

Realistic and fully automated testing of voice-controlled smart home devices with HQS-SmartHome from HEAD acoustics

Database for the analysis system ACQUA optimizes communication and audio quality

With HQS-SmartHome the measurement technology specialist HEAD acoustics provides a new tool for testing communication and audio quality of voice-controlled smart home devices. The database for the ACQUA analysis system contains efficient test series for analyzing and optimizing smart speakers, speakerphones and conferencing devices. HQS-SmartHome (HEAD acoustics Quality Standard) offers a wide range of realistic and reproducible measurements and simulations to users. Therefore, the database is ideally suited to ensure high quality of smart home devices from research and development phase to serial production.

Simulate realistic background noise and reverberation

Voice-operated smart home devices are used in various situations and rooms with different acoustic room properties. Settings with one single talker as well as with multiple talkers have to be taken into account. Talkers may move around in the room and interfere each other. HQS-SmartHome considers these essential aspects. It consists of test series for two different application scenarios: single talker scenarios and multiple talker scenarios. In addition, the database offers tests for evaluating speech and transmission quality under realistically simulated background noises for various everyday situations. HQS-SmartHome enables users to determine speech quality in the presence of reverberance. Thus, acoustic room properties are correctly simulated in the test laboratory. These measurements require the background noise simulation systems 3PASS *lab* or 3PASS *flex* as well as the option 3PASS *reverb*. Additionally, the database allows users to reliably test the performance during double talk.

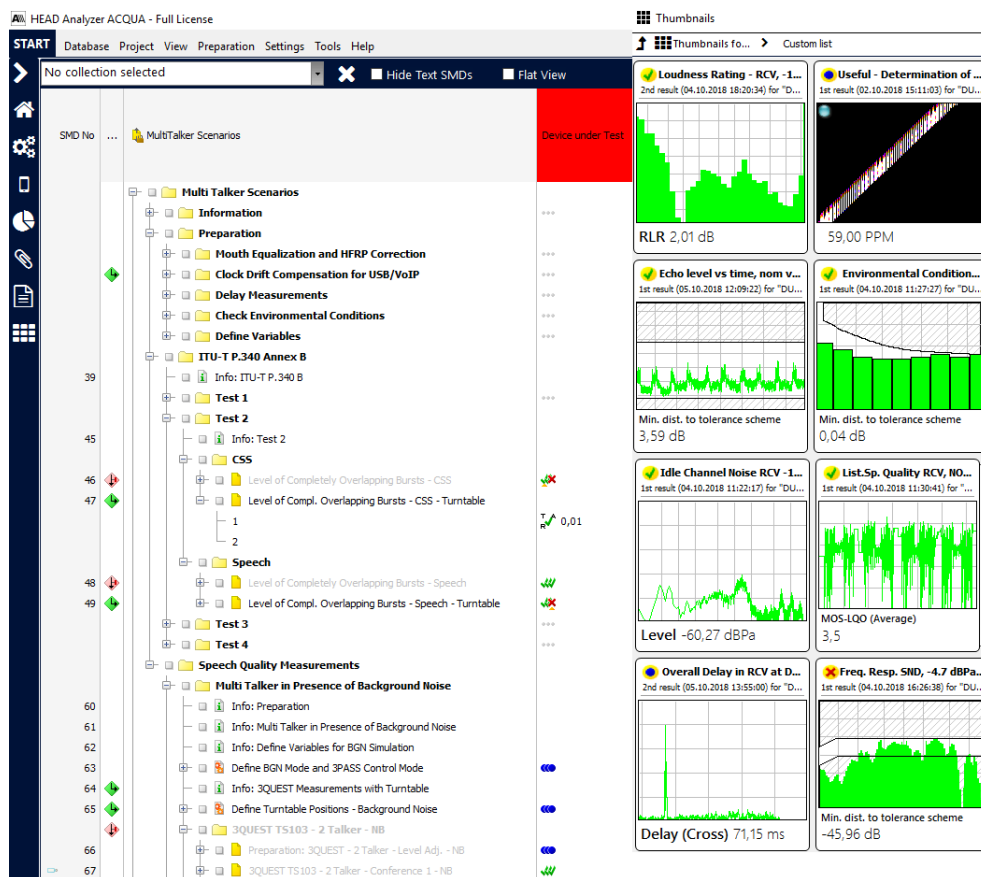
Directivity measurements

For simulating the different positions of moving talkers, directivity measurements are implemented in HQS-SmartHome, performed in combination with the high-precision turntable HRT I. Furthermore, HQS-SmartHome provides traditional electroacoustic measurements such as echo, frequency response, delay and distortion. All measurements in the database are conducted fully automated. In HQS-SmartHome, both artificial and real speech signals are used for testing in sending and receiving direction. The analysis software ACQUA plays back and processes the audio signals. The measurement results are quickly analyzed and clearly displayed by the software.

About HEAD acoustics

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

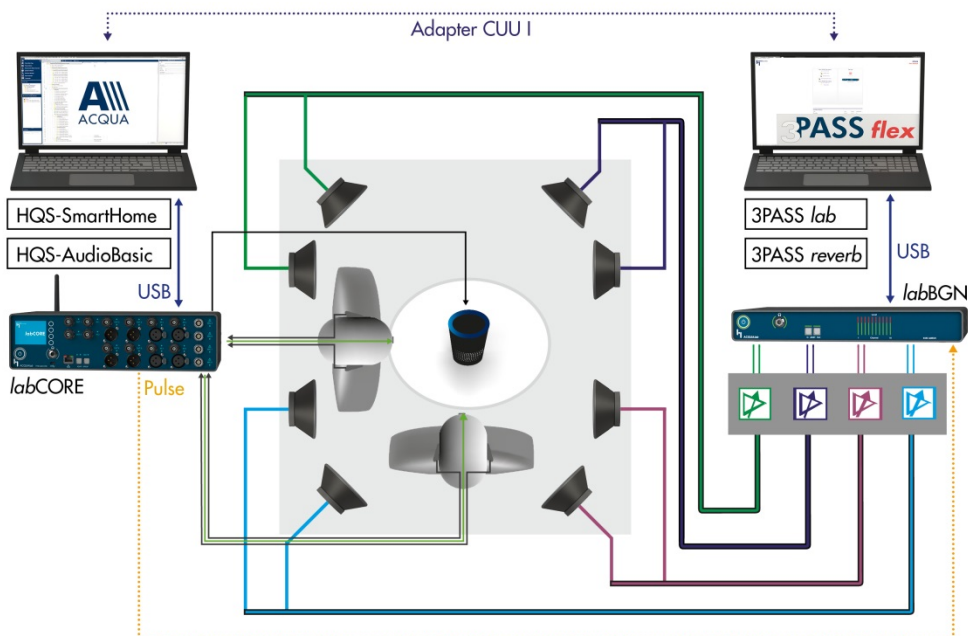
Images



The database HQS-SmartHome for the analysis system ACQUA provides realistic and fully automated measurements for testing and optimizing communication quality of voice-controlled smart home devices, speakerphones and conference devices.



For simulating the different positions of moving speakers, directivity measurements are implemented in HQS-SmartHome.



This exemplary measurement setup of HQS-SmartHome consists of two artificial head measurement systems positioned around the device under test, ACQUA including HQS-SmartHome and further software and hardware components.