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AES standards project report - Considerations for accurate peak metering of digital audio signals

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Abstract

Peak meters in digital audio systems often register 'peak sample' values rather than 'true peak' levels. Such meters are simple to implement, but they do not always register the true peak value of the audio signal.

Problems occur because the actual peak values of a sampled signal usually fall between sampling instants rather than precisely at a single sampling instant. This results in several peak-sample meter anomalies, including inconsistent peak readings, unexpected overloads, and under-reading and beating of metered tones

In order to meter the maximum amplitude, or true-peak value, of a sampled signal it is necessary to 'over sample' (or 'up sample') the signal, essentially using interpolation to increase the sampling frequency of the signal and thus recreating the original signal between the existing samples.

This report discusses criteria for the design of a true-peak meter and proposes appropriate over-sampling ratios to achieve true-peak metering accuracy.

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