



HEAD acoustics MDAQS: A Milestone in Instrumental Audio Quality Assessment

MDAQS (Multi-Dimensional Audio Quality Score) is the world's first binaural perception-based software tool that replaces human evaluation with novel metrics in the audio device development process. This allows manufacturers to quickly and efficiently evaluate the audio quality of all types of playback devices, such as speakers, headphones, smart speakers, headsets, etc., in a scientific and quantifiable way.

MDAQS runs as an option in the test software [ACQUA](#), the powerful speech and audio quality measurement and analysis software from HEAD acoustics.

Perception-based instrumental assessment

MDAQS builds on the extensive research into human perception and hearing models that HEAD acoustics has been working on since the company's beginnings, including modeling binaural processing and signal processing in the human ear.

HEAD acoustics has conducted numerous intensive listening tests with carefully selected, untrained listeners. These "naïve" listeners have evaluated a variety of different audio devices with music of various genres based on several parameters. The results of these extensive listening tests serve as the basis for developing the algorithms and the training of MDAQS.

The analysis and validation of the results show that the perception of the sound quality by normal users primarily depends on three quality dimensions:

- Timbre: How faithfully do the spectrum and temporal precision of the signal stay intact?
- Immersiveness: How well defined are the virtual sound sources in the room?
- Distortions: How "clean" does it sound?

These quality dimensions are sufficient to describe the overall audio quality. The MDAQS model will also be able to be refined with additional parameters depending on the application area. All parameters included by MDAQS provide a reliable, meaningful, and comparable overall assessment of audio quality.

MDAQS is a milestone in perception-based audio quality assessment. MDAQS accelerates the development process and enables more reliable and meaningful audio quality testing and benchmarking results.

It doesn't get any closer to reality

MDAQS uses binaural recordings - the best equivalent of real human perception and realistic acoustics - as input for the analysis. These binaural recordings succeed optimally with [our new series of low-noise artificial heads](#). Combined with the modular [labCORE](#) hardware, they are ideal for sound recording and perfectly reproducing acoustic reality.

MDAQS uses this signal to calculate Mean Opinion Scores (MOS) for the perception-independent quality dimensions timbre (MOST), distortion (MOSD), and immersiveness (MOSI) and combines these values into an overall quality score. Therefore, this model can also be used to benchmark devices in an effortless and meaningful way.



Complete solution for optimal results

The comprehensive package of [ACQUA](#) and MDAQS, together with [labCORE](#) and an artificial head such as the [HMS II.3](#), can easily replace previously used measurement hardware and software solutions. The interaction of the faithfully recorded sound signal and the unique MDAQS metrics models human perception so well that time-consuming and cost-intensive tests with test subjects become obsolete.

Learn more about HEAD acoustics' MDAQS and visit [MDAQS - Instrumental Audio Quality Evaluation | HEAD acoustics!](#)

About HEAD acoustics

HEAD acoustics GmbH is one of the world's leading companies offering holistic sound and vibration analysis solutions. In the telecom sector, the company enjoys global recognition due to its expertise and pioneering role in developing hardware and software for the measurement, analysis, and optimization of voice and audio quality and customer-specific solutions and services. HEAD acoustics' range of services covers sound engineering for technical products, investigation of environmental noise, speech quality engineering, consulting, training, and support. The medium-sized company from Herzogenrath near Aachen has subsidiaries in China, France, Italy, Japan, South Korea, the UK, the USA, and numerous sales partners worldwide.