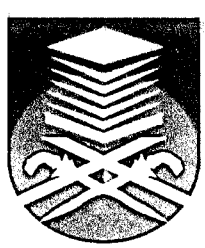
MONTE CARLO SIMULATION IN COMMUNICATION SYSTEM

This thesis is presented in partial fulfillment for the award of the

Bachelor of Electrical Engineering (Honors)

UNIVERSITI TEKNOLOGI MARA



MAZLINA BTE PONIRAN
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR

ACKNOWLEDGMENT

Alhamdulillah and thanks to Allah SWT the Beneficent, the Merciful, with the deepest sense gratitude of the Almighty that gives strength and ability to complete this Final Project 2 (EEE 690) and also have finished my final degree project report.

I would like to highly appreciated and express my most sincere gratitude to my project supervisor, Pn.Husna Binti Abdul Rahman, for her invaluable guidance throughout my entire final year project at Universiti Teknologi Mara. Without her knowledge, patience, support and encouragement, my final year project would never have been possible. She has indeed played a crucial role in the learning process.

Special thanks to Mr.Ihsan Bin Mohd Yassin for his constructive and insightful comments which led to a more critical evolution of the methodology especially in flowchart. I am also grateful to Mr.Ahmad Suffian Bin Muhammad for his willingness to share the helpful ideas and essential input on development of this project and also thesis.

Thanks and appreciations to my beloved parents, family and friends for shaping my life and encouraging me all the time during completing this project.

Last but not least, I would like to exclaim appreciation to those who involve directly or indirectly with this project.

Thank you very much.

ABSTRACT

Monte Carlo simulations are used to evaluate the bit error rate (BER) due to the degrading effects in a communication system. The communication system to be studied consists of binary PSK modulation with both signal points in the signal constellation lying in the direct (in-phase) channel. The filter at the output of the modulator is a third-order Butterworth filter with a bandwidth equal to the bit rate (BW = rb), leads to intersymbol interference (ISI). The filter of the output must continuous from block to block. This is accomplished by using the initial condition parameter that provided in filter and the value of delay must be choosing correctly in this system. Simulation result will be compared with the ideal (zero ISI) result in order to determine the increase in BER resulting from the filter - induced ISI.

TABLE OF CONTENTS

CHAPTER	LIST OF TITLE	PAGE
	DECLARATION	iii
	DEDICATION	iv
	ACKNOWLEDGEMENT	v
	ABSTRACT	vi
	TABLE OF CONTENTS	vii
	LIST OF FIGURES	ix
	LIST OF TABLES	x
	LIST OF ABBREVIATIONS	xi
1	**INTRODUCTION**	
	1.1 Background	1
	1.2 Objectives	6
	1.3 Scope of Work	7
	1.4 Organization of Thesis	8
2	**LITERATURE REVIEW**	
	2.1 General Concept	9
3	**SYSTEM AND SOFTWARE DEVELOPMENT**	
	3.1 System Development	13
	3.1.1 Input	14
	3.1.2 Source Coding	14
	3.1.3 Digital Interface	14
	3.1.4 Channels	15

	3.2	Software Development	20
	3.3	Flow chart	
		3.3.1 Construction of Simple Communication System Simulator (without transmitter filter)	23
		3.3.2 Construction of Simple Communication System Simulator (with transmitter filter)	27
4	**RESULT AND DISCUSSION**		
	4.1	Software result	30
5	**CONCLUSION AND FUTURE DEVELOPEMENT**		
	5.1	Conclusion	36
	5.2	Future development	38
	REFERENCES		39
	APPENDICES		41