OFFLINE SYSTEM ANALYSIS OF HIGH FREQUENCY DIGITAL SIGNAL

Thesis submitted to the Faculty of Electrical Engineering, Universiti Teknologi MARA in fulfillment of the requirement for the Bachelor Degree of Electrical Engineering (Honors)

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MEI 2009

ACKNOWLEDGEMENT

In the name of Allah SWT, The Most Gracious who has given me the strength and an ability to accomplish this project. All perfect praises belong to Allah S.W.T, Lord of the universe and His blessings upon the Prophet Muhammad saw, and members of his family and companions.

I would like to express my deepest gratitude to my Project Supervisor, Ms. Nani Fadzlina Naim for her guidance, ideas and patience in advising and assisting the project. May God bless you.

My deepest appreciation goes to my parents En. Che Mat @ Abd. Hamid b. Isa and Pn. Zainab bt Musa for their prayers, support and encouragement and being the source of my inspiration.

ABSTRACT

This project highlights the significant of the high frequency (HF) communication system in communication field. With a frequency spectrum between 3 to 30 Mhz an ionosphere often reflects the signal frequency very well during transmitting the signal. Hence, the HF communication can be done in long distance transmission. Although, HF communication is applied in radio communication but the HF technology application is still limited because it only involve in certain application. By taking these factors into consideration the idea is generate in order to enhance this application technology. As a result, a research must be conducted to make the HF communication system enhanced in accordance with the development of communication technology. In order to enhance this technology application a system to analysis HF signal should be created to help in developing this communication technology. Concerning to this issues, the system was develop to analyze HF signal. The system is operating in offline mode. The system only capable to read HF signal in form of *.wav file. The system also capable to filter signal so that the process of analyze the signal can be done smoothly. With the periodogram and spectrogram technique the system able to produce a result analysis accurately because it will illustrate the valuable information contain in the signal such as frequency, energy of the signal and the duration of the signal. In addition, the modulation type of the signal and the bit rate also can be determined.

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CHAPTER 1

INTRODUCTION

1.1 Background of High frequency (HF)

HF communication system has experienced a significant use in our communication system with frequency spectrum from 3MHz to 30MHz. In fact, HF communication system still used in certain organization such as military, marine, aviation and diplomatic interest [1],[3]. This is because HF was implemented by the amateur radio that is still being used until now by the organizations for communication purposes. Moreover HF communication system is a long communication range since an ionosphere often reflects HF radio waves quite well, known as skywave propagation [2],[3]. Hence the HF communication is a low cost communication system compared to others since it requires low power and it only used ionosphere as a transmission medium.

HF communication system is only used in certain communication field and cannot be implemented widely such in other wireless application such as cellular phone and television communication system since it has some limitation. The application of HF communication system should be enhanced so that the use of HF communication can be developed in accordance with others. Hence, a system to analyze the HF signal is needed to enhance this communication technology so that the use of HF communication system is more reliable. The system is important to analyze the HF signal so that the data of HF signal can be evaluated automatically and can be improved to receive a good quality signal.