



Code 6777

TS 26 131-32

2G/3G/4G/5G/WLAN Mobile Terminal Acoustic Measurements, Narrowband and Wideband

OVERVIEW

TS 26 131-32

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2G/3G/4G/5G/WLAN Mobile Terminal Acoustic Measurements , Narrowband and Wideband

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 narrowband and wideband into the ACQUA standard TS 26 131-32. In combination with other HEAD acoustics components, TS 26 131-32 forms the test platforms TP89¹, TP90², and TP190³ which are 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 terminal testing

Handheld hands-free testing

Desktop hands-free testing

Prepared measurements according to 3GPP TS 26.132 Version 19.0.0 (2025-10)

Assessment according to 3GPP TS 26.131 Version 19.0.0 (2025-10)

APPLICATIONS

Compliance testing of 2G/3G/4G/5G/WLAN mobile terminals applying acoustic interfaces according to 3GPP TS 26.131 Version 19.0.0 (2025-10) and 3GPP TS 26.132 Version 19.0.0 (2025-10)

GCF/PTCRB compliance testing of 2G/3G/4G/5G mobile devices according to GCF work item 252

Experimental development and optimization of 2G/3G/4G/5G/WLAN mobile terminals with instrumental evaluation of speech quality

DETAILS

DESCRIPTION

General

The tests implemented in the ACQUA standard TS 26 131-32 cover all relevant acoustic requirements for 2G/3G/4G/5G/WLAN mobile terminals for narrowband and wideband scenarios. Typical terminal types for testing compliance are handsets, headsets and desktop/handheld hands-free devices.

TS 26 131-32 includes of 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 and Standards

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 hands-free

Measurements and Analyses

TS 26 131-32 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

TS 26 131-32 contains automated features for convenient measuring:

- › Automated volume control via Bluetooth® HID protocol
- › 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, TS 26 131-32 forms the test platforms TP89¹, TP90², and TP190³. All of these test platforms are officially approved and certified by GCF and PTCRB for testing mobile devices.

If measuring ACQUA standard TS 26 131-32 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

Volume Control via Bluetooth HID

CBA IV-V1 (Code 6599-V1)

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

Options for Measuring In-Ear Headset Terminals

HIS L LN HEC (Code 1701.2)

- › HEAD Impedance Simulator, left, low-noise, human-like ear canal version

HIS R LN HEC (Code 1702.2)

- › HEAD Impedance Simulator, right, low-noise, human-like ear canal version

HEL 4.4 (Code 1715)

- › Flexible Pinna for HMS II.3/4/5, left ear, according to ITU-T P.57 type 4.4

HER 4.4 (Code 1716)

- › Flexible Pinna for HMS II.3/4/5, right ear, according to ITU-T P.57 type 4.4

SCOPE OF DELIVERY

TS 26 131-32 (Code 6777)

- › delivered as ACQUA database backup
- V2C file
- › License file for ACQUA dongle
- Revision history
- › PDF file

GENERAL REQUIREMENTS

Hardware

Hardware Platform

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

HEAD Measurement System

HMS II.3 (Code 1703)

- › HEAD Measurement System, basic version with right ear simulator, 3.3 pinna, and artificial mouth

For binaural applications, HMS II.3 requires a left ear simulator:

HIS L (Code 1701)

- › HEAD Impedance Simulator, left

Handset Measurements

One of the following handset positioners:

HHP IV (Code 1406)

- › Handset positioner, MotoMount (Hexapod) version
- HHP III.2 (Code 1430)
- › Handset positioner, VariMount version

Continued on next page

Software

Super-Wideband/Fullband Extension

- UG TS 26 SWB/FB(Code 60028)
- › 3GPP TS 26.131/132, 3G/4G terminals, extension super-wideband and fullband

Electrical Interfaces Extension

- UG TS 26 EL ITF Tests (Code 60065)
- › 3GPP TS 26.131/132, extension mobile terminal electrical interface tests

ACQUA Options

- ACOPT 23 (Code 6848)
- › Option GCF
- ACOPT 24 (Code 6849)
- › Option PTCRB

Volume Control via Bluetooth HID

- coreBT2HID (Code 7786)
- › labCORE Bluetooth human interface device (requires CBA IV-V1)

RELEASE NOTES

Database Revision and Specification Version		
Database revision	Based on specification	ACQUA version
Revision 18	3GPP TS 26.131 V19.0.0 (2025-10) and 3GPP TS 26.132 V19.0.0 (2025-10)	at least 6.1.100

