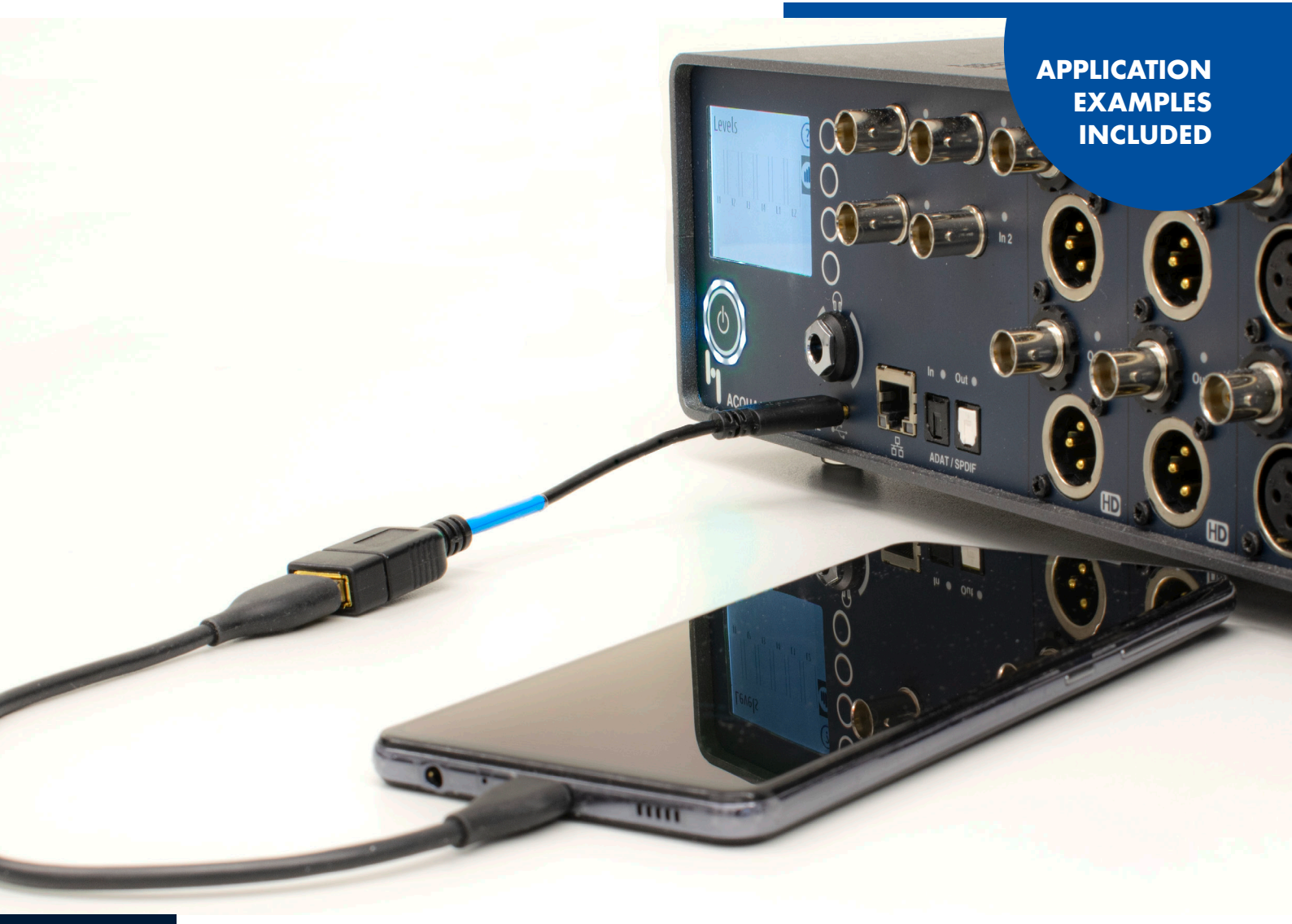


**APPLICATION
EXAMPLES
INCLUDED**



Code 60065

UG TS 26 EL ITF Tests

3GPP TS 26.131/132, Extension Mobile Terminal Electrical Interface Tests

OVERVIEW

UG TS 26 EL ITF Tests

Code 60065

3GPP TS 26.131/132, Extension Mobile Terminal Electrical Interface Tests

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

UG TS 26 EL ITF Tests (Code 60065) is an upgrade for the automated test suite TS 26 131/32 (Code 6777). It includes all relevant measurements from 3GPP TS 26.131 and 3GPP TS 26.132 for assessing digital electrical interfaces or analog electrical interfaces. The definition of an electrical interface is specified in chapter 3.1 of 3GPP TS 26.131 and 3GPP TS 26.132. The signal path of the measurements is solely electrical. Specific measurement equipment simulates a headset and connects to the electrical interface of a mobile terminal. Thus, the measurements from the test suite assess signal processing of the mobile terminal without interference from a connected headset or an acoustic interface. HEAD acoustics provides hardware and software solutions to perform the measurements from the test suite.

KEY FEATURES

Measurements and requirements for digital electrical interfaces or analog electrical interfaces from 3GPP TS 26.131 and 3GPP TS 26.132

Electrical signal path

Measurements for all frequency bands in one database

Background noise files included

No specific room environment

Quick establishment of measurement configuration

APPLICATIONS

Conformance testing of 2G/3G/4G/5G and WLAN mobile terminals according to 3GPP TS 26.131 V17.1.1 (2022-05) and 3GPP TS 26.132 V17.1.0 (2022-04)

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

DETAILS

