Hearing aid for the partial hearing impairment

Group 12

**Team Members**

|  |  |  |
| --- | --- | --- |
| **Index Number** | **Name** | **Field** |
| 170208K | Udith Haputhanthri | BME |
| 170242H | Deepana Ishtaweera | ENTC |
| 170348M | Sandali N. Liyanagoonawardena | BME |
| 170476D | Shalutha N. Rajapaksha | ENTC |

**Issue**

By the year 2018, 18.5% people among the world population is suffering from hearing loss. Among them majority of people are suffering from the disability ‘High frequency hearing loss’. This refers to having trouble hearing the sounds in the 2000Hz to 8000Hz range. This happens when the sensory hearing cells within the ear are damaged.

Adults who suffer from high frequency hearing loss have difficulty in understanding children’s’ and female voices and have trouble hearing doorbell, phone ring etc. As speech is difficult to understand with high frequency hearing loss, children are severely affected with their ability to learn and advance in school.

**Objective**

The objective of this project is to provide an efficient, practical and sufficient solution to the disability of hearing high frequencies which is affordable to the Sri Lankan market. This will be implemented using audio filters, pass band filters, pre-amplifiers and power amplifiers, where the power amplifying process takes the foremost interest

**Proposed solution**

Our team propose the solution to invent a device that utilizes the process of receiving the audio signals, filtering the noise in the input, extracting the specific frequency range through a pass band filter, pre-amplifying the selected range in which the patient has difficulty in hearing, adding the original filtered input to the pre-amplified signal and then using a power amplifier to amplify the combined output.

**Algorithm**

Output

Sending the combined signal through a power amplifier.

Input

Sending the signal through a pass band filter to extract the specific range of frequencies

Pre- amplifying the extracted frequency range

Filtering out the noise of the input audio signal