

AUDIO TRANCEIVER
Project Report Submitted
by
IOSEPHIDES GEORGIOS

in part satisfaction of the award of
Diploma Technician Engineer in Electrical
Engineering of the Higher Technical
Institute, Cyprus.

June, 1992.

ACKNOWLEDGEMENTS

I wish to express my appreciation to the Higher Technical Institute which offered me the opportunity to conduct this project.

I would like to express my thanks to my project supervisor Mr D. Lambrianides for his guidance and assistance given throughout the project period.

Finally I would like to express my gratitude to Dr. Lambes and all those persons who so freely gave me their assistance, for the completion of my project.

I. GEORGE

ABSTRACT

This project deals with wireless communication using:

(a) Visible Light

(b) Infra-red

(c) Ultrasonic

The range of audio frequencies i.e frequencies audible to the human ear varies from 15 Hz to 15 KHz.

For these frequencies to be transmitted by radio, in order that transmitters may not interfere with one another, they are used to modulate different carrier frequencies in the range:

0 - 30 KHz Very Low Frequency (VLF)

30 - 300 KHz Low Frequency (LF)

0.3 - 3 MHz Medium Frequency (MF)

3 - 30 MHz High Frequency (H.F)

30 -300 MHz Very high frequency (VHF)

In the transceiver used there VLF carrier is used to modulate. In visible light the audio is transmitted directly by the bulb. In infra-red the carrier frequency range from 25 - 40 KHz. In ultrasonic the carrier frequency range from 21.5 - 63 KHz. Therefore this transceivers systems find applications in long distance, point to point communications, marine navigation and security systems.

CONTENTS

	<u>pages</u>
ACKNOWLEDGEMENTS	I
CONTENTS	II
SUMMARY	IV
INTRODUCTION	VII
<u>CHAPTER 1</u>	
ELECTROMAGNETIC RADIATION	1-12
<u>CHAPTER 2</u>	
DIFFERENT METHODS TO TRANSCEIVER AUDIO	13-18
<u>CHAPTER 3</u>	
OPTICAL AMPLIFICATION	19-21
<u>CHAPTER 4</u>	
SELECTION AND DESIGN	22-36
<u>CHAPTER 5</u>	
THE VISIBLE TRANSMITTER	37-48
<u>CHAPTER 6</u>	
THE VISIBLE RECEIVER	49-60

CHAPTER 7

THE INFRA-RED TRANSMITTER 69-72

CHAPTER 8

THE INFRA-RED RECEIVER 73-86

CHAPTER 9

THE ULTRASONIC TRANSMITTER 87-89

CHAPTER 10

THE ULTRASONIC RECEIVER 100-112

CHAPTER 11

COMMENTS / APPLICATIONS - IMPROVEMENTS 113-115

APPENDICES

1. PRINTED CIRCUITS

2. I.C.S INFORMATION

REFERENCES