



Code 60028

UG TS 26 SWB/FB

**4G/5G/WLAN mobile terminal acoustic measurements,
extension for super-wideband and fullband**

OVERVIEW

UG TS 26 SWB/FB

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4G/5G/WLAN mobile terminal acoustic measurements, extension for super-wideband and fullband

UG TS 26 SWB/FB is an optional software extension for the automated ACQUA standard TS 26 131-32 (Code 6777).

3GPP TS 26.131 and 3GPP TS 26.132 specify test methods and minimum requirements to assess acoustic characteristics of narrowband (NB), wideband (WB), super-wideband (SWB), and fullband (FB) 2G/3G/4G/5G/WLAN terminals.

HEAD acoustics has implemented the test methods and requirements for super-wideband and fullband into the ACQUA standard UG TS 26 SWB/FB. In combination with other HEAD acoustics components, TS 26 131-32 and UG TS 26 SWB/FB form the test platform TP190¹ which is certified by GCF/PTCRB (Global Certification Forum/PCS Type Certification Review Board) for testing mobile devices.



KEY FEATURES

Automated and repeatable test sequences

Handset testing

Headset testing

Handheld hands-free testing

Desktop/vehicle-mounted hands-free testing

Prepared measurements according to 3GPP TS 26.132 Version 17.2.0 (2023-03)

Assessment according to 3GPP TS 26.131 Version 17.3.0 (2022-12)

APPLICATIONS

Compliance testing of super-wideband and fullband mobile terminals in 4G/5G/WLAN networks applying acoustic interfaces according to 3GPP TS 26.131 Version 17.3.0 (2022-12) and 3GPP TS 26.132 17.2.0 (2023-03)

GCF/PTCRB compliance testing of 4G/5G mobile devices according to GCF work item 252

Experimental development and optimization of 4G/5G/WLAN mobile terminals with instrumental evaluation of speech quality

DETAILS

DESCRIPTION

General

The tests implemented in ACQUA standard UG TS 26 SWB/FB cover all relevant acoustic requirements for 4G/5G/WLAN mobile terminals for super-wideband and fullband scenarios. Typical terminal types for testing compliance with are handsets, headsets, and desktop/vehicle-mounted/handheld hands-free devices.

UG TS 26 SWB/FB includes preset measurements and automated measurement sequences and allows fast and easy acquisition, analysis, and documentation of measurement data. The requirements from 3GPP TS 26.131 are automatically compared to the measurement results. Conformity with the requirements is immediately visible in ACQUA and can be published in ACQUA reports.

ACQUA projects

There are two kinds of projects available for each terminal type. Common ACQUA projects which are editable and standard projects which are read-only for ensuring compliant testing to the technical specification.

- › Handset
- › Headset
- › Handheld hands-free
- › Desktop and vehicle-mounted hands-free

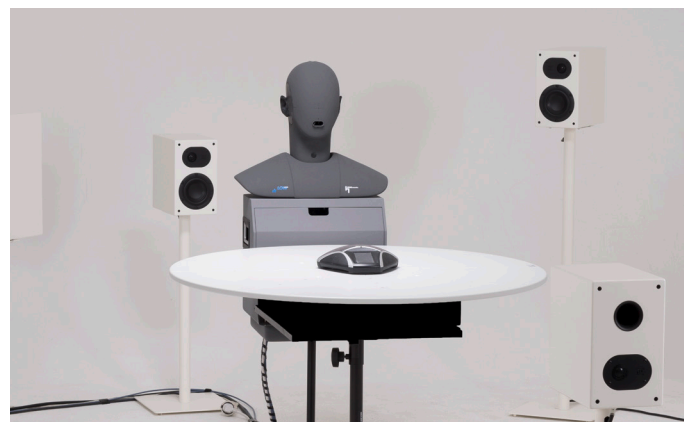
Measurements and analyses

UG TS 26 SWB/FB contains the following measurements and analyses:

- › Delay
- › Frequency response
- › Loudness rating and sidetone masking rating
- › Distortion
- › Delay and speech quality in conditions with packet arrival time variations and packet loss
- › Jitter buffer management behavior
- › Echo control
- › Speech quality with background noise



Handheld hands-free measurement



Desktop hands-free measurement



Headset measurement

Special features

UG TS 26 SWB/FB contains automated features for convenient measuring:

- › Automated volume control via Bluetooth® HID profile
- › Automated determination of ECRP with HHP IV for handsets providing non-traditional earpiece
- › Automated handset positioning with HHP IV

HEAD acoustics provides GCF and PTCRB certified test platform

In combination with particular combinations of HEAD acoustics hardware and software, UG TS 26 SWB/FB forms the test platform TP190¹. This test platform is officially approved and certified by GCF and PTCRB for testing mobile devices.

