

CONTENTS

APPROVAL PAGE	
SELF DECLARATION AGAINST PLAGIARISM	
ABSTRACT	iv
ACKNOWLEDGMENTS	v
PREFACE	vi
CONTENTS	vii
LIST OF FIGURES	ix
LIST OF TABLES	x
LIST OF ABBREVIATION	xi
ACHIEVEMENT	xii
I INTRODUCTION	1
1.1 Background	1
1.2 Problem Identification and Objective	3
1.3 Scope of Work	3
1.4 Research Methodology	3
1.5 Stucture of Thesis	4
II BASIC CONCEPTS	6
2.1 Broadband Channel	6
2.2 Power Delay Profile (PDP)	7
2.3 Orthogonal Frequency Division Multiplexing (OFDM)	7
2.3.1 Cyclic Prefix	9
2.3.2 Circulant Matrix and Toeplitz Matrix	9
2.4 Channel Coding	10
2.4.1 Convolutional Codes	10
2.4.2 Polar Codes	11

2.5	<i>Bit Error Rate</i>	13
2.6	New York University Wireless Simulator	13
III SYSTEM MODEL AND PROPOSED FRAMEWORK		15
3.1	System Model	15
3.2	The Proposed Framework	17
3.3	Representative PDP Calculation	19
3.4	Outage Performances	20
3.5	Validation of Channel Model	20
3.5.1	Bit Error Rate (BER)	21
3.5.2	Frame Error Rate (FER)	22
IV RESULTS AND VALIDATIONS		23
4.1	Telkom University 5G Channel Model	23
4.2	Outage Performances of Telkom University 5G Channel Model . . .	27
4.3	Result Validation	28
4.3.1	FER Performances of Telkom University 5G Channel Model	29
4.3.2	BER Performances of Telkom University 5G Channel Model	31
V CONCLUSIONS AND FUTURE WORKS		33
5.1	Conclusions	33
5.2	Future Works	33
REFERENCES		34
Appendices		37
APPENDICES A		38
A		38