

## **AUDIOMETER DESIGN BASED ON MICROCONTROLLER ATMEGA 16**

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### **ABSTRACT**

*The major implication of noises on human is the damage in hearing sense that it causes hearing disorders, such as temporary or even permanent deaf, depending on how intense, how long and how sensitive each individual is exposed to the noises. Early detection and management of hearing disorders either towards children or adult are necessary to be conducted. Hearing disorders in adults would diminish their quality of life, in which such weakening hearing sense would have effect on work, study and daily life. Human hearing level can be checked by using audiometer. This research aims at building audiometer based on microcontroller ATmega 16. The components used were relay module for equalizer, IC ATmega 16 for controlling overall performance system. This tool is equipped with sound and frequency intensity interface. The main microcontroller component is able to generate frequency 20 Hz, 120 Hz, 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2500 Hz, 4000 Hz, 8000 Hz and 15000 Hz, with 10 – 60 dB sound intensity output. The tool testing was performed by using digital oscilloscope and android smartphone. The result of the testing shows that the tool's error frequency is below 5 % and the highest sound intensity (dB) error margin is at 40 dB point, which is as many as 3 dBs.*

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**Key Words:** Noises, audiometer, microcontroller, frequency, sound intensity