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Proof**CONTROL ID:** 2020432**CURRENT TECHNICAL COMMITTEE:** Noise (NS)**CURRENT SPECIAL SESSION. IF NOT SUBMITTING TO A SPECIAL SESSION, CHOOSE "NONE SELECTED.":** None Selected**PRESENTATION TYPE:** Invited Submission : Lecture**TITLE:** Sound Field Uncertainty Budget for Real-Ear Attenuation at Threshold Measurement per ANSI S12.6 Standards**AUTHORS (FIRST NAME, LAST NAME):** Jeremie Voix¹, Céline Lapotre¹**INSTITUTIONS (ALL):** 1. École de technologie supérieure, Université du Québec, Montréal, QC, Canada.**ABSTRACT BODY:**

Abstract (200 words): In many national and international standards, the attenuation of Hearing Protection Devices is rated according to a psychophysical method called Real-Ear Attenuation at Threshold (REAT), which averages on a group of test-subjects the difference between the open and occluded auditory thresholds. In ANSI S12.6 standard, these REAT tests are conducted in a diffuse sound field in which sound uniformity and directionality are assessed by two objective microphone measurements. While the ANSI S12.6 standard defines these two criteria, it does not link the microphone measurements to the actual variation of sound pressure level at the eardrum that may originate from natural head movements during testing. This presentation examines this issue with detailed measurements conducted in an ANSI S12.6-compliant audiometric booth using an Artificial Test Fixture (ATF). The sound pressure level variations were recorded for movements of the ATF along the three main spatial axes and two rotation planes. From these measured variations and different head movements hypothetical scenarios, various sound field uncertainty budgets were computed. These findings will be discussed in order to eventually include them for uncertainty budget in a revised version of the ANSI S12.6 standard.

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