DESIGN OF APPLICATION WIRELESS HOME SPEAKER

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Dedicated to my beloved mother and father

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ABSTRACT

Nowadays, people are chasing for technology because technology makes people life perfect and simple. To design, a person has to derive the mathematical calculation, simplify using control theorem, application on programming and derive using the model. Another simpler method is designing wireless speaker for people convenient. Wireless speaker is an application at home that uses simple basic programming and wireless circuit that connect each speaker inside the house by using controller on desktop. In a sense, wireless transmitter speaker can be a wireless communications operator that has been seen phenomenal growth in consumer demand for high quality and low cost services. This project focuses more on application of wireless in home. Users can used this system in home with easily control which speaker they want to be used. Digital communications technology provides efficiency, advantage over analog wireless communications; multiplexing and filtering is easier, components are cheaper, encryption is more secure and network management is easier. Additionally, digital technology provides more value In future, this project could help consumer in convenient way.

ABSTRAK

Saat ini, manusia mengejar pembangunan teknologi kerana teknologi mampu membuat hidup manusia mudah dan sempurna. Untuk merekacipta sesuatu, seseorang harus mengetahui perkiraan matematik, menggunakan teorem kawalan, menggunakan aplikasi program dan mengetahui menggunakan kaedah daripada model. Salah satu kaedah mudah adalah merancang sistem pembesar suara tanpa wayar unntuk keselesaan pengguna. Projek ini merupakan projek pembesar suara tanpa wayar dimana ia adalah sebuah aplikasi di rumah menggunakan sistem asas program yang mudah dan rangkaian sistem tanpa wayar yang dikawal dari komputer persendirian. Dalam erti kata lain, pembesar suara tanpa wayar boleh dikatakan kaedah komunikasi moden yang menjadi fenomena dalam permintaan pelanggan dari segi aspek kualiti dan perkhidmatan berkos rendah. Projek ini menekankan konsep aplikasi komunikasi tanpa wayar di rumah kerana pengguna boleh menggunakan sistem ini di rumah dengan mudah. Kesimpulannya, komunikasi digital teknologi dapat memberikan keuntungan, kelebihan dari komunikasi tanpa wayar analog; pemultipleksikan dan penapisan lebih mudah, komponen akan menjadi lebih murah, data sulit menjadi lebih selamat dan pengurusan rangkaian lebih mudah. Selain itu, teknologi digital memberikan kelebihan pada masa depan kerana ia dapat membantu pengguna dengan memudahkan cara.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATION

RF	:	Radio Frequency
LOS	:	Line of Sight
Hz	:	Hertz
TV	:	Television
Volt	:	Voltage
USB	:	Universal Serial Bus
PC	:	Personal Computer
FM	:	Frequency Modulation
AF	:	Audio Frequency
Cm	:	Centimetres
CD	;	Compact disc
DC	:	Direct Current
BTS	:	Base Transceiver Station

ID	:	Initial device
dB	:	Decibel
RAM	:	Random Access Memory
Mbps	:	Mega Bit per Second
PIC	:	Peripheral Interface Controller
UART	:	Universal Asynchronous Receiver Transmitter
ASK	:	Asynchronous Serial Communication
PWM	:	Pulse Width Modulation
LED	:	Light Emitting Diode
VCC	:	Common Collector Voltage
TX	:	Transmitter
RX	:	Receiver
FLL	:	Frequency Locked Loop
IC	:	Integrated Circuit
GUI	:	Graphical Userl Interface

LIST OF APPENDIX

CHAPTER 1

INTRODUCTION TO PROJECT

1.1 Introduction

Wireless speakers are very similar to traditional loudspeaker that used wired,but they transmit audio signals using radio frequency (RF) waves rather than over audio cables. As things stand today, the term 'wireless' in the audio and video world does not mean 'wireless' - rather all it means is less wires. And this applies to any wireless speaker system presently. Still, this in itself can turn out to be a great advantage. Here, wireless speakers are composed of two units: a main speaker unit combining the loudspeaker itself with an RF receiver, and an RF transmitter unit.

