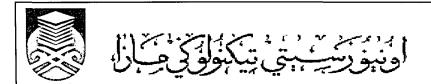


DEVELOPMENT AND ANALYSIS OF SINGLE ENDED ELLIPTICAL ANTENNA

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



ADZNINA BT EBERAHIM FACULTY OF ELECTRICAL ENGINEERING UNIVERSITI TEKNOLOGI MARA 40450 SHAH ALAM, SELANGOR DARUL EHSAN MALAYSIA

ACKNOWLEDGEMENTS

With the name of Allah, The Most Gracious, The Most Merciful and The Most Beneficent. Praise in only Allah S.W.T for His bounty and blessing upon us. It is with deepest sense of gratitude to Allah who has given the strength and ability to complete this project as it is today.

I would like to convey my appreciation to my supervisor, Puan Kamariah Bt Ismail for her guidance, advices, supervision, encouragement and faith in me in accomplishing this project.

My special thanks to Encik Hisham, Hanisah Bt Muhamed Nadzar and to those who have devoted their time either directly or indirectly; especially my friends for their ideas, supports and contribution towards the success of this project.

Lastly and by no means least I would like to give very special thanks and love to my family for their encouragement and moral support throughout the duration of my study.

ABSTRACT

This work highlights the development and analysis of a Single Ended Antenna (SEA) operating within the range of 3.1 to 10.6 GHz for ultrawideband (UWB) applications. Tapering concept was used to achieve the required parameters; resonance frequency at 4.592GHz, return loss (S_{11}) of -13.24 dB, Voltage Standing Wave Ratio (VSWR) of less than 2 and radiation efficiency of 80%. All these parameters were determined by using commercial computer aided design (CAD) software. This antenna is fed by coaxial feed and was fabricated using RT Duroid 5870 with the dielectric constant, εr equal to 2.33 and the height of the substrate, h is 0.5mm. A Vector Network Analyzer (VNA) was used to analyze the prototype antenna. The simulated and measured values concur well.

TABLE OF CONTENTS

DECLA	ARATION	i
DEDIC	ATION	ii
ACKNO	OWLEDGEMENT	iii
ABSTR	ACT	iv
TABLE	OF CONTENTS	v
LIST OF FIGURESviii		
LIST O	F ABBREVIATION	x
CHAPT	ΓER 1	
INTRO	DUCTION	
1.		
1.3		
1.3		
1.		3
1.:	5 THESIS ORGANIZATION	4
CHAPT	ΓER 2	
LITER	ATURE REVIEW	
2.		
	2.1.1 Microtrip Patch Antenna Configurations and Characteristics	
	2.1.2 Advantages of Microstrip Antenna	
2.		
2.	• • • • • • • • • • • • • • • • • • • •	
	2.3.1 Return Loss (S ₁₁)	9
	2.3.2 Voltage Standing Waves Ratio (VSWR)	
	2.3.3 Input Impedance (Z ₁₁)	
	2.3.4 Radiation Pattern	
	2.3.5 Efficiency	
	2.3.6 Gain	
	2.3.7 Polarization	
	2.3.8 Bandwidth	
2.	.1 LITERATURE REVIEW	15