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ELECTRICAL ENGENEERING DEPARTMENT

DIPLOMA PROJECT

DEVELOPMENT OF A MICROPROCESSOR CONTROLLED HEARING TEST FACILITY

By

KAMBOURIDES MICHALIS

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KAMBOURIDES MICHALIS
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Summary

This project deals with the design of a system which stores words in his memory and it playbacks them, taken measurements in who many dB we hear them. All these actions are shown on LCD display to the users, who can choose the next action from a keyboard.

The whole system is designed by the aid of a Computer Aided Design (CAD) program. First was designed the recorder circuit and then the μP system with its peripherals (keyboard, alphanumeric display, etc.). The reason that we make first the recorder circuit is for the complexity of it and the problem that we have to control it.

Software was written for the operation of the system as required and stored in system's EPROM. An 8051 assembler was used along with an 8051 disassembler, an EPROM programmer.

The operation of the whole system was tested using Logic Analyzer (disassembler) and oscilloscope.
The system was fully operating as was designed.

Introduction

This project deals with the development of a system which stores words in his memory and it playbacks them, taken measurements in who many dB we hear them. Such a system was studied, designed and constructed along with the appropriate software, having in mind the characteristics of the required bandwidth that we wont, and the available memory.

In the beginning of the project we try to store the words in RAM but the RAM needed to store three words with sampling rate 20KHz is bigger that 1M-byte and none 8-bit microprocessor can control so mush memory. For this reason our try to use RAM is been disqualify and we approach the Digital Signal Processing IC's (DSP).

An IC like this is the MSM6388 of Oki Semiconductors that has his own microprocessor, a built-in 12bit A/D converter, built-in 12bit D/A converter, built-in microphone pre-amplifier, built-in low-pass filter and the ability to control up to four serial voice registers of 1Mbit each.

For the control of the voice recorder we use the 8031 μP that he has his own RAM and input/output ports that we easy connect the peripherals (keyboard, alphanumeric display, etc.) as we presented in this project.

All the circuits PCB's that we mentioned above, are designed by the use of the TraxMaker of Microcode Engineering and are been calibrated and tested using appropriate laboratory instruments such as Logic Analyzers, Oscilloscopes, Assemblers, etc.