HEAD acoustics

APPLICATION EXAMPLES INCLUDED

Code 60068

Zoom Audio

Zoom Audio Test Specification for Speakerphones, Headsets, Pro Audio, Mics.

zoom

zoom Rooms   **zoom Meetings**

OVERVIEW

Zoom Audio

Code 60068

Zoom Audio Test Specification for Speakerphones, Headsets, Pro Audio, Mics

Zoom is a versatile platform for professional collaboration and communication both in the office and at home. Clear speech quality in Zoom meetings is a key factor in making online communication smooth and effortless.

To ensure optimal speech quality in Zoom meetings, Zoom Video Communications provided test specifications focused on usability-oriented characteristics such as speech quality, signal-to-noise ratio, echo and delay.

HEAD acoustics implemented these specifications in the automated test suite Zoom Audio for ACQUA. It allows efficient automated testing of suitable devices for compliance with these specifications.

The 'Zoom Certified' logo displayed on e.g. retail packaging indicates that the product complies with the requirements laid out by Zoom Video Communications.

KEY FEATURES

Comprehensive automated test suite for measurement and evaluation of communication devices for Zoom.

Supports all types of devices laid out in the following Zoom specifications:
› Zoom Meetings – Headsets
› Zoom Meetings – Speakerphone
› Zoom Meetings – Pro Microphone
› Zoom Rooms – Speakerphone
› Zoom Rooms – Pro Audio

All tests automatable and fully repeatable with realistic background noise simulation

APPLICATIONS

Automated quality analysis, evaluation and comparison of communication devices in accordance with the specifications:
› Zoom Meetings Headsets Specification v2.3 (Jun 2023)
› Zoom Meetings Speakerphone Specification v2.3 (Mar 2023)
› Zoom Meetings Pro Microphone Specification v1.4 (Jun 2023)
› Zoom Rooms Speakerphone Certification v2.3 (Feb 2023)
› Zoom Rooms Pro Audio Certification v2.2 (Jun 2023)

DETAILS

The IP-based audio and video communication service Zoom is used throughout the world for commercial and private communication. Its frequent use in office environments sets special focus on clear communication quality for single users and user groups alike.

To ensure a high standard of communication quality in Zoom meetings, Zoom Video Communications laid out requirements for compatibility and performance of communication devices typically used with the service. These requirements must be met in order to be eligible for a Zoom certification in the respective device category.

Device types

Zoom releases individual certification requirement documents per type of device. Overarching, two general application scenarios are defined – 'Zoom Meetings' and 'Zoom Rooms'. 'Zoom Meetings' are specified as one-user-per-device applications. Therefore, tests are laid out for personal gear such as headsets, single-user speakerphones and pro (e.g. podcast) microphones. 'Zoom Rooms' characterizes multiple-users-per-device applications, e.g. devices for video conferencing or in collaboration spaces. Testing therefore is specified for (multi-user) speakerphones and professional audio solutions. The latter category comprises permanently installed conferencing systems with (often multiple) microphones and loudspeakers. All devices are required to use an USB connection to their host PC.

Testing

The instrumental tests laid out in each specification mimic close-to-life situations typical for the respective device type. They assess its functionality, communication quality and operation robustness during communication. This is examined for sending and receiving direction and, where appropriate, in the presence of background noise typical for the respective environment.

1. Alternatively, the previous-generation frontend MFE VI.1 together with MFE VI-BEQ can be used.

SCOPE OF DELIVERY

Zoom Audio (Code 60068)
›   Revision 0, Service Pack 2
›   delivered as ACQUA Database Backup

V2C File
›   License File for ACQUA Dongle

Revision History
›   PDF File

GENERAL REQUIREMENTS

Please use the flow chart on page five to determine the hardware and software required for your individual use case. The items listed below are generally required independent of use case(s).

The below items and the flow chart are subject to change due to possible changes to the Zoom specifications.

Hardware

*lab*CORE[1] (Code 7700)
›   Modular multi-channel Hardware Platform

*core*BUS[1] (Code 7710)
›   *lab*CORE I/O Bus Mainboard

Continued on next page

To simulate communication, purpose-built hardware solutions (appliances) as well as PCs are used. On PCs, tests are performed with the Zoom application for Microsoft Windows and MacOS.

If a device meets all requirements of its category, its test results need to be submitted to Zoom. The company will then advise the next steps, which regularly include sending in one or more device unit(s) for further testing and certification.

