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Influence of an in-situ measurement on the transmission behaviour of hearing aids

It should be well known that placing a probe tube between the earpiece and the ear canal can cause additional leakage. This leakage can lead to the hearing system being more openly coupled during the fitting than in everyday life, resulting in inappropriate adjustments being made. Despite the importance and awareness of this fact, no comprehensive quantitative data exists to date that allows an exact categorisation of the ‘in-situ leakage effect’ as a function of the selected coupling.

In a recently completed study, the influence of a probe tube on the transmission behaviour of external receiver hearing aids was quantitatively recorded for a total of 4 different earmoulds and 3 different shields. For this purpose, an additional probe tube was fed through a separate borehole, thus enabling measurements to be taken in a leakage-free reference condition. An audiometric method was also used. Many couplings showed a clearly measurable level reduction of the hearing aid output in the frequency range below 1 kHz due to the positioning of the probe tube.

The presence of a probe tube has a stronger influence on the transmission behaviour, the more closed the coupling and the shorter the sealing zone. With open or ventilated shields, the effect is negligible, and with standard oto