

Audio Quality objectively measure and evaluate

Audio quality is a main issue for product acceptance in hands-free solutions and other communication systems.

voice INTER connect supports you in the concept and implementation stage of your product. In our in-house acoustic laboratory we can perform high-quality audio measurements. According to objective criteria we measure the audio signal quality of your device. Optimal audio performance in your application is achieved by evaluating and optimising separately different factors contributing to overall quality: acoustical components, electronical components, algorithms and parameters, data transmission channels and (depending on purpose) one- or two-way communication.

You will benefit from our long-standing expertise in optimising a great variety of communication systems (e. g. for automotive, entertainment, intercom, video conferencing applications).

Our qualified test engineers evaluate your product in test scenarios representing typical use cases. Our measuring methods follow industry standards and recommendations (ITU, DIN, VDA).

Services

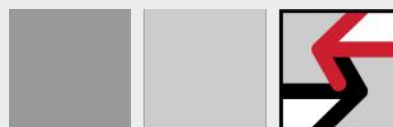
- Audio data measurements for hands-free devices and communication systems
- Acoustic evaluation of intercom, microphones, loudspeaker and audio hardware
- Measurement under realistic environmental conditions (car, office, home, conference room, public buildings ...)
- Specific test reports for every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

Special Features

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

Audio/Acoustic Measurements

In the laboratory and under real conditions.

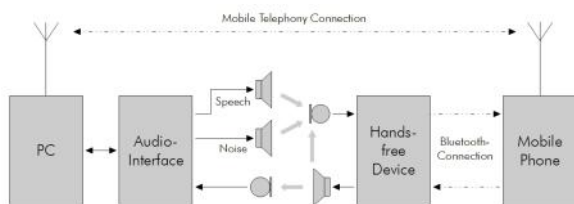


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Parameters and Laboratory Equipment

Microphone / Loudspeaker

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



Pict. 1: Exemplary test scenario

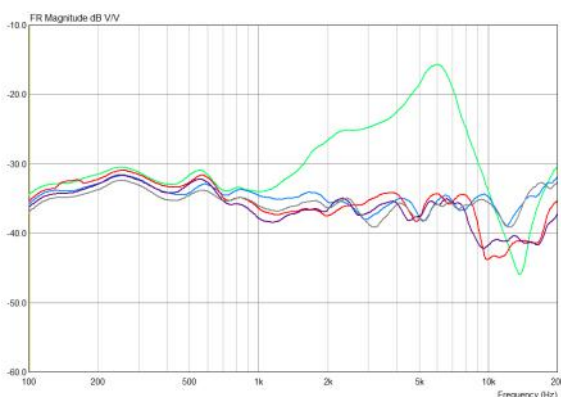
Acoustic Echo Cancellation (AEC)

- Initial convergence
- Terminal coupling loss
- Double talk performance
- Single talk performance

More parameters according to customer's requirements.

Intercom

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



Pict. 2: Graphical representation of measurement results

Evaluation of Speech Quality

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

Acoustic Laboratory

Acoustic measurements are performed in our in-house, modern laboratory according to customer requirements.

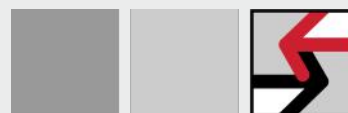
If any mechanical or electrical adjustments are necessary, they can be implemented by our experienced specialists.

Equipment:

- $A = 7,2 \text{ m}^2$
- $V = 16,5 \text{ m}^3$
- Reverberation time: $RT60 < 0,1 \text{ s}$



Pict. 3: Acoustic measurement of an intercom in our laboratory



voice INTER connect

voice INTER connect GmbH
Ammonstraße 35
01067 Dresden

Tel.: +49 351 407 526 50

info@voiceinterconnect.de
www.voiceinterconnect.de