

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF A HI / FI FIBER OPTIC

TRANSMISSION SYSTEM

E / 1045

BY: YIAPATOS MICHAEL

JUNE 1996

HIGHER TECHNICAL INSTITUTE

**ELECTRICAL ENGINEERING
DEPARTMENT**

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HIGHER TECHNICAL INSTITUTE	PROJECT NO. 2572
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DEVELOPMENT OF
A
HI/FI FIBER OPTIC TRANSMISSION SYSTEM

Project Report Submitted by

YIAPATOS MICHAEL (E.1045)

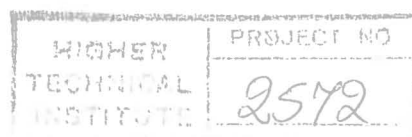
In part satisfaction of the award of
DIPLOMA OF TECHNICIAN ENGINEER
in Electrical Engineering of the
Higher Technical Institute, Cyprus

Project Supervisor

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Lecturer in Electrical Engineering, H.T.I

June 1996



E.1045

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in addition, I would like to
thank you for your support
throughout the project. I hope
you will find this book
interesting.

Finally, I would like to
thank you for your
encouragement.

TO MY FAMILY

AKNOWLEDGMENTS

I would like to express my deep thanks and gratitude to my supervisor, Mr. Lambrianides Diomedes, lecturer of Higher Technical Institute, for his valuable help and quittance during the development of this project.

In addition, I would like to thank Mr. Valianti Nearcho who supported me knowledgewise throughout the project development period.

Finally, I would like to express my deep gratitude to my parents who provided me with moral and economical support.

Yiapatos Michael

SUMMARY

The purpose of this project is to examine the fiber optic transmission systems and design a Hi/Fi Fiber Optic Transmission system.

First different modulation techniques were studied in order to select the best for the construction of the transmission system. Secondly the theory behind the fiber optic cable and the optoelectronics devices were studied in order to understand the operation of the fiber optic and the reason they are so widely used. Thirdly the circuit selected is described and explained in detail. Finally several tests are done using various instruments

By the above it can be concluded that the fiber optic cables in the coming years will replace the copper cables in the communication industry and will enable the people to enjoy services that at the present time are not possible due to the limited bandwidth of the copper cable.

INTRODUCTION

In recent years a rapid evolution of the telecommunication industry occurred as a result of the increasing demand and the technologic merciless occurred. Although the two tends to walk together that is the increase is covered by the technological inventions and the inventions are founded by the demand some times the demand tends to overcome the offer.

A major problem in telecommunication industry is the limited bandwidth of the copper cable which it was putting limits on the information's could be send. This problem over the last few years tends to be minimised by the appearance of the fiber optic cables.

Fiber optic cables are cable used to transmit light, they have enormous bandwidth that establish them as the most appropriate cable for use in communication industry. Most of the communication companies all over the world are using the fiber optic cables enable them to increase their services by introducing services such as video phone, video on demand etc. Fiber optic cable also have been placed underwater and they are responsible for a large amount of the international communications, reducing therefore the cost since otherwise the satellites would be used which they cost considerably more than fiber cables.

The only drawback of the fiber optic cables which is their high price in compare with copper cables is know minimise due to the mass production and new methods of production.

Since the fiber optic cable price tends to be minimised we are able to use the fiber optic cable in such applications that before were not possible. Therefore we can now use the fiber for transmitting Hi/Fi signals for long distances since they are less sensitive to noise than copper cables. Based on the above a Hi/Fi transmission unit with two channels will be constructed for the project.