If measuring ACQUA standard UG TS 26 SWB/FB without modifications with the respectively specified hardware and software plus ACOPT 23 and/or ACOPT 24, the test reports will include a stamp that the test results have been achieved on a test platform certified by GCF and/or PTCRB.

OPTIONS

Hardware

Bluetooth Volume Control

CBA IV-V1 (Code 6599-V1)

- › Bluetooth transceiver for *labCORE* module *coreBT2* (USB-based, includes antenna)

Software

ACQUA Options

ACOPT 23 (Code 6848)

- › Option GCF

ACOPT 24 (Code 6849)

- › Option PTCRB

Bluetooth Volume Control

coreBT2HID (Code 7786)

- › *labCORE* Bluetooth human interface device (requires CBA IV-V1)

GENERAL REQUIREMENTS

Hardware

General

labCORE (Code 7700)

- › Modular multi-channel hardware platform

coreBUS (Code 7710)

- › I/O bus mainboard

coreOUT-Amp2 (Code 7720)

- › *labCORE* Power amplifier board

coreIN-Mic4 (Code 7730)

- › *labCORE* Microphone input board

coreBEQ (Code 7740)

- › Binaural equalization for one artificial head

coreIP (Code 7770)

- › *labCORE* I/O module, Voice over IP reference gateway

coreIP-EVS (Code 7773)

- › *labCORE* EVS codec option

Radio communication tester (third party device)

HEAD measurement system

One of the following HEAD measurement systems:

HMS II.3 (Code 1703)

- › HEAD measurement system, basic version with right ear simulator, 3.3 pinna and artificial mouth

HMS II.3 LN (Code 1703.1)

- › HEAD measurement system, low-noise version with right ear simulator, 3.3 pinna and artificial mouth

HMS II.3 LN HEC (Code 1703.2)

- › HEAD measurement system, low-noise version with human-like ear canal simulator right and artificial mouth

HMS II.3 ViBRIDGE (Code 1703.3)

- › HEAD measurement system, low-noise, with human-like ViBRIDGE ear simulators (left and right) and artificial mouth

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RELEASE NOTES

| Database revision and specification version | | |
|---|---|------------------|
| Database revision | Based on specification | ACQUA version |
| Revision 08 | 3GPP TS 26.131 V17.3.0 (2022-12) and 3GPP TS 26.132 V17.2.0 (2023-03) | at least 6.0.200 |

SCOPE OF DELIVERY

- UG TS 26 SWB/FB (Code 60028)
 - > delivered as ACQUA database backup V2C file
 - > License file for ACQUA dongle
- Revision history
- > PDF file

GENERAL REQUIREMENTS

Only for binaural applications

Appropriate HEAD Impedance Simulator for the respective HEAD measurement system:

HIS L (Code 1701)

- > HEAD impedance simulator, left, version 2021
- HIS L LN (Code 1701.1)
- > HEAD impedance simulator, left, low-noise version, version 2021

HIS L LN HEC (Code 1701.2)

- > HEAD impedance simulator, left, low-noise, human-like ear canal version

Handset measurements

One of the following handset positioners:

HHP IV (Code 1406)

- > Handset positioner, MotoMount (Hexapod) version
- HHP III.1 (Code 1403)
- > Handset positioner, VariMount version

Software

General

TS 26 131-132 (Code 6777)

- > 3GPP TS 26.131/132, 2G/3G/4G/5G/WLAN terminals

One of the following software applications:

ACQUA (Code 6810)

- > Advanced Communication Quality Analysis Software, Full-license version
- ACQUA Compact (Code 6860)
- > Compact test system

Ambient noise measurements

ACOPT 09 (Code 6819)

- > Option SLVM P.56
- ACOPT 35 (Code 6866)
- > Option 3QUEST super-wideband/fullband

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GENERAL REQUIREMENTS

One of the following software applications:

3PASS *lab* (Code 6990)

- › Advanced background noise simulation system with automated equalization – lab version

HAE-BGN (Code 6971)

- › Basic background noise simulation system with semi-automated equalization

Packet loss / variation network measurements

ACOPT 30 (Code 6857)

- › Option POLQA
- coreIP-IMP (Code 7771)
- › *lab*CORE VoIP impairment option

Echo control measurements

ACOPT 32 (Code 6859)