Implementation

HEAD acoustics implemented the tests laid out in all Zoom specifications in the automated HEAD acoustics test suite Zoom Audio.

In combination with the necessary hard- and software, the test suite allows automated analysis of suitable communication devices for compliance with the respective Zoom specification. The items listed in this data sheet as 'General Requirements' are necessary for any use case and device. Additionally required hard- and software depends on the individual use-case, page five gives an overview of this. Pages six and seven contain exemplary test setups.

The use of the Zoom Audio test suite ensures that devices to be certified for use with Zoom fulfill the requirements laid out by the company. The test suite therefore is ideally suited for fast and convenient testing, comparison and optimization of qualified devices by manufacturers.

OPTIONAL ACCESSORIES

Software

ACOPT 09[2] (Code 6819)
› Speech Level Volt Meter (SLVM) P.56

GENERAL REQUIREMENTS

coreOUT-Amp2[1] (Code 7720)
› *lab*CORE Power Amplifier Board

coreIN-Mic4[1] (Code 7730)
› *lab*CORE Microphone Input Board

coreBEQ[1] (Code 7740)
› Binaural Equalization for one Artificial Head

HMT III (Code 1961)
› Height-adjustable Tripod for HMS

DSB IV.1 (Code 2408.1)
› Digital Sound Board, USB version

1 × Pressure-field Measurement Microphone

2 × Windows-PC
› 1 × Zoom Reference Client
› 1 × Zoom DUT Client

1 × Mac-PC
› 1 × Zoom DUT Client

Software

One of the following HEAD acoustics Software:
› ACQUA (Code 6810)
  » Advanced Communication Quality Analysis Software, Full-license Version
    (Version 5.1.200 with Update 2 or newer)

› ACQUA Compact (Code 6860)
  » Version 5.1.200 with Update 2 or newer

ACOPT 21 (Code 6844)
› 3QUEST – 3fold Quality Evaluation of Speech in Telecommunication (NB/WB)
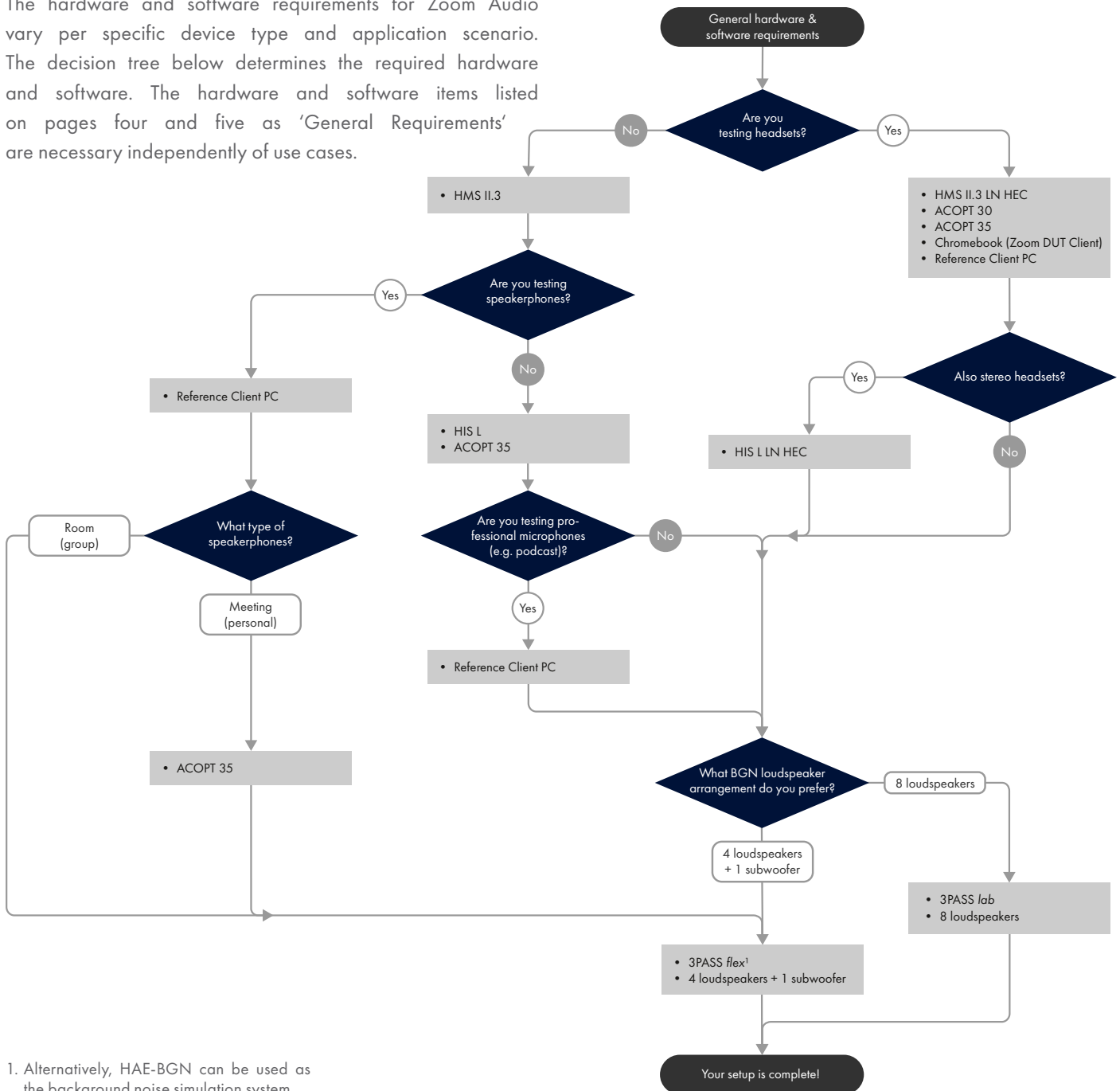
ACOPT 26 (Code 6853)
› Room Acoustics

