UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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DEVELOPMENT OF GSM MOBILE JAMMER FOR EXAMINATION PURPOSE

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronic Engineering Technology (Telecommunication) with Honours.

by

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APPROVAL

This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronic Engineering Technology (Telecommunication) with Honours. The member of the supervisory is as follow:

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ABSTRAK

Gangguan bunyi telefon di kawasan tertentu seperti di kawasan peperiksaan menyebabkan suasana peperiksaan terganggu. Umumnya, pelajar menipu dengan memuat turun kertas dari internet, menggunakan telefon untuk melayari internet semasa ujian, menangkap gambar ujian dan menyiarkannya secara dalam talian. Dalam projek ini, pembangunan jammer GSM telefon bimbit untuk tujuan peperiksaaan dibuat adalah untuk mencegah penipuan di kalangan pelajar dalam peperiksaan. Selain itu, projek ini bertujuan untuk mengelakkan penggunaan telefon bimbit di tempat-tempat di dalam liputannya tanpa menggangu saluran komunikasi di luar jangkauannya, dengan itu menyediakan kaedah yang murah dan boleh dipercayai untuk menyekat komunikasi mudah alih di kawasan terhad yang diperlukan sahaja. Jammer ini berfungsi pada GSM 900 dan GSM 1800 pada masa yang sama. Litar yang digunakan untuk GSM jammer adalah Tuning Circuit, Voltage Controlled Oscillator, RF Amplifier dan Antena.

ABSTRACT

Telephone ringing in certain areas such as in the examination area causes disturbance. Generally, students cheat by downloading papers from the internet, using phones to surf the internet during testing, capturing test photos and publishing them online. In this project, the development of GSM cellphone jammer for the purpose of the examination is to prevent fraud among students in the examination. Additionally, the project aims to prevent the use of mobile phones in places within its coverage without interrupting the communication channel beyond its reach, thus providing a cheap and reliable method of blocking mobile communications in only limited areas. Jammer works on GSM 900 and GSM1800 at the same time. The circuit used for GSM jammer is Tuning Circuit, Voltage Controlled Oscillator, RF Amplifier and Antenna.

DEDICATION

To my beloved parents (Muhammad Tapprizi bin Abu and Jamaliah binti Jaafar) and all family members.

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LIST OF ABBREVIATIONS

BBC	British Broadcasting Corporation
CDMA	Code Division Multiple Access
DC	Direct Current
DOS	Denial of Service
FCC	Federal Communication Commission
FDD	Frequency Division Duplexing
FPGA	Field Programmable Gate Array
GSM	Global System for Mobile Communication
HDL	Hardware description language
IF	Intermediate frequency
LCD	Liquid Crystal Display
RF	Radio frequency
RTC	Real time clock
SNR	Signal to noise ratio
VCO	Voltage Controlled Oscillator

CHAPTER 1

INTRODUCTION

1.0 Introduction

The mobile jammer is one of the devices to blocking the mobile phone from getting signals from base station. The jamming device can transmit the signal in the same frequency for mobile phone to jamming the signal. The communication will automatically re-establish when the device turned off and deliver full service. The jamming distance is based on the signal strength in the specific place and the base station distance.

1.1 Background

A mobile phone jammer or blocker is a device which purposefully transfer signals on the similar radio frequencies as mobile phones, disturbing the communication between the mobile phone and the mobile phone base station, successfully deactivating mobile phones inside the area of the jammer, keeping them from getting signals and from transferring them. Communication jamming devices were first created and utilized by military. This importance comes from the essential objective of refuse the successful transportation of data from the transmitter (tactical commanders) to the recipient (the army personnel), and the opposite way. These days, cell phone or mobile phones are enhancing necessary gadget in our everyday life. The innovation behind cell phone jamming is absolutely uncomplicated. The jamming device transmissions an RF signal in the frequency range kept for cell phone that restricts with the cell phone signal, which outcome in a "no network available" show on the cell phone display. Entirely mobile

phones within the operational area of the jammer are silenced. In the most countries, the mobile jammers are prohibited device.