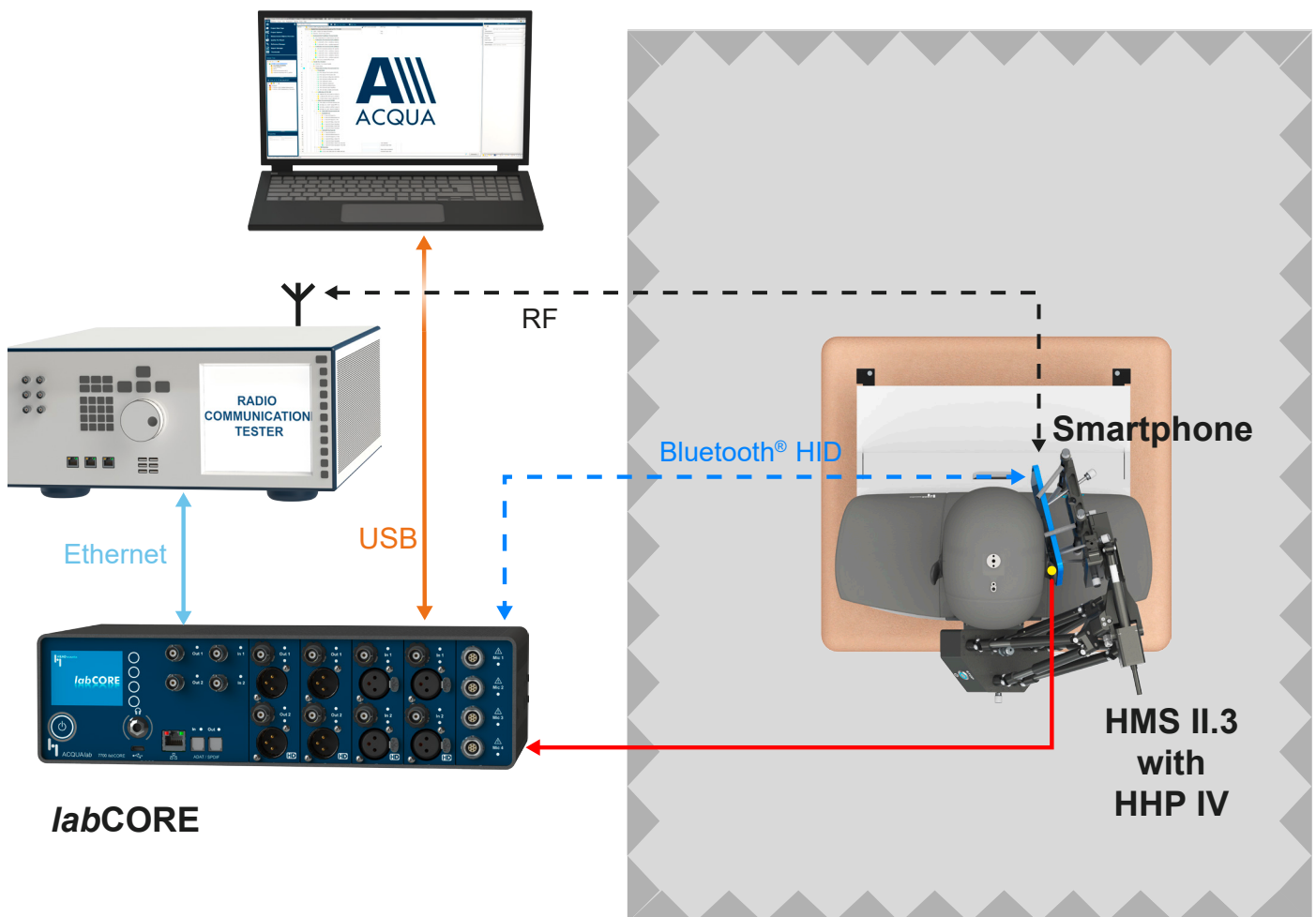
- › Option Speech-based Double Talk analysis

