

UNIVERSITY OF CALIFORNIA INSTITUTE  
ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DEVELOPMENT OF A COMPUTER PROGRAM  
FOR THE PAPER CARD

by  
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ELECTRICAL ENGINEERING

JUNE 1964

**Higher Technical Institute**

**Development of a  
Computer plug-in Tuner  
card**

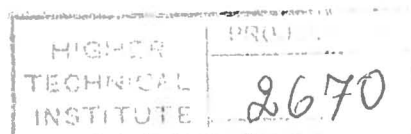
**In partial fulfillment of the  
requirements of award of the Diploma  
Project**

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**3E2**

**June 1997**

**E.1078**



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# **ACKNOWLEDGEMENTS**

**I would like to express my sincere thanks to my supervisor Mr. Diomide Lambrianide, lecturer in the Electrical Engineering Department at H.T.I for his assistance, guidance and help through this work.**

**And Socrati Anastasiou who help me with the etching of the board.**

**C.Kyprianou**

# SUMMARY

## Development of a computer Plug-in tuner card.

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Supervised by: **Mr. DIOMIDES LAMBRIANIDES**

The objectives of this project are to design and construct a radio tuner card and TV tuner card (optional) and studying various types of such tuner cards. Using the PC to control the function of that tuner card with the help of an interface card and software.

The card is giving sufficient power output for driving two speakers and there is no possibility of damaging the computer.

# Introduction

The most used electronic equipment nowadays is the radio. However, till now almost all the radios in the market is manually controlled or with the used of remote controls. Also it can be in a personal computer and be controlled by the PC. So the work in our computer will be more pleasurable because we can listen our favorite radio station as we work.

The Project can be separated into three different parts: a) The FM radio b) the interface card with Digital to Analogue converter and c) the program which will control the radio card. For testing purposes, each part of the card could be separated. But finally is constructed in one card so as to be with less wires and also less noise also is better to be only one card because actually is PC plug-in card.

When we talk about a computer controlled radio we simply mean a radio connected to a slot of a computer. Also with the help of program can control the functions of that radio. Those functions are the search, scan and volume and may be some memories.

Now if we take the three parts separately first the program is in Pascal Language and sends digital information's to control the card at addresses 300hex to 302hex.

Then as shown and at the Block Diagram at figure 1 the interface card has buffered D-latched flip-flop. That send the information's to the DAC which give a voltage at the tuning filter of the radio which is consist of a LC filter with a varicap diode. In addition, we have digitally controlled potentiometer for the Amplifier. The flip/flop and the potentiometer's are selected with the help of simple gates and 2-4 lines decoder. Finally is placed



on an ISA slot of IBM PC (or compatible).

The last Part is the radio that is a superheterodyne FM stereo receiver. That contains an SMD chip, which is actually the whole receiver in it. The only calibration that this IC need is the frequency of the tuning filter, that actually is an LC filter. It's output is multiplexed audio signal that goes to a stereo decoder to give us the Left and Right channels. This step is also done by an IC, which is a complete decoder. Finally, our audio signals go to an amplifier through two digitally controlled potentiometers that are control the gain of the amplifier, with simple words the volume.