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Modulation-based filtering in digital hearing aids

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In many digital hearing aids modulation-based filtering is applied as a method of noise reduction. Although there are many different methods of implementing this type of filtering, currently there are no standards for their technical evaluation. It has been shown that ICRA noises are able to do so and knowledge about the differences between aids may be of use in the interpretation of the subjective results. Therefore, we documented the technical functionality of modulation-based filtering in a variety of 12 hearing aids from different brands, using ICRA noises.

There are at least four characteristics that determine the properties of each specific noise-reduction scheme: the number of channels, the attack- and release times, the maximum amount of gain reduction as a function of frequency, and the sensitivity, being the amount of gain reduction as a function of the ratio between modulated and unmodulated parts of the signal.

The results show characteristic and reproducible differences between the adaptive schemes applied for noise reduction in different brands.

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