IN PRACTICE

APPLICATION EXAMPLES

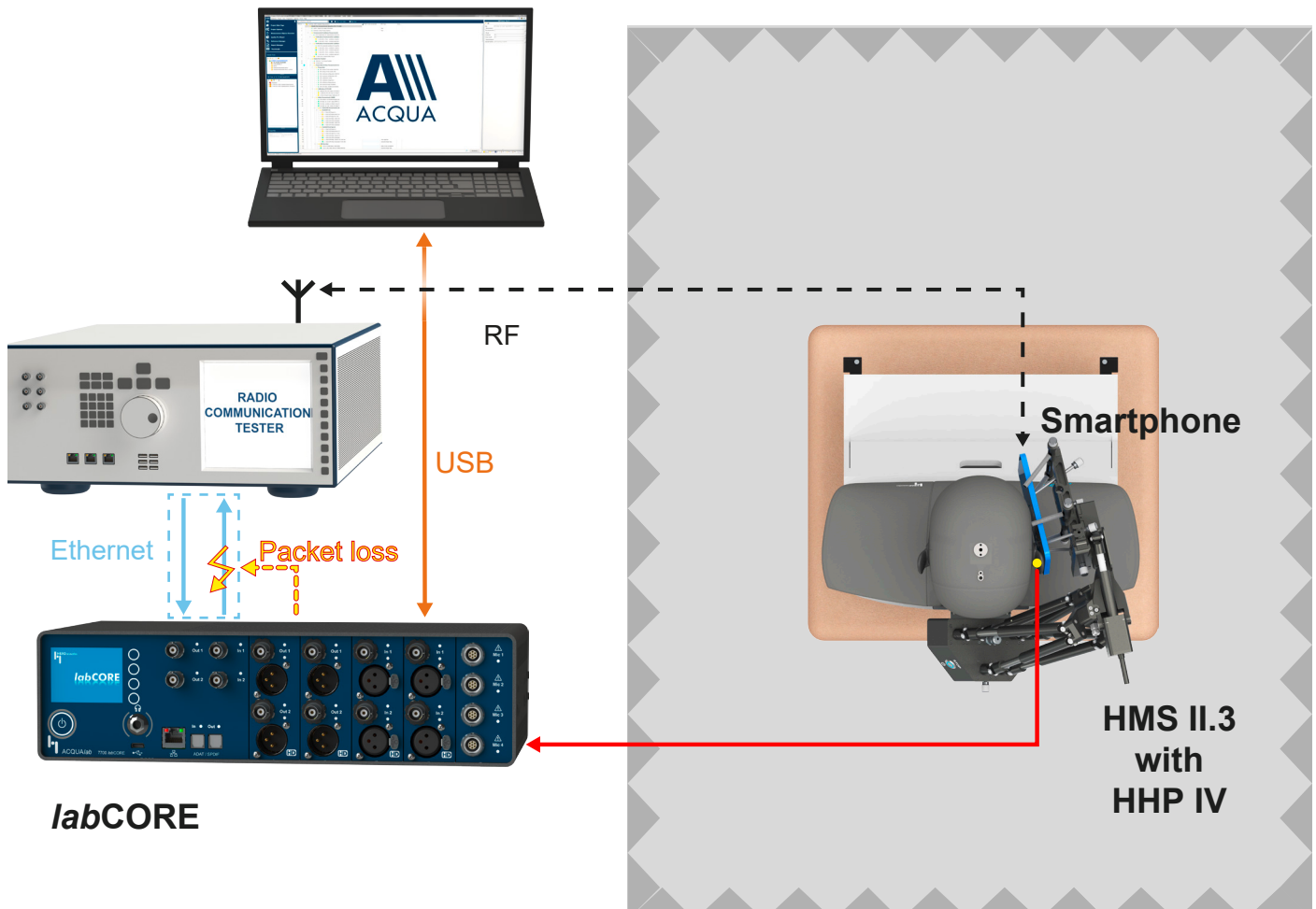
Handset: Automatic determination of nominal volume (exemplary)

The handset is clamped into HHP IV and connects via packet-switched network to a radio tester. *labCORE* transmits the audio signal via the radio tester to the handset. Furthermore, it connects to the handset by Bluetooth HID profile for setting the required volume step automatically. The handset plays back the signal through its earpiece. *labCORE* receives the signal from HMS II.3 and transmits it to ACQUA for recording. ACQUA plays back signals, determines the volume step of the handset as well as analyzing the recorded signals according to the receive loudness rating requirements of 3GPP TS 26.131.