UG TS 26 EL ITF Tests provides measurements for assessment of mobile terminals according to the requirements from 3GPP TS 26.131 and 3GPP TS 26.132. Included measurements are electrical and require no special measurement environment such as an anechoic room. Simulating third-party headsets via the electrical interface provides the opportunity to ensure the audio quality of mobile terminals, even with third-party devices. The supported electrical interfaces may be digital or analog.

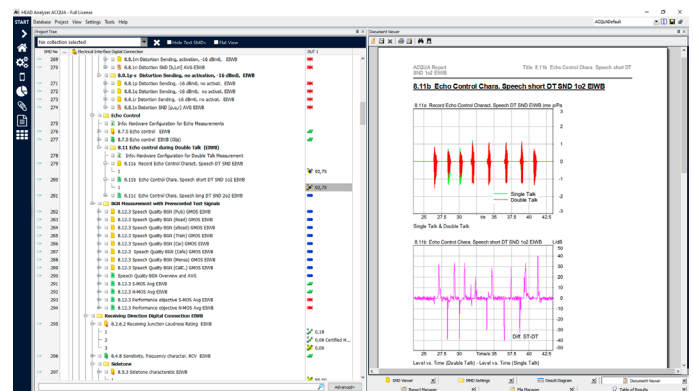
DESCRIPTION

The test suite provides measurements according to 3GPP TS 26 131-132 via electrical interfaces. These measurements are solely electrical. The mobile terminal may connect in three different ways. Connection type and frequency band depend on the mobile terminal and its available interface.

If desired, measurements of the test suite can be modified or extended for additional tests as well as combined to create individual test sequences. However, testing for standard conformity requires unaltered measurements.

Supported interfaces are either analog (3.5 mm jack) or digital (USB or Bluetooth®). The hardware platform *labCORE* and its extensions provide the necessary interfaces for each digital connection. The analog connection additionally requires the Headset Interface Box (HIB I) which simulates an analog interface (according to Recommendation ITU-T P.381) to the applied mobile terminal.

Further, the test suite provides all measurements for the band-



widths narrowband (NB), wideband (WB), super-wideband (SWB) and fullband (FB). Devices under test may operate within 2G/3G/4G/5G or WLAN networks. The bandwidth of measurements depends on the electrical interface of the mobile terminal and its available audio codecs. For example, the combination of a Bluetooth connection and application of EVS codec only allows wideband measurements.

With its predefined measurement descriptors and automated measurement sequences, the test suite UG TS 26 EL ITF Tests allows fast and easy acquisition, analysis and documentation of standard-compliant measurement data.

