

Behavior of psychoacoustic measurements with time-varying signals

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Abstract

As Information Technology product noise becomes lower and lower in absolute terms, the issue of subjectively-significant time-varying patterns in noise emission has become a center of attention in assuring good design and manufacture. ECMA-74 and ISO 7779, in Appendices, describe methods for assessing prominent tones and also impulsive transients. Human sensation is so sensitive to temporal variations, particularly of short duration, that the subjective importance of time-varying noises and their measurement and remediation have “widened the search” for subjectively-relevant sound quality measures including psychoacoustic loudness, sharpness, roughness and fluctuation strength. The paper will describe the state of standardization of these measures (including the new preliminary time-dependent loudness standard DIN 45631-2007 and its associated sharpness measure); methods, choices, and examples of time-dependent behavior of the psychoacoustic measures on emission time-data containing various kinds of transient events including frequency-variant tones.