Personal Protection Evaluation

YOUR

Real Word attenuation

There are two primary techniques available for measuring the real-world attenuation of HPDs: Real-Ear-at-Threshold (REAT) and Microphone-in-Real-Ear (MIRE). In the former approach, the attenuation provided by an HPD is the difference in the noise level in the ear canal with and without the HPD inserted and is termed Insertion Loss (IL). In the latter approach, the attenuation is the difference between the sound levels measured simultaneously by the internal and external microphones, and is termed noise reduction, (NR)

Single Number Rating on MIRE (SNR-MIRE)

Specification used to determine the noise reduction level by a hearing protector based on Microphone-In-Real-Ear technology. Expressed as a single number it provides a an easy way to quickly evaluate the performance of the hearing protector.

Noise reduction per group of related frequencies:

High (>2000 Hz). Medium (500-2000 Hz) Low (< 500 Hz)

Score on 'protective function'

Protective function is an all-encompassing term but primarily links the personal real-world attenuation of the hearing protector to the noise exposure level of the wearer. Ideally, the result is compliant with legal, health-based and safety criteria.

First Name - Last name

Gender Date of Birth

Noise exposure level: 90dB(A)

Н

14.3

GHENT

UNIVERSITY

10.8

18.2

Legal

Safety

Health Based

Test details

Professional Test date Test time

М

7.1

Legal

Safety

Health Based

Hearing Coach®

SOFTWARE

2.2

Н

13.5

Is registered by the microphone measuring underneath the earplug 'in place' and under heavy noise load (pink noise > 85dB(A).

Residual Noise Level (RNL)

The Health-based safe limit

Is based on the limit values of a Temporary Threshold Shift (TTS-baseline levels). Sounds below this limit, even after a lengthy exposure, do not cause a shift of the hearing treshold.

Residual Noise Level dB(A)

Per frequency for the left and right ear.

Compliance with legal 'limit value'

Hearing protectors must comply with (inter)national regulations. The personal noise exposure level minus the Single Number Rating (SNR MIRE) should always be lower or equal to the applicable 'limit value'. Example; in the European Community, the 'limit value' is 87 dB(A) (see Directive 2003/10/EC).

Compliance with 'health-based' safe limit

Sounds below the TTS baseline levels, even after a lengthy exposure, do not cause a shift of the human hearing threshold, the Residual Noise Level (RNL) should not exceed the TTS baseline levels at more than 2 frequencies.

Compliance with 'safety' criteria

Wearing a hearing protector with too high attenuation leads to a sense of isolation and difficulties with understanding speech and hearing alarm signals. Therefor the logarithmic sum of the Residual Noise Level (RNL) at 1,2,4 and 8 kHz should be equal or above 60 decibel.

Residual Noise Level **RIGHT EAR LEFT EAR** 120 110 110 el dB(A) 100 80 60 60 50 50 40 40 30 20 10 Freq. (Hz) 125 250 500 1000 2000 4000 8000 1000 2000 4000 8000 125 250 500 RNL dB(A) 74,1 68,9 64 58,6 66,4 74,4 65,7 RNL dB(A) 79,3 79,4 79,2 71,4 68,4 68,7 67,8 6 TTS Baseline levels Residual Noise Level Real-world Attenuation (dB) **SNR MIRE SNR MIRE** 8.9 16

Protective Function