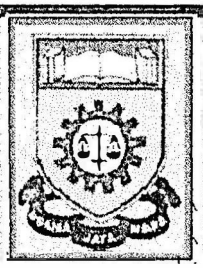
DATA COMMUNICATION SYSTEM USING PORTABLE TWO-WAY RADIO

Thesis presented in partial of fulfillment for the award of
Bachelor of Electrical Engineering (Hons) by
MARA INSTITUTE OF TECHNOLOGY



MOHD SHUKRI BIN HJ AHMAD
FACULTY OF ELECTRICAL ENGINEERING
MARA INSTITUTE OF TECHNOLOGY
40450 SHAH ALAM
SELANGOR
NOV 1998

ACKNOWLEDGMENT

I would like to take this opportunity to thank my supervisors Pn. Norasimah Khadri, Dr. Deepak Kumar Ghodgoankar, and Mr. Hadzli Hashim for their support, ideas and suggestions. Also thanks to Mr. Kamaruzaman, Mr. Khalim, and Mr. Azman (lab technicians) for their co-operation towards the completion of my thesis.

I would like to give my heartfelt to my parents for their support in to pursue my dream; for surrounding me with their devoted love and for all the prayers they have said for my success.

A special thanks also goes to my classmate Mr. Awang Mokthar for his endless support and help.

ABSTRACT

Traditionally, the Personal Computer (PC) is connected via Local Area Network (LAN) using the wireless data services and systems, cost effectiveness and flexibility can be achieved as the PC can be moved around without additional hard wire required for the LAN.

This project thesis presents the use of radio frequency portable two-way-radio GP300 as a medium for wireless data communication. The objective of this project is to study bit error rate (BER), modulation types and signal speeds for wireless data communication (WDC) using portable two-way radio (walkie-talkie), voice band modem and PC. It will be a low-cost (without line charge, access fee), low-speed (less than few kilobits per second) communication system with a range of a few meter to hundred meter or in building environment.

This WDC system has applications such as remote weather station, telemetry system, and portable data terminal in building.

DATA COMMUNICATION SYSTEM USING PORTABLE TWO-WAY RADIO

CONTENTS **Page No**

CHAPTER 1: INTRODUCTION

1.1 OVERVIEW OF WIRELESS INFORAMATION NETWORK

We are all being exposed to a communication revolution that is taking us from a world where the dominant mode of electronic communications was standard telephone service and voiceband data communications carried over fixed telephone networks, packet-switched data networks, high-speed local area networks (LANs), and mobile communications environment.

Wireless communication system, of which cordless phone, pagers, and cellular telephones mobile data networks, and mobile satellite systems, has experienced enormous growth over the last decade, and the new concept of personal communication systems, wireless LANs (WLANs), and mobile computing have appeared in the industry. Digital system has also been advocated for better performance in a wireless environment. Channel coding, interleaving, and other digital techniques can be used to provide additional robustness in radio channels affected by shadowing, fading, and other forms of perturbation.

The increasing reliance on data communications in world provides the basis for a similar growth in demand for various forms of wireless data service. Just as the pager and the cellular telephone have become standard items in the business traveler's attach case, lap-top and notebook computers are becoming increasingly familiar elements of the "mobile office". In the marketplace one already finds portable computers which can be connected to the cellular telephone. These are example of ways of providing data transmission over a network design for wireless analog voice service, in effect the wireless equivalent of connecting a standard V-series data modem to the wired public switched telephone network (PSTN). However, just as terrestrial digital data networks have evolved to provide more efficient data communication than is provided by the use of modem, dedicated wireless data services and networks, including wireless LAN's, are being developed as well.