APPLICABLE MEASUREMENTS

Included measurements in UG TS 26 EL ITF Tests

- › Delay
- › Loudness rating
- › Distortion

- › Speech quality
- › Measurements with packet impairments
- › Echo control
- › Double talk
- › Speech quality in presence of ambient noise

OPTIONS

For super-wideband / fullband measurements

ACOPT 35 (Code 6866)

- › Option 3QUEST Super-wideband/Fullband

For measurements via packet based networks

coreIP (Code 7770)

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

coreIP-AMR (Code 7772)

- › AMR codec option

coreIP-EVS (Code 7773)

- › EVS codec option

SCOPE OF DELIVERY

UG TS 26 EL ITF Tests (Code 60065)

- › Revision 01
- › delivered as ACQUA database backup

V2C File

- › License file for ACQUA dongle

Revision history

- › PDF file

GENERAL REQUIREMENTS

Hardware (USB connection)

labCORE (Code 7700)

- › Modular multi-channel hardware platform
- coreUSB-DR (Code 7705)
- › I/O module, USB Device Reference
- Radio communication tester (third party device)

Hardware (Bluetooth connection)

labCORE (Code 7700)

- › Modular multi-channel hardware platform
- coreBT2 (Code 7782)
- › I/O module, Bluetooth reference access point
- Radio communication tester (third party device)

Hardware (Analog connection)

labCORE (Code 7700)

- › Modular multi-channel hardware platform
- HIB I (Code 6002)
- › Headset interface box
- Radio communication tester (third party device)

Software

ACQUA (Code 6810)

- › Advance Communication Quality Analysis Software

TS 26 131-132 (Code 6777)

- › 2G/3G/4G/WLAN mobile terminal acoustic measurements

ACOPT 09 (Code 6819)

- › Option SLVM P.56

ACOPT 21 (Code 6844)

- › Option 3QUEST - 3fold Quality Evaluation of Speech in Telecommunication (Narrowband/Wideband)

ACOPT 30 (Code 6857)

- › Option POLQA - Perceptual Objective Listening Quality Analysis

ACOPT 32 (Code 6859)

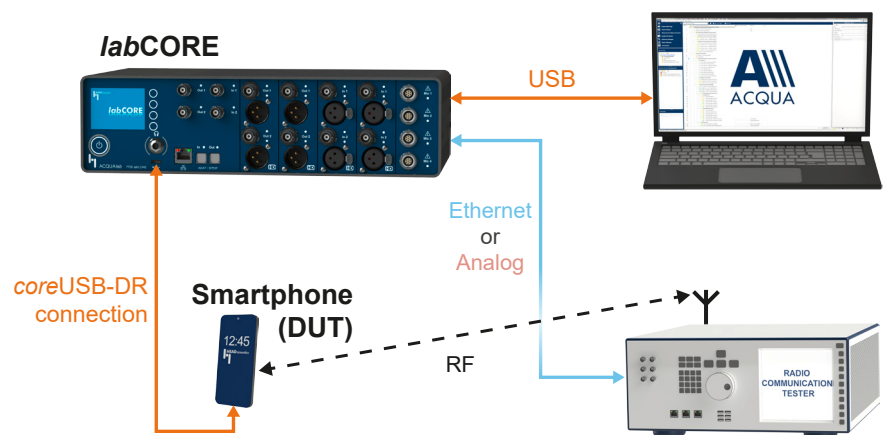
- › Option Speech-based Double Talk Analysis

