	CO-ORDINATION OF NOTIFIED BODIES **PPE Regulation 2016/425** **RECOMMENDATION FOR USE**	PPE-R/04.054 Version 01

Number of pages: 1	Approval stage : Approved on :
Origin : VG4 Hearing Protection	☒ Vertical Group 24.11.2017 ☒ Horizontal Committee 18.07.2018 ☒ EU PPE Working Group 05.11.2018

Question related to	☐ PPE Regulation	☒ EN/prEN: EN ISO 4869-1 + -2	☐ Other:
Article:	Annex:	Clause:	

Key words:

Sound attenuation, decimal place, APV

Question:

1. With which precision (how many decimal places) is the sound attenuation of an individual test subject measured in accordance with EN ISO 4869-1 to be declared in the test report and used for further calculation?
2. With which precision (how many decimal places) are the mean and standard deviation and the APV of a sample of 16 test subjects in accordance with EN ISO 4869-2 to be calculated and declared in the test report and user information?
3. With which precision (how many decimal places) are the HML and SNR values to be declared in the test report and user information?

Solution:

1. **Rounded to the nearest integer.**
   Explanation: For the determination of the hearing threshold, EN ISO 4869-1 refers in clause 4.5.5 to (EN) ISO 8253-2. This standard refers in clause 8.1 to (EN) ISO 8253-1. That standard (EN ISO 8253-1:2010) in turn deals in clause 6 with (a) the manually controlled threshold determination (6.2), (b) the threshold determination with an automatic recording audiometer (6.3) and (c) the computer-controlled threshold determination (6.4). When manually controlled audiometers are used with the bracketing method (6.2.4.3) the levels at which a response occurs are averaged for ascents and descents separately for each frequency and ear and the arithmetic mean of these two results is rounded to the next 5 dB step. For automatic recording audiometers (clause 6.3.5) minimum and maximum values of the recording are each averaged for each frequency and ear. The arithmetic mean of these two results is calculated and this value, rounded to the nearest integer in dB, is defined as the hearing threshold level of the ear at the given frequency. Further, computer-controlled audiometers have to provide hearing thresholds that are in accordance with the other procedures of EN ISO 8253-1. Concluding, all hearing thresholds according to EN ISO 8352-1 have to be integer values and sound attenuation values with decimal places are thus not in accordance with EN ISO 4869-1.
2. **One decimal place.**
   Explanation: EN ISO 4869-2 uses in all examples one decimal place for the mean and standard deviation. From these two quantities, the APV results also with one decimal place. If for mean and standard deviation more decimal places are used for the calculation, but not declared in the test report, discrepancies with the APV can result (differences of 0.1 dB due to rounding). This is not in accordance with the definition of the APV given in EN ISO 4869-2.
3. **Rounded to the nearest integer.**
   Explanation: EN ISO 4869-2 clearly states in clause 7.1 (HML values) and 8.1 (SNR value) that the resulting values shall be rounded to the nearest integer.