

**PERFORMANCE EVALUATION OF OFDM IN AUDIO SYSTEM  
FOR DAB**

**This is presented in partial fulfillment for the award of the  
Bachelor of Electrical Engineering (Hons)  
UNIVERSITY TECHNOLOGY OF MARA**



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## ACKNOWLEDGEMENT

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of ALLAH, the Most Gracious and the Most Merciful

All praises be to ALLAH SWT for the all bless and strength he has given me during the completion of this final year project.

First of all, I would like to give my special thanks to my dearest supervisor, Pn. Suzi Seroja Sarnin who has encouraged me with great ideas, opinion, valuable guidance and support in order for me to complete this project successfully. Thanks for your commitment and your patience in conducting and consulting me.

I want to take this opportunity to express my deepest gratitude to my beloved family who always been supportive. Without them I would have no enthusiasm to go further. My thanks also go out to other members who have been voiced out their opinion or reach or reach out their hands helping me in this project. Last but not least, my thanks also to everyone who is regrettably not named because of shallowness of my minds. Thank you so much from the bottom of my heart.

May Allah Bless Us

## **ABSTRACT**

This paper presents the analysis of OFDM technique with audio sound signals using as an input, with the objective to show the advantages of multi-carrier OFDM modulation method compared with single-carrier 16-QAM for application in Digital Video Broadcasting (DAB). Programs and algorithms were utilizing MATLAB R2006a and using GUI to show the output of a sounds signals received while at receiver after its being transmitted from Transmitter. The output results will show the quality of the audio signals graphically and in form of audio received. The programs as well as GUI can accurately distinguish the output results of the audio signals received that simulates by OFDM and 16-QAM methods.

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# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND OF THE PROJECT

In today's environment, wireless is a conclusion to minimize the cost to send data from one point to another. Wireless communication by definition is the transfer of information over a distance without the use of electrical conductors or wires. The distances involved may be short (a few meters) or long (thousands or millions of kilometers).

With the rapid growth of digital communication in recent years, the need for high-speed data transmission has increased. New multicarrier modulation techniques such as OFDM are currently being implemented to keep up with the demand for more communication capacity. Multicarrier communication systems "were first conceived and implemented in the 1960s, but it was not until their all-digital implementation with the FFT that their attractive features were unraveled and sparked widespread interest for adoption in various single-user and multiple access (MA) communication standards" [2]. The processing power of modern digital signal processors has increased to a point where OFDM has become feasible and economical. Examining the patents, journal articles, and books available on OFDM, it is clear that this technique will have an impact on the future of communication. See the references section (starting on page 6) for a condensed bibliography and list of patents related to this topic. Since many communication systems being developed use OFDM, it is a worthwhile research topic. Some examples of current applications using OFDM include GSTN (General Switched Telephone Network ), Cellular radio, DSL & ADSL modems, DAB (Digital Audio Broadcasting) radio, DVB-T (Terrestrial Digital Video Broadcasting), HDTV broadcasting, HYPERLAN/2 (High Performance Local Area Network standard), and the wireless networking standard IEEE 802.11 [1] [3] [4].