ACOPT 29 (Code 6856)
› EQUEST - Echo Quality Evaluation of Speech in Telecommunication

ACOPT 32 (Code 6859)
› Speech-based Double Talk Analysis

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1. Alternatively, the previous-generation frontend MFE VI.1 together with MFE VI-BEQ can be used.
2. Highly recommended for use with 3QUEST SWB / FB (ACOPT 35, Code 6866)

USE-CASE-BASED REQUIREMENTS

The hardware and software requirements for Zoom Audio vary per specific device type and application scenario. The decision tree below determines the required hardware and software. The hardware and software items listed on pages four and five as 'General Requirements' are necessary independently of use cases.

General hardware & software requirements

Are you testing headsets?

No
- HMS II.3

Are you testing speakerphones?

Yes
- Reference Client PC

What type of speakerphones?

Room (group)

Meeting (personal)
- ACOPT 35

No
- HIS L
- ACOPT 35

Are you testing professional microphones (e.g. podcast)?

Yes
- Reference Client PC

No

Yes
- HMS II.3 LN HEC
- ACOPT 30
- ACOPT 35
- Chromebook (Zoom DUT Client)
- Reference Client PC

Also stereo headsets?

Yes
- HIS L LN HEC

No

What BGN loudspeaker arrangement do you prefer?

4 loudspeakers + 1 subwoofer
- 3PASS *flex*[1]
- 4 loudspeakers + 1 subwoofer

8 loudspeakers
- 3PASS *lab*
- 8 loudspeakers

Your setup is complete!

1. Alternatively, HAE-BGN can be used as the background noise simulation system.

Product Name / Code / Description

Product Name	Code	Description
HIS L	1701	HEAD Impedance Simulator, Left, for HMS II.3/4/5, Version 2021
HIS L LN HEC	1701.2	HEAD Impedance Simulator, Left, Low-Noise, for HMS II.3/4/5, Human Ear Canal Version
HMS II.3	1703	HEAD Measurement System, Basic Version with Right Ear Simulator, 3.3 Pinna & Artificial Mouth
HMS II.3 LN HEC	1703.2	HEAD Measurement System, Low-Noise Version with Human Ear Canal Simulator Right & Artif. Mouth
ACOPT 30	6857	POLQA – Perceptual Objective Listening Quality Analysis
ACOPT 35	6866	3QUEST Super-wideband/Fullband according to ETSI TS 103 281 Model A
3PASS *lab*	6990	Advanced Background Noise Simulation System with Automated Equalization – lab Version
3PASS *flex*	6995	Advanced Background Noise Simulation System with Automated Equalization – flex Version

