DESIGN OF MICROSTRIP PATCH ANTENNA AT S-BAND FREQUENCY FOR SATELLITE COMMUNICATION

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ABSTRACT

This paper consists of a design of microstrip patch antenna at S-band for satellite communication. This antenna designed to operate at S-band frequency which is at 2.4 GHz using Computer Simulation Technology (CST) software. The antenna designs were started with a basic microstrip patch antenna and proceed with power divider and to design an antenna array. Combination of microstrip patch antenna and power divider called antenna array. The return loss (S_{11}) result for antenna array is -18.89dB and 1.22 for voltage standing wave ratio (VSWR).

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Antenna is a transducer designed to transmit or receive electromagnetic waves. Microstrip antennas have several advantages over conventional microwave antenna and therefore are widely used in many practical applications [1]. Microstrip antennas are characterized by a larger number of physical parameters than are conventional microwave antennas. They can be designed to have many geometrical shapes and dimensions. The radiating patch and the feed lines are usually photo etched on the dielectric substrate. The conducting patch ,theoretically, can be designed of any shape like square, triangular, circular, rectangular, however rectangular and circular configurations are the most commonly used [2].

Micro strip antenna consists of very small conducting patch built on a ground plane separated by dielectric substrate. This patch is generally made of conducting material such as copper or gold and can take any possible shape. The radiating patch and the feed lines are usually photo etched on the dielectric substrate. The conducting patch, theoretically, can be designed of any shape like square, triangular, circular, and rectangular [3].

In satellite communication, signal transferring between the sender and receiver is done with the help of satellite. In this process, the signal which is basically a beam of modulated microwaves is sent towards the satellite. Then the satellite amplifies the signal and sent it back to the receiver's antenna present on the earth's surface. So, all