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Title: Application of Psychoacoustic Analyses according to ECMA-418-2

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Abstract:

Assessing and assuring sound quality has become a very important task for product design. Customers expect product sounds without disturbing noises. This is a challenge because spectro-temporal noise patterns (such as tonal sounds or modulated signals that generate a roughness sensation) must be taken into account, in addition to frequency-weighted values like dB(A) and loudness. If the sound of a technical product exhibits these characteristics, it is most likely perceived as having poor quality.

The new standard ECMA-418-2 describes methods for the automatic quantification of tonal sounds and modulated sounds, which generate a sensation of roughness. The methods are based on a psychoacoustic hearing model and thus emulate human perception very closely.

This paper describes the application of these methods. Several examples show how these parameters can be used for sound engineering and how to interpret the results.

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