DEVELOPMENT OF TRANSMITTER AND RECEIVER CIRCUIT USING RADIO FREQUENCY FOR AUTOMATIC ANNOUNCEMENT IN LRT TRAIN

MOHD NAZRUL FAZLI BIN MOHD FOUDZI

BACHALOR OF ENGINEERING (HONS) ELECTRICAL

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FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

MALAYSIA

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ABSTRACT

This paper presents a solution for LRT train announcement problem by using wireless radio frequency transmitter and receiver circuit to energize the automatic announcement circuit. The circuit described generates ultrasonic sound of frequency between 315 Mhz to 350 Mhz. Transmitter which is placed at the station platform will generates ultrasonic sound and the receiver which is placed at the LRT train will senses ultrasonic sound from transmitter and switches "on" a relay. The relay is used to control the public address equipment.

This project is one of the major parts of the automatic announcement system which consists of complete block of automatic announcement system. The proposed project has two different circuits which is a transmitter that transmit the wireless radio frequency and a receiver to receive the signal transmitted. Then, the receiver output will connect to the automatic announcement circuit and activate it. To develop this circuit there are many software can be used such as p-spice and Multisim ver7 to design and simulate the circuit and Protel software to design the PCB board.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

RF is short for radio frequency, any frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space. Many wireless technologies are based on RF field propagation. Radio frequency (RF) is a frequency or rate of oscillation within the range of about 3 Hz to 300 GHz. This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves. Since most of this range is beyond the vibration rate that most mechanical systems can respond to, RF usually refers to oscillations in electrical circuits or electromagnetic radiation

Low frequency systems generally have an operating range of between 1 and 3 meters, however low power levels can be used and therefore LF systems are more easy for licensing. Low frequency systems are also more appropriate for use in hazardous atmospheres due to the low power levels. Another advantage of LF systems is that unlike many other automatic identification systems, including RFID systems operating at the top end of the frequency spectrum, they do not require line of sight between the transponder and the reader antenna. High frequency systems are available with operating ranges of 30 meters or more. However, to obtain this range, high power levels must be used. Fast data rate Less able to penetrate solids high power levels. High frequency systems are less acceptable internationally due to licensing difficulties. Furthermore, the ability of these systems to read transponders through solids is limited, in addition those systems operating at the top end of the frequency spectrum require line of sight the transponder and the reader unit. The simplest link type is the point-to-point system. There, the transmitter and receiver must be pointed at each other to establish a link. The line-of-sight (LOS) path from the transmitter to the receiver must be clear of obstructions, and most of the transmitted light is directed