

ABSTRACT

Conventional Audiometer testing using manual mode takes quite a long time for one patient, and the audiologist must accompany until the test is complete. The purpose of this research is to design a pure tone audiometer with an automatic mode using Arduino microcontrollers. Contributions from this research is a system of automatic running to improve health services. The Hughson Westlake method is used for automatic mode. The method is prepared in the Arduino software and uses the CD4066 digital switch to regulate the frequency and intensity given to the patient. As for the frequency generator using XR2206, the raised frequencies are 250, 500, 1000, 2000, 4000, 8000 Hz. Then the patient will press the interrupt button if listening to sound, and the result will be displayed to the Audiogram on Android. Patient diagnostic results can be seen when testing the entire frequency has been completed. At frequency 250 Hz obtained error value 0.13, at frequency 500 Hz obtained error value 4.37, at frequency 1000 Hz obtained error value 39.5, at the frequency of 2000 Hz obtained error value 24.67, at the frequency of 4000 Hz obtained error value 67.33. And at the frequency of 8000 Hz obtained error value 32.33. The results of this study showed that the highest error was 3.95% at 1000Hz frequency and the smallest error was 0.05% at 250Hz frequency. The results of this study can be implemented in conventional audiometer system to accelerate testing time to improve service and facilitate audiologist during hearing testing.

Keywords: Audiometer, Audiogram, frequency, XR2206