APPLICATION OF RFID SYSTEM AND ZIGBEE WIRELESS TECHNOLOGY TO LOCATE VESSEL IN TISSUE CULTURE LABORATORY

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UNIVERSITI TEKNOLOGI MARA

NADIA BINTI ZULKORNAIN
2008553481
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 Shah Alam, Malaysia

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ABSTRACT

Radio frequency identification (RFID) applications are numerous and far reaching. The most interesting and widely used applications include those for supply chain management, security and the tracking of important objects and personnel.

This project, focus about tracking of vessel which means to know which shelf that vessel placed in tissue culture laboratory, Malaysian Palm Oil Board (MPOB). RFID system consists of RFID tag and RFID reader. RFID tag is attached on the vessel while RFID reader will be placed nearby the door. A database system with Graphical User Interface (GUI) is developed using Microsoft Office Access and Visual Basic (VB) software. This database allows the laboratory worker to store the location of vessel.

A new method of tracking the location of vessel based on Zigbee technology. The Zigbee or Xbee wireless module is used to interface between reader and computer. Using RFID system and PIC16F876A the data will be transmitted thru Zigbee wireless technology to personal computer (PC). The data will display the number of tag attached on the vessel in the database. The system is able to detect when the vessel enter and exit the room. Besides, the location of vessel can be easily tracked and position of vessel will be in orderly manner.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Tissue Culture is a tool or mechanism used for plant propagation to speed up the production of certain plant, as well as create the desired type of growth. For Malaysian Palm Oil Board (MPOB) provide tissue culture of oil palm industry with innovations for the production of improved planting materials and information on the molecular biology of tissue culture processes [1].

Radio frequency identification (RFID) is a rapidly developing technology which uses radio frequency signals for automatic identification of objects. It provides a quick, flexible and reliable way to electronically detect, track and control a variety of items. The complete RFID system combines the technology of the tag contain a unique identification number and reader [2].

Wireless is one of the telecommunication technology used nowadays that uses radio waves, rather than cables to carry the signal from one location and the distances involved may be short or long depends on the frequency used. It provide high-quality information exchange between portable devices located anywhere in the world. By wireless technology, it can improve communication lead to faster transfer of information. The example of application for this technology, including the evolution of cell phones and PDAs, smart homes, sensor networks and automated highways and skyways. In this project, Zigbee as wireless network communication device. Zigbee act as transceiver where transmit and receive data given by RFID system through PIC before database collect all the data to display it on computer.

This project begins with the research about the RFID system, Zigbee wireless and Visual Basic. There are a few parts that have been highlighted in completing this project such as how the RFID system works, types of RFID, wireless system and database system.