GENERAL REQUIREMENTS

Packet-Switched Network Measurements

- coreIP (Code 7770)
- › labCORE I/O module, Voice over IP reference gateway
- coreIP-AMR (Code 7772)
- › labCORE AMR codec option

Network Simulation

Radio communication tester (third-party device)

Software

General

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 21 (Code 6844)
- › Option 3QUEST - 3fold Quality Evaluation of Speech in Telecommunication (narrowband/wideband)

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 Measurements

- ACOPT 30 (Code 6857)
- › Option POLQA
- coreIP-IMP (Code 7771)
- › labCORE VoIP impairment option

Echo Control Measurements

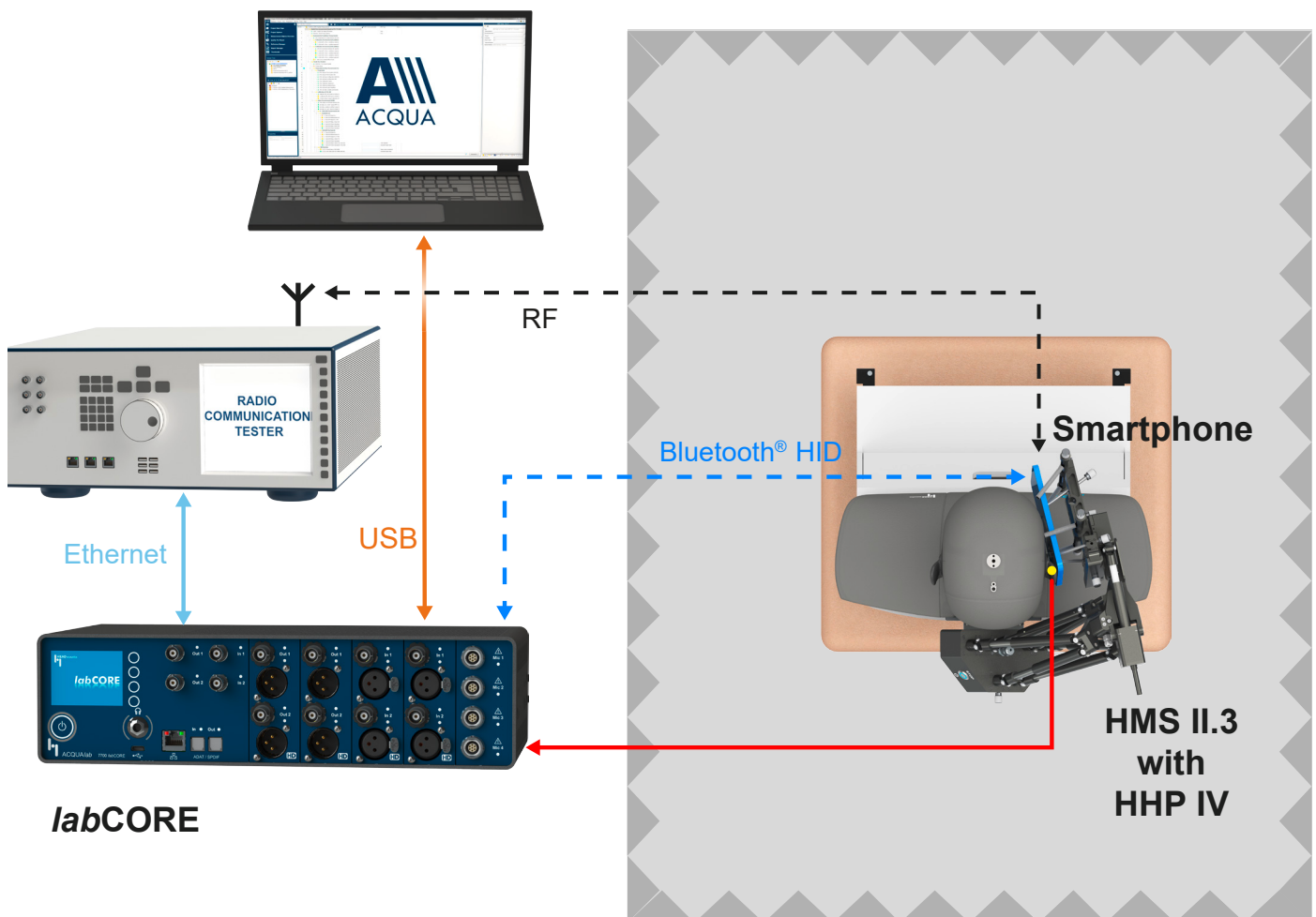
- ACOPT 32 (Code 6859)
- › Option Speech-based Double Talk analysis

