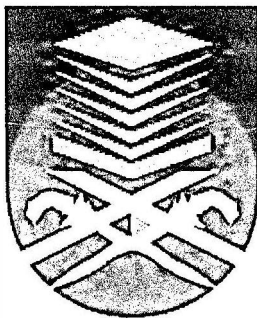


HELICAL ANTENNA FOR WIRELESS BROADBAND SYSTEM

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“In the Name of ALLAH, the Most Gracious and the Most Merciful”

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ABSTRACT

Antenna is the basic component of all system using electromagnetic radiation to transmit and receive information. In this project the antenna that has been design is helical antenna. Helical antenna is the antenna that has been popular in application from VHF to microwaves requiring circular polarization. The one that take advantages of helical antenna is satellite communication. A helical antenna is an antenna consisting of a conducting wire wound in the form of a helix. In most cases, helical antennas are mounted over a ground plane. The feed line is connected between the bottom of the helix and the ground plane. The important part of helical antenna is the radiating element which is the helical wire. The helical wire is driven at one end and radiating along the axis of the helix makes the direction unidirectional from the far open end. For this project, theory and practical must be done to know the signal when using helical antenna for broadband wireless system. The antenna is design using CST microwave studio. The antenna will focused on increase the performance of wireless broadband system in term of loss and its gain. The antenna is design for wireless broadband application because of it is easy to construct, low cost, and smaller size. The simulation will be compared to the experimental results. This invention is to provide depth knowledge on helical antenna.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

A wireless broadband antenna is a device that is used to detect a signal so that the internet can be used. If the antenna is weak, then the signal may not be detected. To improve the performance, new antenna must being built to replace the old wireless broadband antenna. There are different types of wireless antennas that can be used. These include circular, patch, Omni, parabolic and helical antenna [1]. The antenna that has been choosing for this project is helical antenna. This antenna generally constructs with a uniform diameter and operates in conjunction with ground plane, cavity or helical launcher [2]. A helical antenna is a specialized antenna that emits and responds to electromagnetic fields with rotating (circular) polarization. A reason for circular polarization is because the relative orientation of the transmitting and receiving antennas for wireless broadband application cannot be easily controlled [3]. These antennas are commonly used at earth-based stations in satellite communications systems. Helical antenna consists of two main parts which is the helical wire and the ground plane. The helical wire is driven at one end and radiating along the axis of the helix and one far open end that make the radiation unidirectional.