

Development of an Artificial Ear for Bone-Conducted Objective Occlusion Measurement

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Abstract : The bone-conducted objective occlusion effect (OE) is characterized by a discomforting sensation of fullness experienced in an occluded ear. This phenomenon arises from various external stimuli, such as human speech, chewing, and walking, which generate vibrations transmitted through the body to the ear canal walls. The bone-conducted OE occurs due to the pressure build-up inside the occluded ear caused by sound radiating into the ear canal cavity from its walls. In the hearing aid industry, artificial ears are utilized as a tool for developing hearing aids. However, the currently available commercial artificial ears primarily focus on pure acoustics measurements, neglecting the bone-conducted vibration aspect. This research endeavors to develop an artificial ear specifically designed for bone-conducted occlusion measurements. Finite element analysis (FEA) modeling has been employed to gain insights into the behavior of the artificial ear.

Keywords : artificial ear, bone conducted vibration, occlusion measurement, finite element modeling

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