IN PRACTICE

APPLICATION EXAMPLES

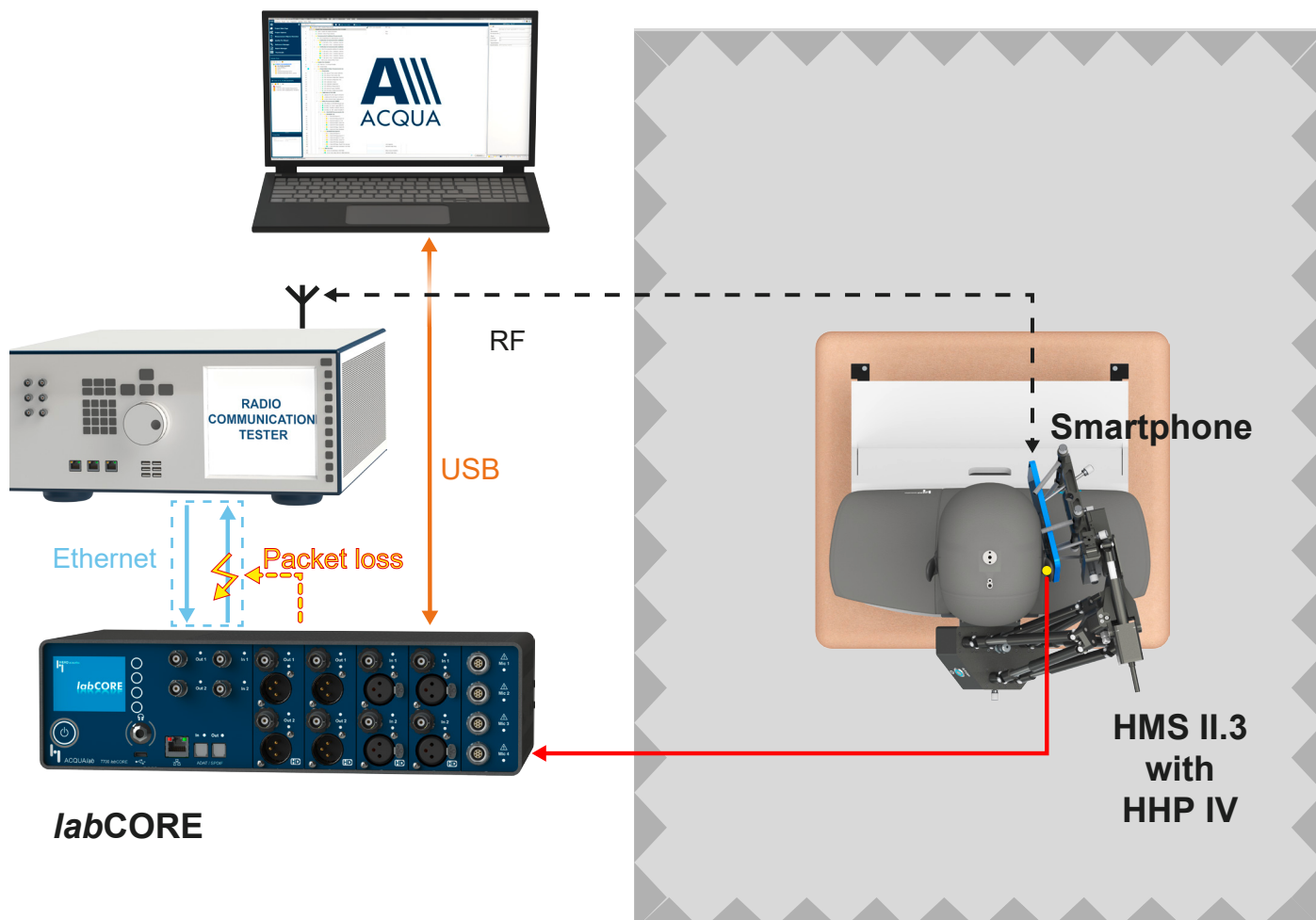
Handset: Automatic Determination of Nominal Volume

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.



