	CO-ORDINATION OF NOTIFIED BODIES **PPE Regulation 2016/425** **RECOMMENDATION FOR USE**	PPE-R/04.050 Version 2

Number of pages: 1	Approval stage : Approved on :
Origin : Vertical Group 4	☒ Vertical Group 20.05.2021 ☒ Horizontal Committee 01.10.2021 ☒ EU PPE Expert Group 18.11.2022

Question related to ☒ PPE Regulation ☐ PPE Guidelines	☒ EN/prEN: : EN 352-5:2002 + A1:2005	☐ Other:
Article:	Annex:	Clause: 6.1 c) and Annex B

Key words:

Hearing protectors with active noise control

Question:

EN 352-5 does not clearly specify the procedure to calculate the total sound attenuation in the active mode of the ANR HPD. Moreover the user information is not required to contain the total attenuation, only the active values.
How shall the total sound attenuation be calculated and what attenuation values shall be included in the user information?

Solution:

Aim is the calculation of the assumed protection value (APV) of the total (active plus passive) attenuation. It shall be derived by the active attenuation measured according to EN 352-5, Annex B and the passive attenuation determined according to EN ISO 4869-1:2018.

1. Calculate the mean and standard deviation of the active attenuation in one-third-octave bands between 50 Hz and 10 kHz as measured according to chapter 5.2/Annex B of EN 352-5.
2. Interpolate the subjective REAT data (from 16 test subjects according to EN ISO 4869-1:2018) linearly in one-third- octave bands between 63 Hz and 8 kHz for mean and SD. Extrapolate the subjective data to 50 Hz and 10 kHz.
3. Add the mean values of the two contributions (active and passive) to get the mean of the total attenuation for each one-third-octave band.
4. Average the three one-third- octave bands of total attenuation for one octave band (between 63 Hz and 8 kHz) energetically (using negative values, i.e. the residual level under the HPD). The lowest attenuation has the highest weight for the end result. This yields the mean of the total attenuation in octave bands.
5. Sum the standard deviation of passive and active attenuation quadratically for one-third-octave bands between 50 Hz and 10 kHz.
6. Average the three standard deviation values for one octave band (between 63 Hz and 8 kHz) energetically using positive values, i.e. the highest value has the highest weight for the end result. This yields the standard deviation of the total attenuation in octave bands.
7. Calculate the APV for each octave band by subtracting the standard deviation from the mean of the total attenuation.

$$APV_{tot} = m_{tot} - s_{tot}$$

Content of the user information (6.1 c):

The user information shall contain the mean, standard deviation and APV between 63 Hz and 8 kHz for the total attenuation together with the derived HML and SNR values.