As indicated by the Federal communications commission (FCC) in the USA: "The manufacture, importation, sale, or offer for sale of devices designed to block or jam wireless transmission is prohibited". Though, in recent times, there has been an expanding request for mobile phone jammers. Almost mobile phones operate dissimilar bands to transmitting and receiving communications from towers (called frequency division duplexing, FDD). Jammers manage operate by either disturbing mobile phone to tower frequencies or tower to mobile phone frequencies. Entirely bands from 800 MHz to 1900 MHz within a 30-foot range (9 meters) can block use smaller handheld model. Small devices are likely to use the previous way, but larger more costly models may affect directly with the base station. The area of phone jammers can extend from twelve feet for stash models to kilometres for more devoted units. The real scope of the jammer relies upon its energy and the nearby condition, which may incorporate slopes or dividers of a structure that blocking the jamming signal. A smaller amount of energy is needed to interrupt signal from tower to mobile phone than the signal from mobile phone to the base station, for the reason that the base station is placed at longer distance from the jammer than the mobile phone and that is the reason the signal from the tower is not as strong. Jammers old versions frequently were restricted to operational on phones with only analogue or digital mobile phone old version standards.

During World War II, jamming was applied to block the radar signal used by the enemy's missiles or aircraft. The radar jamming was used by interrupting the signal of the radar used by the enemy in order to mislead the enemy's pilot by giving false instructions in their own language. Modern secure communication techniques use such methods by increasing the bandwidth of the data sent in order to avoid from the harmful

effects of jamming. The government of Israel, Iraq, Cuba, China, Germany (during World War II), Iran (Iran and Iraq war, 1980-1988), North and South Korea and several Latin American countries, as well as Ireland have occasionally applied jamming to against the pirate radio stations such as Radio Nova. Besides, the United Kingdom government also tried to jam the offshore radio ship and Radio North Sea International off the coast of Britain in 1970 by using two coordinated, separately located transmitters. Not to be forgotten, the Nazis attempted to block the signal of the broadcasts to the continent from the BBC and other related stations. The wrongly use of jammer has come out to a law in which manufacturing, owning, marketing, offering for sale or even operating a cell phone jammer are against the law. It can be punished by an $11,000 fine and up to one year in prison for each offense. This punishment has opposed the development of such device as defensive weapon.

1.2 Problem Statement

The mobile phone jammer is a device used to block mobile phone from receiving signal from tower (base station). When the devices turn on, the mobile phone successfully disables. These devices can be utilized as a part of for all intents and purposes any area, however are discovered basically in places where a telephone call would be mostly disruptive because silence is expected. Different Signal jamming devices might be utilized by various individuals or group to jamming different frequencies and hospital are not a special case. Pacemakers can truly meddle with jammers, yet the two jammers and pace-maker producers are continually ensuring that such situation would be avoided any way.

The wide utilization of cell phones could make a few issues as the sound of ringing winds up irritating or disturbing. This could occur in a few spots like gathering rooms, law courts, libraries, exam hall, mosques and lecture room. One approach to stop these disturbing ringing is to introduce a device in such places which will block the utilization of mobiles. Alike a device is well-known as mobile phone jammer or "GSM jammer", which is essentially some kind of electronic countermeasure device. The idea was taken to our information when previous year during the examination session students were caught using mobile phones with internet to cheat over the exam. Thus, the jammer is the one solution to prevent the incident is repeated again.

1.3 Objectives

Based on the problem statements discussed above, the objectives of this study are:

i. To prevent mobile phone from transmitting and receiving the signal from base station.

ii. To design and implementation phone jammer with a double band GSM 900 and GSM1800.

iii. To develop a mobile phone jammer circuit with hardware part with high flexibility and minimum cost.