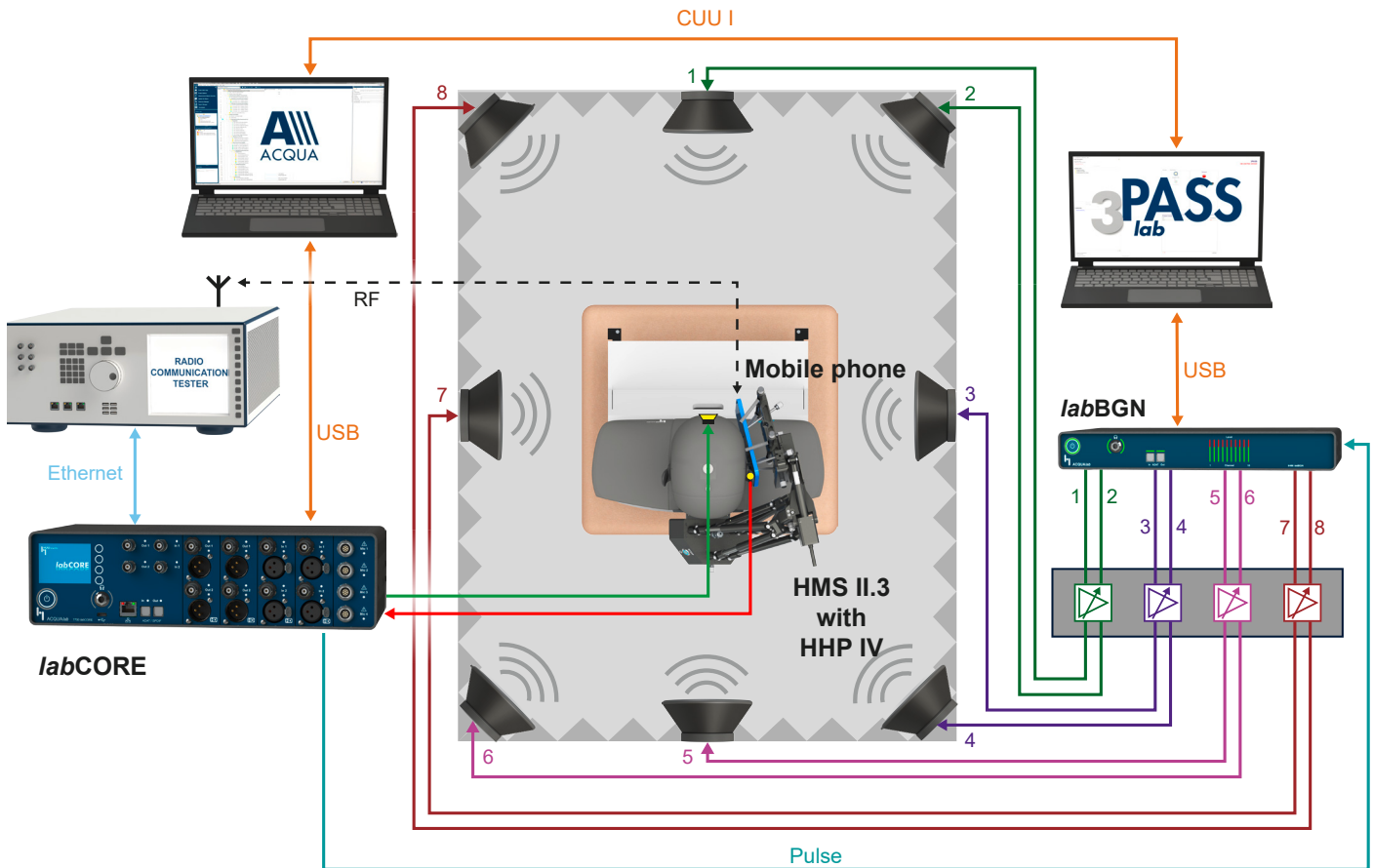
Handset: VoIP Measurements with Packet Loss

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

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. TP89: ACQUA, MFE III.1, and ACQUA standard according to specifications 3GPP TS 26.131 and 3GPP TS 26.132, Release 9.
2. TP90: ACQUA, MFE VI.1, and ACQUA standard according to specifications 3GPP TS 26.131 (Version 12.4.0 / 3GPP TS 26.132 (Version 12.6.0), Release 12.
3. TP190: ACQUA, *labCORE*, and ACQUA standard according to specifications 3GPP TS 26.131 (Version 19.0.0) / 3GPP TS 26.132 (Version 19.0.0), Release 19.

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