SCHOOL OF ENGINEERING

FINAL YEAR PROJECT

FINAL REPORT

DEVELOPMENT OF REMOTE CONTROL SYSTEM USING WIRELESS COMMUNICATION TECHNOLOGY

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Abstract

In past, the device control are consists of analog technology which is slowly pace off due its reliability and the need of moving fast towards digitalize technology. In recent year of technological advancement in electronic devices, such as highly integrated circuit, has made the implementation of the digital controller possible. The digital controller being compact has high reliability and provides the mean to easily access to the challenging parameters of the analog system.

The focus of this project is to develop a remote control system using one of the wireless communication technologies. This remote control system will allow user to control as well as monitoring the ON/OFF status of the any electrical devices and even industrial machineries, without the use of wire between the user and the application devices. Users control and monitor the device through a computer running graphical user interface (GUI) computer program. Control and monitoring information is transmitted by mean of RF transmission using RF transmitter and Receivers.

This thesis begins by defining about the project and proposes of undertaking this project. The theory behind the personal computer based remote controlling system is touched on briefly. The thesis carries on with a literature review of type of wireless communication available and also on how to implement a basic wireless communication system to

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construct one. The basic concepts of digital signal processing that are of important to the programming of the controller are also being discussed.

The implementation of the thesis began with the development of hardware which consists of designing a control and monitoring circuitry and algorithms using a PIC micro controller and other related component. Here the process of designing the circuit is discussed briefly starting with the component selection by going through their capabilities and application. This will lead to designing the circuit and implement it to the printed circuit board (PCB).

On the second phase of hardware design, the programming implementation was discussed briefly and the programming flow is shown clearly through the flow chart representing each program. Two different programming tools are used, one to create a graphical user interface (GUI) using Visual Basic 6.0 and another to control the workability of the hardware using Visual C++. The basic control analogy is incorporated into the system and the results are shown on the personal computer via serial port.

Overall, the project successfully realizes the working principle of the wireless communication system and the output of the project is fairly satisfying. There are some room of improvement on the system and the future work of this very interesting field of studies are also detailed.

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