THE CAPABILITY OF DRAGON FRUIT TREES TO ABSORB RADIO FREQUENCY WAVES

This thesis is present in partial fulfillment for the award of the Bachelor of Electrical Engineering (Honors.)

UNIVERSITI TEKNOLOGI MARA MALAYSIA

NURISWATY BINTI MOHAMAD HAMZAH

2006687082

FACULTY OF ELCETRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM

SELANGOR, MALAYSIA

NOVEMBER 2010

This thesis is forwarded to faculty of electrical Engineering
UNIVERSITI TEKNOLOGI MARA MALAYSIA

ACKNOWLEDGEMENT

In the name of Allah, the Most Beneficent and the Most Merciful, I pray to Allah for giving me patience in completing my project.

I would like to take this opportunity to express my great feelings of gratitude to my project supervisor Pn. Hasnida Binti Saad for her advice and guidance in making this project report successful .

Furthermore, I like to express my appreciation to all staff and technicians in the communication laboratory especially to Mr.Kamarulzaman for his persistence assistance in making the measurement part successfully done.

Finally, special gratitude to the staff of Malaysian Agricultural Research and Development Institute (MARDI), Prof. Dr. Abd. Rahman Milan,Prof. Dr. Mohd Nasir Taib,my family and all my friends.

ABSTRACT

This research concerned about the radio waves frequency (RF) waves absorbed by dragon trees. The experiment is focused on the received power receive by the receiver antenna through the dragon fruit tree as a propagation medium. The RF signal is detected by a simple set-up consisting of a Yagi-uda antenna and a spectrum analyzer. From this study, it was found out that the dragon tree is capable to absorbed RF, where the fruits absorb more RF compared to the trunk. As the distance between transmitter and receiver increased, the received power will decrease.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE RESEARCH

Communication nowadays has taken a new step running along with technology including transmitting and receiving signal. The process including transmit data then the signal will pass through medium and get to receive data with the encode data by the receiver. Many sectors using this study to upgrade their own product either in agriculture sector, medical sector and many more.

The absorber is designed and shaped to absorb incident RF radiation, also known as non-ionizing radiation as effectively as possible from as many incident directions as possible. The more effective the absorber is the less will be the level of reflected RF radiation [2]. Radio frequency (RF) radiation is a subset of electromagnetic radiation with a wavelength of 100km to 1mm, which is a frequency of 3 KHz to 300 GHz, respectively. This range of electromagnetic radiation constitutes the radio spectrum and corresponds to the frequency of alternating current electrical signals used to produce and detect radio waves. RF can refer to electromagnetic oscillations in either electrical circuits or radiation through air and space. Like other subsets of electromagnetic radiation, RF travels at the speed of light [5].Radio waves at different frequencies propagate in different ways. The interaction of radio waves with the ionized regions of the atmosphere makes radio propagation more complex to predict and analyze than in free space[5].