## UNIVERSITI TEKNOLOGI MARA KAMPUS BUKIT MERTAJAM 2005

FINAL REPORT OF DIPLOMA PROJECT

FACULTY OF ELECTRICAL ENGINEERING



# FM RADIO

MUHAMMAD TAUFIQ MOKHTAR

MUHAMMAD FITRI ZAKARIA

### ACKNOWLEDGEMENT

Alhamdulillah, in the name of Allah S.W.T the most gracious, the most merciful, for giving us strength and patience upon the completion of this final report on our project 2. Only with his permission can we complete whatever task we plan to do.

We would like to express our thanks to the most important person who plays a big part in our project, ensuring that we followed the appropriate procedure which is our kind supervisor Puan Tuan Syahirah Bt Tuan Yaakub. She had given her full support and guidance, helping us on how to deal with the problems we have during the process.

Not to forget our thanks to Mohd Norrasiddiq B Mohter, a very helping friend who really help a lot to make sure that we get all the materials and information **aceded** and **our t**hanks also to all the person involved in contributing their effort so that this task can be done.

### ABSTRACT

The FM radio project is a similar thing like any other kind of radio devices that can be found in today's application. It uses nearly the same components which includes parts such as the LM386 IC's, transistors, capacitors, the coils and antenna. However the task is not that easy because some parts are need to be taken seriously as they can be a sensitive components which will determine either this radio receiver can perform it efficiently.

In this thesis, there is a different technique which will be applied to the construction of the FM radio that is by making of the source coil and the drain coil manually. These two components are the important parts because it is a complicated thing to make. Another reason is that these components cannot be found in electronic stores; otherwise the process would be easy. The function of the coils is that they provide the sources of the FM channels that people listen from a regular radio device.

The proposed project should provide a similar function or perhaps a more reliable FM radio receiver like any other kind of FM devices available in the market.

	TABLE OF CONTENTS			PAGE
	Ackno	owledge	i	
	Abstra	act	ii	
	СНАР	TFR		
	1	INTRODUCTION		
		1.1	Objectives of the project	1
		1.2	Specific objectives of the project	2
		1.3	Scope of the project	3
2 RADIO: HOW IT WORKS				
	2		Introduction	A
		2.1		4
		2.2	Radio waves	7
		2.3	Modulation	8
			2.3.1 AM: Amplitude Modulation	9
			2.3.2 FM: Frequency Modulation	10
	3	CIRCUIT DESIGN AND OPERATIONS		
		3.1	Circuit Design	11
		3.2	Component list and data	17
		3.3	Making the coil components	18
		3.4	The source coil	18
		3.5	The drain coil	20
		3.6	PCB layout	21

# **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 OBJECTIVE OF THE PROJECT**

The purpose of this project is to design and build an electronic FM radio receiver. At the early stage of the project, the electronic AM/FM radio circuit was intended to be built. But due to suggestion by the supervisor, the FM radio circuit is chosen because the FM radio is the type of device which is widely used than the AM radio nowadays due to its efficiency and the construction of an AM/FM radio would contribute to a more complex circuit and the consumption of huge amount of components.

This FM radio circuit is supposed to function like the same kind of other regular FM radio devices. It would have the same parts like an antenna, a speaker, a FM tuning button and it will operate using a battery. Besides the purpose of building a FM radio device, the main aim is to get used to the practice of involving into such project like this so that in the future, students will be able apply their knowledge and skills in their work field.