Prachir Puri / Prof. P. C. Pandey (Supervisor), "An Audiometer Using PC and Wirelessly Interfaced Audiometric Module," *M. Tech. Dissertation*, Department of Electrical Engineering, Indian Institute of Technology Bombay, June 2017.

Abstract

An audiometer is an electro-acoustic instrument for quantifying the hearing loss and for identifying its causes. It involves presentation of sounds through calibrated transducers and assessing the responses. A two-channel advanced diagnostic audiometer using a PC and an external audiometric module is developed for performing subject-response audiometry and psychoacoustic tests for clinical and research applications. A PC-based application is used to generate the audio waveforms and the controls for the audiometric tests. The audiometry module presents the audio signals with precise attenuation in accordance with the controls received from the PC and collects the subject response. The PC and the audiometric module are wirelessly interfaced through Bluetooth for transfer of signals, controls, and responses. The system can be used for performing different audiometric tests including the pure-tone test in manual and automated mode, SISI test, tone decay test, ABLB test, speech test using live speech or recorded speech, and psychoacoustic tests. The audiometry module is designed as a compact battery-powered device including features like maintaining required signal-to-noise ratio over the full audiometric range of sound levels, monitoring the output voltage level of the transducer terminals to detect the connection status, automatic calibration using a sound level meter's feedback, acquiring and acknowledging patient response using a response switch with an indicator, and two microphone inputs which can be used for talk-back and ambient noise monitoring.