IN PRACTICE

APPLICATION EXAMPLES
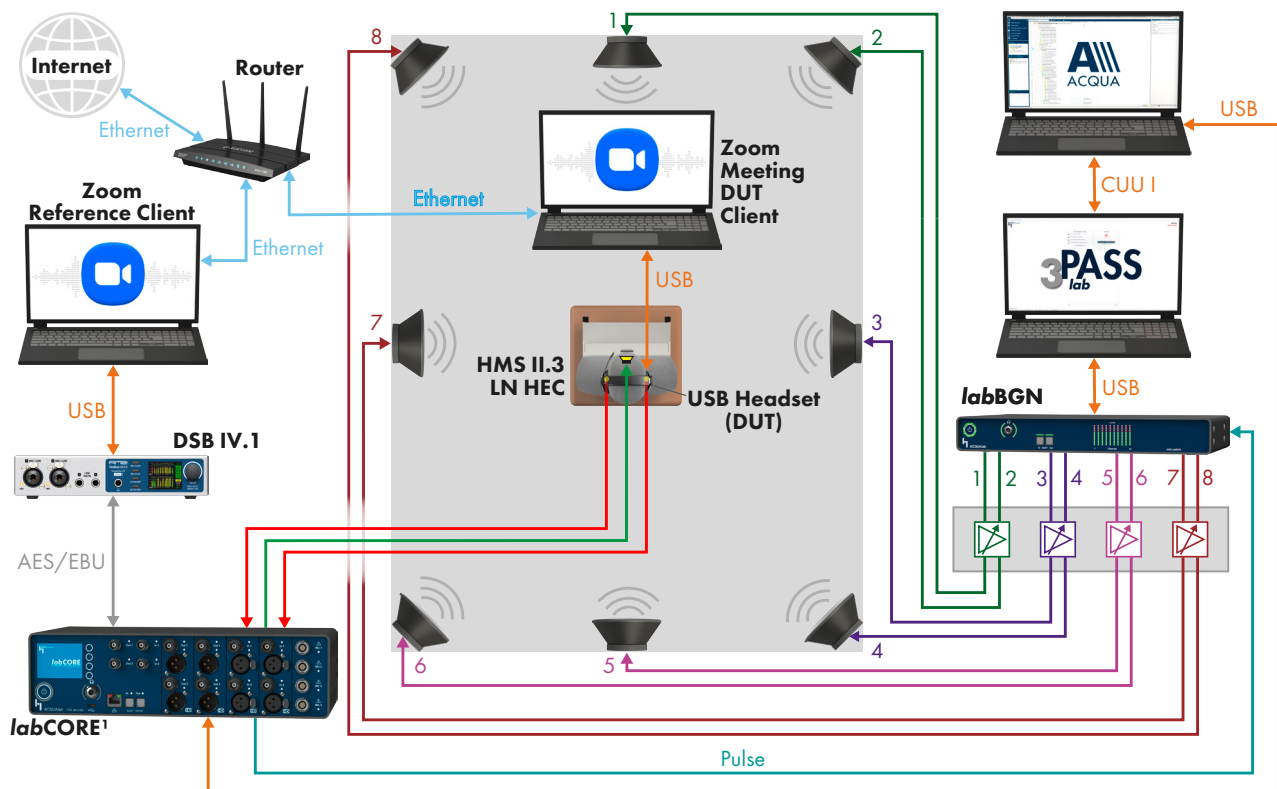
Measurement of a Headset with Zoom Audio

This exemplary test scenario depicts testing a headset with a boom microphone as laid out in the Zoom Audio test specification. This test is designed to assess the device's performance in an office-like environment in the presence of typical background noise.

An HMS II.3 LN HEC simulates the user of the headset. The specification requires the use of an artificial head with ear simulators with a human-like ear canal as laid out in Recommendation ITU-T P.57.

*lab*CORE[1] connects via the audio interface DSB IV to a PC serving as a Zoom reference client. A second PC in the test room acts as a

Zoom client for the device under test (DUT). Both PCs have access to a local network as well as the Internet through a router.

Background noise in this reverberant, yet quiet office-like room is simulated with 3PASS *lab*[1] and eight loudspeakers. The Zoom specification for headsets alternatively allows for a 3PASS *flex*[1] setup with four loudspeakers and a subwoofer (see next application example). ACQUA operates as the central software to generate, receive and analyze signals.

1. Alternatively, the previous-generation frontend MFE VI.1 and/or the background noise simulation system HAE-BGN can be used.

Measurement of a Room Speakerphone with Zoom Audio

This exemplary test scenario depicts testing a (multi-user) speakerphone as laid out in the Zoom Audio test specification. This test is designed to assess the device's performance in an office-like environment in the presence of typical background noise.

