Abstract

Technology has become of key importance in the betterment and care of human lives. With that being the case technology must be accurate and precise, due to the risk of error and possible harm those errors could cause. In the audiology field a design of a novel audio device comprised of a microphone and coupling apparatus was designed to be more cost efficient and simplistic to calibrate audiometers to their necessary specifications. The device will capture the audio signal of the audiometer, and process information to the graphical user interface programmed with features to analyze acoustics from the audiometer in real time. Features to display the frequency, sound level, and distortions will be necessary to accurately calibrate the device and determine necessary repairs.

Methods and Materials

Methods used in the development of the audiometer calibration device were software such as Solidworks, LT Spice, Altium, and various Python IDE. The software was used to manipulate to fabricate the coupler, and manipulate the audio components, such as the microphone and amplifier.

Results

The device is setup to provide multiple audio outputs received by the coupled microphone, and outputs real-time visuals and various information about audio signals received.

Conclusions

The purpose of the Novel Audiometer Calibration Device is to reduce cost, repeatedly allow for a controlled environment to measure the headphones and hearing aid. While making sure to have a computer replace some of the more expensive components in the standard calibration process done by audiologist. With the goal of the project, unnecessary expensive components will not be needed. While also making sure to be portable and easy to use.

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