1.4 Scope

The scopes of this research work are established based on the objectives that mentioned. This GSM mobile jammer can block the signal at GSM900 and GSM1800 frequency band. Another essential point the connection between base station and mobile phone user disconnected in the jamming area. The connection between mobile phone and base station become normal if the jamming device turn off. Lastly, the selecting suitable jamming technique for the jammer will create a necessary output result.

1.5 Summary

The summary of this chapter is to talk about GSM mobile phone jammer. Mobile Jammers were initially created for law enforcement and the military to disturb communications by criminals and terrorists to stop the use of certain remotely exploded explosives. Mobile jammers impact can change broadly based on aspects such as nearness to towers, indoor and outdoor settings, existence of structure and landscape, even temperature and humidity assume a part. After understand the theoretical it a can be implant to our objective to block signal in examination area. The area of jamming become smaller compared to military usability but the function still same to block the signal.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter discusses on the literature review of the previous research and papers that are related to this project. Literature review that will be discussed later in this chapter is about the development of Global System for Mobile communications (GSM) mobile jammer such as different types of communication technologies and different types of design used. The technologies will then be compared and analysed to get advancement in this project.

2.1 Previous Work

2.1.1 GSM 900 Mobile Jammer

This project is prepared by Ahmad Jisrawi from Electrical Engineering Department, Jordan University of Science and Technology in year 2011.

This project is about the GSM jamming device that transfer signal on a similar frequency at the GSM 900 system works, the jamming achievement when the cell phones in the area where the jammer is placed unsuccessful make or receive call phones. This jammer will block the mobile phone signal at GSM 900. There are several types of techniques that can be classed in this project such as Type "A": Jammers, Type "B":

Intelligent Cellular Disablers, Type "C": Intelligent Beacon Disablers, Type "D": Smart JAMMERS and Type "E": Faraday Cage (EMI Suppression Techniques). For the jamming requirement, the GSM frequency range needed to be covered the frequency of the jammer signal.

	Uplink	Downlink
GSM 900	890-915 MHz	935-960 MHz

Figure 2.1: GSM uplink and downlink frequency range (Ahmad Jisrawi,2011)

To do a jamming signal from the downlink is not that complicated than uplink as the low power received from the GSM Base Station. Thus, the jammer output frequency must cover the downlink frequency.

2.1.2 Dual Band Mobile Jammer for GSM900 and GSM1800

This project is prepared by Ahmed Sudqi Hussein Abdul-Rahman and Ahmad Nasr Raja Mohammad from Department of Electrical Engineering, Jordan University of Science and Technology, Jordan in year 2008.

This project is about the design, testing and implementation of dual band GSM mobile phone jammer. This jammer will block the mobile phone signal at GSM 900 and GSM 1800 simultaneously. Then the transport of information from the sender to the receiver will become unsuccessful. The jamming techniques in their project, they have used The Denial of Service (DOS) jamming techniques. This technique needs

transmitting noise on the similar frequencies of dual band GSM 900 MHz and GSM1800Mhz.

	UPLINK (Handset transmit)	DOWNLINK (Handset receive)
GSM 900	890-915 MHz	935-960 MHz
DCS 1800	1710-1785 MHz	1805-1880 MHz

Figure 2.2: Operating frequency band (Ahmed. Sudqi Hussein Abdul-Rahman, 2008)

In this project, the actual jamming distance will gain if the distance between the cell phone and the base station gain. As the result, the designed device works in dual band GSM and the device capable block signal the main cell phone carriers by using Denial of Services (DOS) technique.

2.1.3 Analyzing the Advanced Mobile Phone Signal Jammer for GSM and CDMA

This paper is prepared by S.Madhuvanthi and R.Anitha from Master of Computer Applications, S.A Engineering College, Chennai in year 2016.

This paper is about the design for the advanced mobile signal jammer for Global System for Mobile communication (GSM). This design requires jamming techniques, section, keys, microcontroller and GSM unit. In this system, the data will sent to the