The transmitter connects to the audio output of audio devices like speakers.Wireless technology is relatively new for home surround sound systems. There are two types of transmission media for wireless speakers. RF signal based systems, and infrared signal based systems. RF, or radio frequency based systems use radio signals to transmit data, and in this case music, to the remote receiver. RF systems commonly use radio frequencies between 300 MHz and 1000 MHz, with 900 MHz being the most common frequency. Transaction rates range up to 40,000 bits per second.

This technology does well for speaker systems that will not have direct LOS (line of sight) from the receiver to the transmitter. Some barriers, such as cement, metal, electronic devices, some plastics, and other materials interrupt or absorb RF signals. The speaker placement can be test by moving speakers around slightly to see where the best reception and audio quality is. This solution is common for outdoor speaker systems, systems that are located in a different room that the audio source, or home wide audio systems. In the location where it would like to place, the speakers is limited to areas of bad coverage, RF repeaters can be purchased to assist transmissions around barriers that are causing transmission problems.

These systems are susceptible to radio interference from electronic devices, although new technologies in shielding and spread spectrum solutions are making this less of an issue. RF systems tend to transmit more data, communicate further, are more reliable and are more expensive than the infrared alternative. A transmitter in a wireless network is responsible for generating a high power output signal with adequate signal strength to deliver a sender's message.

Wireless transmitters provide modulated radio waves to carry (transmit) data signals from one place to another that may include a radio frequency (RF) filter system

which is used to ensure that the integrity of a sender's message is not threatened by the many compromising system components that the signal encounters as it progresses through the transmitter.

1.2 Objectives

Following are the objectives set in this project:

- How wireless system were applied in speaker.
- Radio frequency were used as transmitter medium in transmitting signal
- Function of transmitter and receiver circuit.
- To develop high gain wireless transmitter by using a few medium.

1.3 Problem Statement

A common complaint against home audio systems has been the cables that interconnect the speakers to the audio receiver, tuner, CD player, or stereo units. As more and more channels are added to modern home audio equipment the problem of connecting the speakers to the audio sources has getting worst. Running cables through the house walls is messy and time consuming. Cables running over the carpet are a tripping hazard. Running cables along the ceiling or walls are just an eyesore. Some homes have a nice deck, patio or gazebo in the yard that is a common relaxation area for meeting and entertaining guests. Playing soft or popular music has a tendency to relax people, and help with awkward gaps in communications, as well as provide a topic of discussion when one isn't forthcoming. These wireless speaker acts as solver for a few problems that can be seen before.

1.4 Scope

These are a few scopes that cover in this project:

a) This project will focus on using transmitter and receiver circuit in implementing the wireless signal between speakers by doing research on reference circuit. Thus, the function and operation of transmitter and receiver circuit will be study to accomplish this project. Either transmitter receiver circuit, Proteus software used is the main components to execute the task.

b) In this project, RF signal were used as transmitting medium in wireless home application.

c) Use transmitter and receiver circuit in implementing the wireless signal between speakers by doing research on reference circuit.
d) Use Proteous software to simulate the design circuit analysis
e) Use interfacing software, Delphi 7 to control the switches

1.5 Expected Outcome

The expected outcome of this project are this wireless speaker should be able to function in home in a maximum distance between each other by transmitting the signal between receiver and transmitter in a house with little interference signal from each other. The signal sent between the transmitter and receiver should be receive in a long distance with help by amplifier that will used where the area to be covered and capacity requirements do not justify the installation of a full base station system with managed frequency-channel allocation.

With this wireless speaker, problem come out from application using cable speaker can be solved with great way. The application of interfacing software will help this signal will be controlled on

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction to Wireless Speaker

To make the objectives of this project successful, some step must be used as a starting step. First step should be taken is doing a research on wireless transmitter speaker system. Wireless speaker, as what can get from its name, is a new kind of speaker which works without dependence on lots of wires as the traditional one does. In this wireless speaker system, sound is transmitted though air. It is easy to be setup and if users have the hobby of holding parties regularly in home, it will be a real good choice. It can be moved freely in outdoors and user will never be worried about that the tangled wires may trip user friends up when holding a party in the garden.