna and concentrating on the effect of antennas radiation pattern and gain. By considering the parameters of relative dielectric constant (ϵ_r), substrate material & thickness of the material, length & width of the patch. Conducting patch is formed by using rectangular configuration. The presented grid-slotted patch antenna acquires the measured bandwidth of 2.45 for the slot lesser than 3db and the maximal attained gain is 2.25dbi.**

Keywords: **HFSS, microstrip patch antenna.**

I.INTRODUCTION

A patch antenna also known as a rectangular micro strip antenna is a type of radio antenna with a low profile which can be mounted on a flat surface. It consists of a flat rectangular sheet or "patch" of a metal mounted over a large sheet of metal called ground plane. A patch antenna is a narrow band, wide beam antenna fabricated by etching the antenna element pattern in metal trace boned to an insulating dielectric substrate such as printed circuit board with a continuous metal layer bonded to the opposite side of the substrate which forms a ground plane. Common micro strip antenna shapes are square, rectangular, circular and elliptical but any continuous shape in antenna is not possible.

Some antenna does not have dielectric substrate instead they are made of metal patch mounted above a ground plane which has wider bandwidth. The industrial, scientific and medical (ISM)radio bands are used for the purpose of telecommunication. These bands have been used for short range, low power wireless communication systems since these bands are often approved for such devices that can be used without a government license.ISM frequencies are often choose for that purpose as they already have serious interference. Cordlesphones, Bluetooth devices ,near field communication(NFC) devices and wireless computer networks may also use the same ISM frequencies.

II. LITERATURE SURVEY

The antenna consists of three metal layer separated by two square F4B substrates with size of 70×70 mm2, relative permittivity of 2.2, loss tangent of 0.002, and thickness of 1 mm.. The two substrates are stacked together closely and there is no air gap between the substrates. A grid-slotted patch works as a radiator is printed on the top layer. The patch is divided into 3×3 small patches by two horizontal slots and two vertical slots.