UNIVERSITI TEKNOLOGI MARA

PERFORMANCE EVALUATION OF THE HUFFMAN AND ARITHMETIC CODING TECHNIQUES USING F-OFDM FOR 5G SYSTEMS

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Dissertation submitted in partial fulfillment of the requirements
for the degree of
Master of Science in Telecommunication and Information Engineering

FACULTY OF ELECTRICAL ENGINEERING

JULY 2017

ACKNOWLEDGEMENT

Alhamdulillah Rabbil 'Aalameen, All praises to Almighty Allah S.W.T. I want to express my most grateful thanks to Allah S.W.T. because He had given his blessing, merciful and spirit in order for me to successfully finish my thesis in the given period of time. A lot of thanks are dedicate to my beloved parents, sisters, brothers, nephew and neice, Encik Md Deros Bin Md Said, Puan Basrah Binti Ramli, Nur Elfira Binti Md Deros, Nur Rozavina Binti Md Deros, Muhd Nasir, Mohd Yusuf, Muhammad Yusri Nazhan and Yusrina Adellia for giving me their continuous supports along the journey to finish up my final year project as a requirement to fulfill for the award of Master of Science in Telecommunication and Information Engineering.

I also would like to express my special thanks to my beloved supervisor, Assoc. Prof. Dr. Azlina Idris, who has given me guidance and persistent help throughout this project. Without his untiring assistance, directions, encouragements, comments, suggestions, continuous guidance, support, ideas and constructive criticism throughout this project, I would not complete my project with success. Her support, encouragement and advice from the beginning until the completion help me to complete this project and writing this thesis.

I reserve my special appreciation to my beloved parents and entire family whose continuous do'a, unconditional love, patient, understanding and encouragement that enable me to complete this project. Not to forget my deepest gratitude to my respected lecturers and friends, for their help and co-operation during completion of my final year project.

ABSTRACT

Filtered orthogonal frequency division multiplexing (F-OFDM) was introduced to overcome the high side lobes in the OFDM system. Filtering is implemented in the system to help reduce the out-of-band emission (OOBE) for the spectrum utilization and to meet the diversified expectation of the upcoming 5G networks. The main drawback in the system is the high peak to average ratio (PAPR). This research is to investigate the effect of different block coding technique to reduce the PAPR in the F-OFDM system. The method that being proposed in this project are by using the block coding technique that is the Arithmetic coding and Huffman Coding to overcome the high PAPR. This study evaluates the performance of F-OFDM system based on the bit error rate (BER) and PAPR values. The best encoding scheme to be implemented in the F-OFDM system in order to minimize the PAPR and BER is being review. From the simulation results, the PAPR reduction of the Arithmetic coding is 8.9% lower, while the Huffman Coding is 6.7% lower in the F-OFDM system. Nevertheless, BER is improved by 32% for the Arithmetic coding, while 30.6% improvement for the Huffman coding. The results prove that the Arithmetic Coding will out-perform the Huffman coding in the F-OFDM system.

TABLE OF CONTENTS

		PAGE
DECLARATION		i
ACKNOWLEDGEMENT		ii
ABSTRACT		iii
TABLE OF CONTENTS		iv
LIST OF FIGURES		viii
LIST OF TABLES		xi
LIST OF SYMBOLS		xii
LIST OF ABBREVIATIONS		xiii
CHAPTER 1 INTRODUCTION		**1**
1.1	Introduction	1
1.2	Background of Study	2
1.3	Problem Statement	5
1.4	Objectives	7
1.5	Scope of Work	8
1.6	Thesis Flowchart	9
1.7	Research Contribution	12
1.8	Outline of Thesis	12
CHAPTER 2 LITERATURE REVIEW		**13**
2.1	Introduction	13

2.2 Orthogonal Frequency Division Multiplexing (OFDM) 14

2.3 Filtered-Orthogonal Frequency Division Multiplexing (F-OFDM) 17

2.3.1 Modulation Scheme 19

2.3.1.1 Amplitude Phase Shift Keying (APSK) 20

2.3.1.2 Quadrature Amplitude Modulation 23

2.3.2 Serial to Parallel Conversion 25

2.3.3 Pilot Insertion 28

2.3.4 Fast Fourier Transform 31

2.3.5 Cyclic Prefix 32

2.4 Rayleigh Fading Channel 36

2.5 Duplexing 37

2.6 Windowing Technique 40

2.6.1 Hanning Window 42

2.6.2 Hamming Window 43

2.6.3 Rectangular Window 43

2.7 Block Coding Technique 46

2.7.1 Arithmetic Coding 47

2.7.2 Huffman Coding 49

CHAPTER 3 METHODOLOGY **52**

3.1 Introduction 52

3.2 Software Development Flowchart 53

3.3 Algorithm and Formulation 54