An HMS II.3 simulates the user of the speakerphone. *lab*CORE[1] connects via the audio interface DSB IV to a PC serving as a Zoom reference client. A second PC in the test room acts as a Zoom Rooms client for the device under test (DUT). Both PCs have access to a local network as well as the Internet through a router.

Background noise in this reverberant, yet quiet office-like room is simulated with 3PASS *flex*[1] feeding four loudspeakers and a subwoofer. ACQUA operates as the central software to generate, receive and analyze signals.
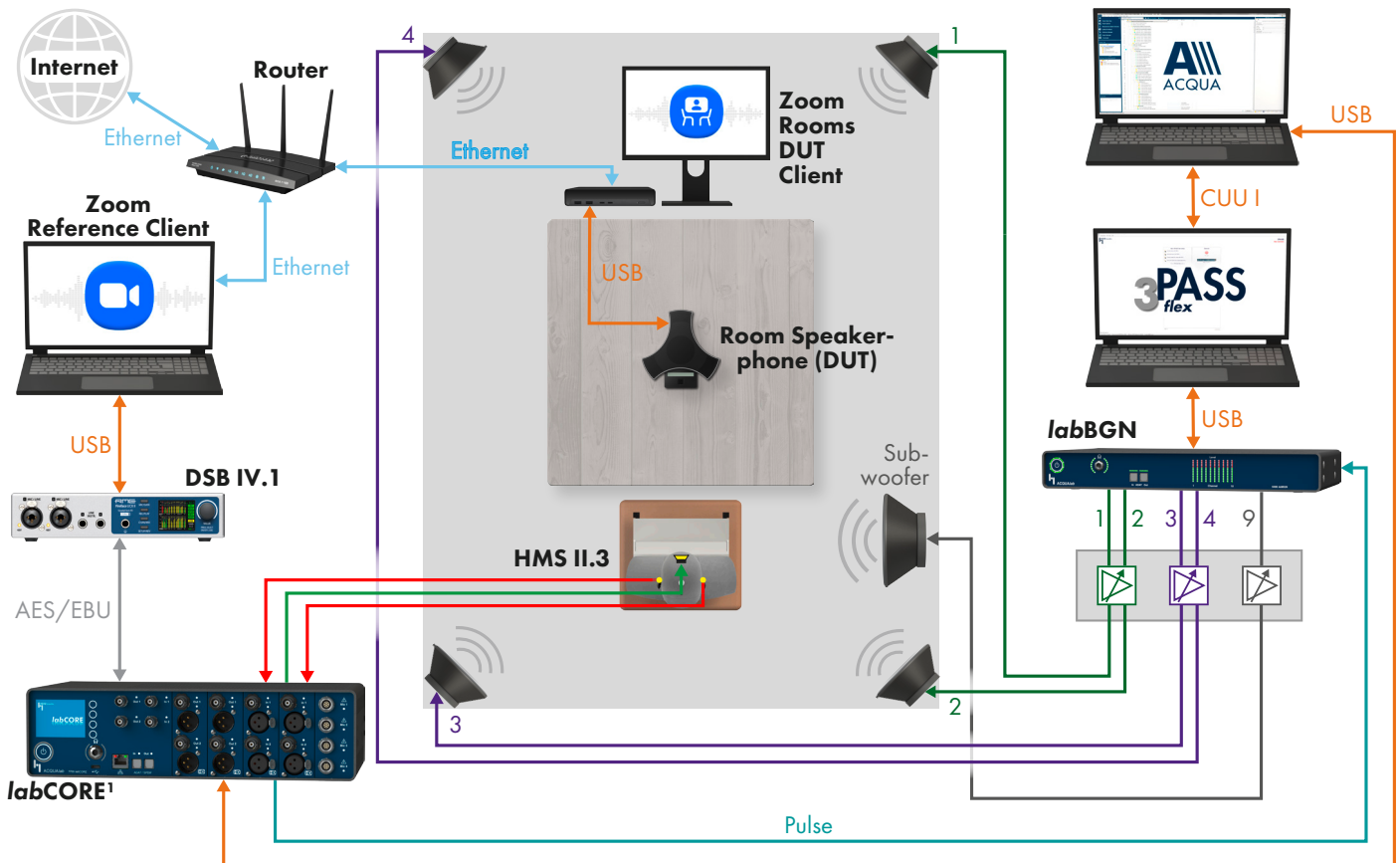
1. Alternatively, the previous-generation frontend MFE VI.1 and / or the background noise simulation system HAE-BGN can be used.

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