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Transforming Sound into Knowledge

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## **New CLEAR Perceptual Rub & Buzz Algorithm Listens like a Human**

The new CLEAR (**C**epstral **L**oudness **E**nhanced **A**lgorithm for **R**ub & **B**uzz) algorithm from Listen offers true perceptual Rub & Buzz analysis of loudspeakers, microspeakers and headphones on the production line. It uses a simplified auditory perceptual model to measure the loudness of Rub & Buzz distortion in phons rather than the more traditional dB SPL and % distortion units. This measurement better identifies whether distortion due to manufacturing defects can be heard by the listener than conventional measurements. Although conventional Rub & Buzz measurements continue to offer excellent identification of defects, many manufacturers are moving towards a model where only speakers with audible defects are rejected in order to increase yields. Perceptual Rub & Buzz offers a means of identifying and precisely quantifying only speakers with audible faults, yet with the benefits and reliability of an automated test system.

Listen's CLEAR™ Rub & Buzz detection algorithm is a true perceptual Rub & Buzz algorithm based on well-proven psychoacoustic principles. It accurately replicates a human response using the same mathematical models found in MP3 encoders that mimic the way that both the ear and the brain interpret sound. This results in close to 100% correlation to the human ear. Furthermore, it offers a calibrated loudness value rather than simply a comparison to a reference.

In addition to a result which corresponds more accurately to the human ear, this new test method also offers two significant advantages for use on the production line. It is less sensitive to transient background noises than traditional methods, therefore is reliable in noisy factory environments. It is also much simpler to set limits than when using conventional distortion measurements. Like most SoundCheck tests, it offers flexibility in configuration as it can be set up to either offer a simple pass/fail result or provide more detailed results including defect analysis.

CLEAR Perceptual Rub & Buzz is an add-on module to SoundCheck 9.1 costing just \$500 - considerably less expensive than other 'perceptual' Rub & Buzz detection systems.

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**About Listen, Inc.**

Listen, Inc. ([www.listeninc.com](http://www.listeninc.com)) is a world-leading developer of audio test and measurement software tools and complete measurement systems for R&D and production test of electroacoustic products including loudspeakers, microphones, handsets, headsets, telephones, cell phones, VoIP telephony products, and hearing aids. Formed in 1995, Listen's electroacoustic test systems have become the standard test platform at many of the world's largest manufacturers of audio and audio electronic devices.

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