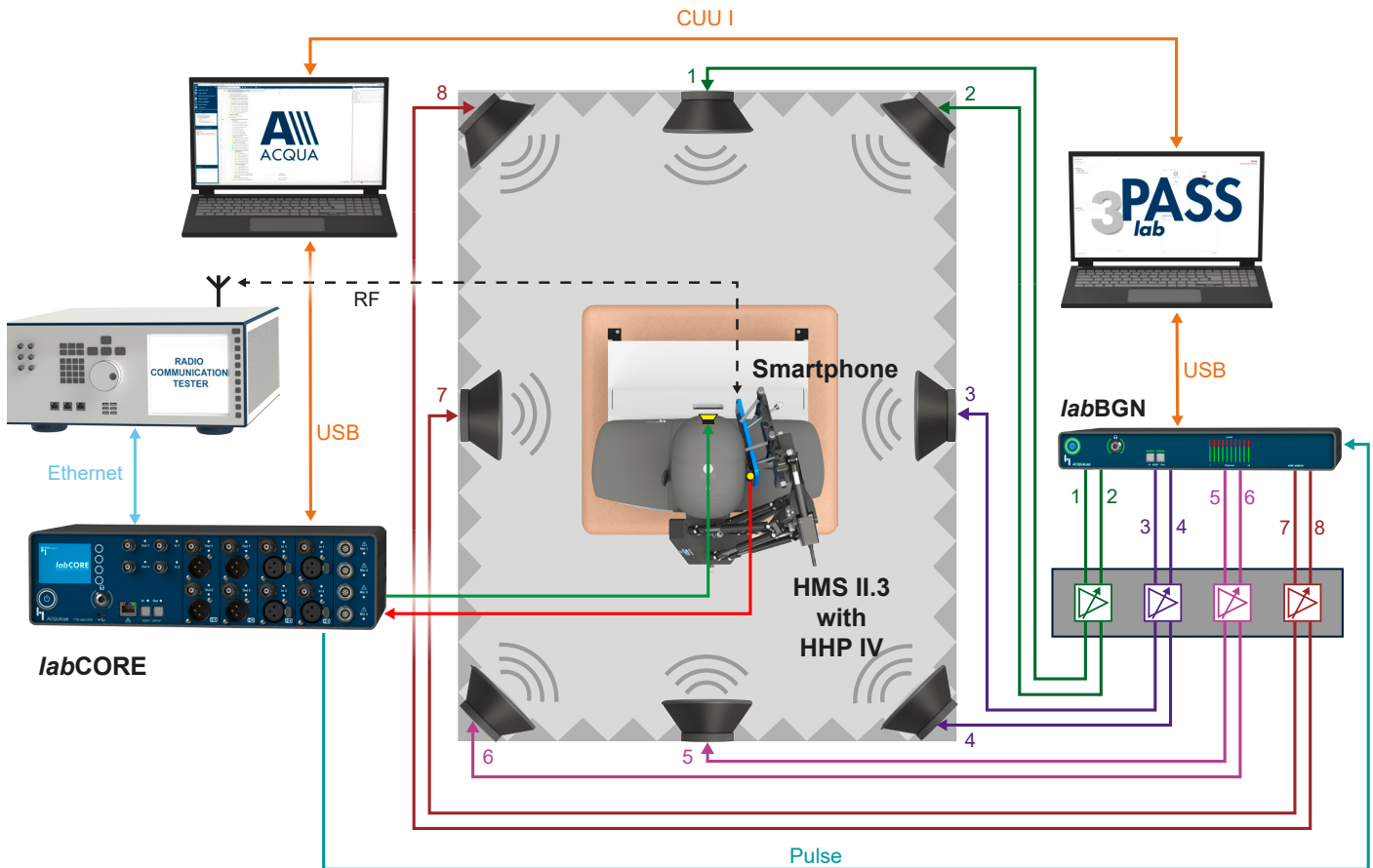
Handset: VoIP measurements with packet loss (exemplary)

The handset is clamped into HHP IV and connects via packet-switched network to a radio tester. *labCORE* transmits an audio signal including impaired packets via the radio tester to the handset. The handset processes the signal and plays it back through its earpiece. *labCORE* receives the signal from HMS II.3 for recording. ACQUA analyses and assesses the recorded signals according to the requirements of 3GPP TS 26.131.



Handset: VoIP measurements with ambient noise (exemplary)

The handset is clamped into HHP IV and connects via packet-switched network to a radio tester. *labCORE* transmits signals to HMS II.3 for playback and receives signals from HMS II.3 for recording. *ACQUA* generates the signals for playback and analyzes the recorded signals. *3PASS lab* plays back background noises and *ACQUA* assesses speech signal processing of the smartphone under real-life conditions according to the requirements of 3GPP TS 26.131.



1. TP190: ACQUA, *labCORE*, and ACQUA standard according to specification releases 3GPP TS 26.131 17.3.0 / 3GPP TS 26.132 17.2.0.

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