



Audio / Acoustic Measurements

Objectively Measuring and Evaluating Audio Quality

Audio quality is a main concern for product acceptance in hands-free solutions and other communication systems. voice INTER connect supports you with the acoustic design of your product (concept, component selection and constructive implementation).

Using objective evaluation criteria, we measure the audio signal quality or speech intelligibility of your device. For this purpose we carry out high-quality audio measurements in our in-house acoustic laboratory or on site with our mobile equipment. By analysing the influence of individual factors (such as acoustic and electronic components, mechanical design, channel characteristics, algorithms, parametrisation) on the overall quality, we are able to achieve a sustainable optimisation of your product. Depending on the area of application (e.g. automotive, intercom, video conferencing), we use measurement procedures that have been tried and tested over many years and simulate scenarios that represent typical use cases, all based on industrial standards and recognized guidelines (ITU, DIN, VDA).

Contact us today and benefit from the many years of experience of our competent team of experts for acoustics and audio signal processing.

SERVICES

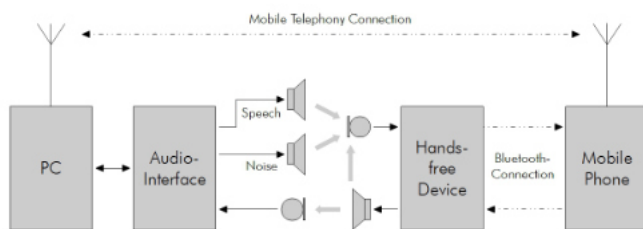
- Audio and acoustic measurements for hands-free devices and communication systems
- Acoustic evaluation of intercom, microphones, loudspeakers and audio hardware
- Measurement under realistic environmental conditions (e.g. cars, office, home, conference room, public buildings)
- Specific test reports for every scenario
- Workshops for the evaluation of measurement results

KNOW-HOW

- Methodology according to international standards and recommendations (ITU, DIN, VDA)
- High-quality audio measurements with in-house equipment and proven measuring methods
- Development and implementation of application specific tests according to customer requirements

MICROPHONE / LOUDSPEAKER

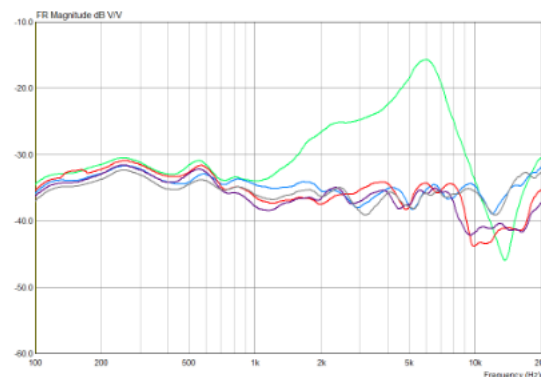
- Frequency response
- Sensitivity
- Directivity pattern
- Nonlinear distortion
- Inherent noise
- Signal-to-noise ratio
- Quality of digital transmission (glitches) and sample rate conversion
- Delay



Exemplary test scenario

INTERCOM

- Frequency response
- Acoustical feedback between loudspeaker and microphone
- Average echo level within microphone path
- Harmonic distortions
- Evaluation of full-duplex capability



Graphical representation of measurement results

ACOUSTIC ECHO CANCELLATION (AEC)

- Initial convergence
- Terminal coupling loss
- Double talk performance
- Single talk performance
- More parameters according to customer's requirements

EVALUATION OF SPEECH QUALITY

- PESQ
- Speech similarity
- Distortion measurements
- Speech Transmission Index (STI, RASTI, STIPA)

ACOUSTIC LABORATORY

Acoustic measurements are performed in our modern in-house laboratory according to customer requirements. If any mechanical or electrical adjustments are necessary, they can be implemented by our experienced specialists.



Equipment:

- $A = 7.2 \text{ m}^2$
- $V = 16.5 \text{ m}^3$
- Reverberation time $T60 < 0.1 \text{ s}$

FIND OUT MORE

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