IN PRACTICE

APPLICATION EXAMPLES

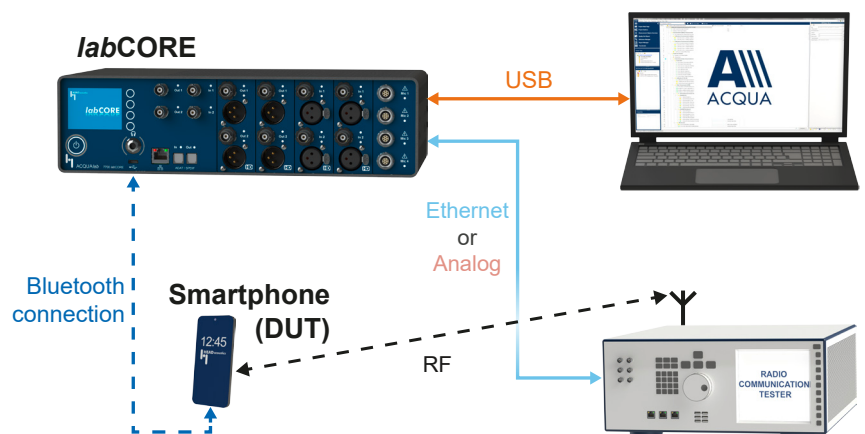
Digital connection via coreUSB-DR

Measurement configuration for a digital connection via USB. The mobile terminal connects via USB-C cable to the USB-C socket of *labCORE*. *labCORE* contains the extension board *coreUSB-DR*. *coreUSB-DR* enables *labCORE* to simulate an USB headset. A radio communication tester provides the desired network for the measurements. It connects either via Ethernet or analog connection to *labCORE*, depending on the type of network. ACQUA controls measurements and signal path from the test suite UG TS 26 EL ITF Tests. Measurement results are analyzed, saved and assessed in the test suite according to the requirements of 3GPP TS 131 and 3GPP TS 132.



Digital connection via coreBT2

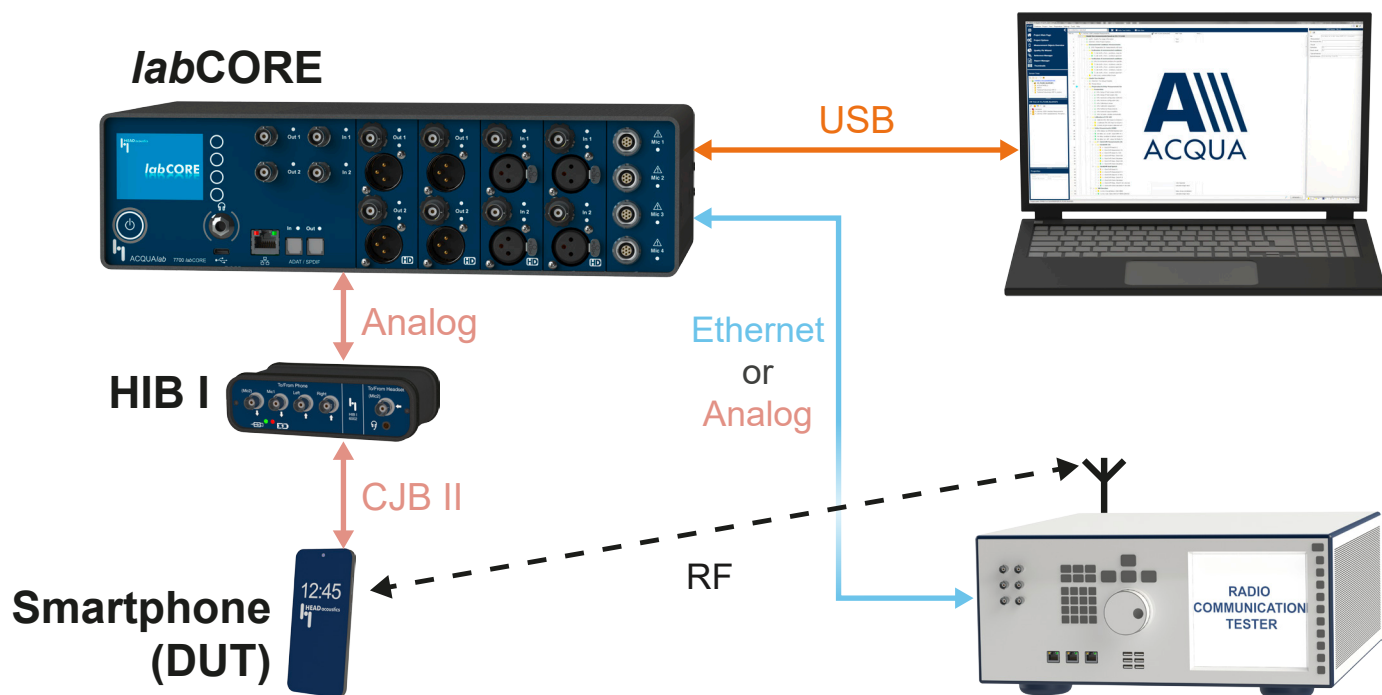
Measurement configuration for a digital connection via Bluetooth. The device under test connects via Bluetooth to the Bluetooth transceiver of *labCORE*. *labCORE* is equipped with the extension module *coreBT2*. *labCORE* simulates a Bluetooth device as including source and sink. A radio communication tester provides the desired network for the measurements. It connects either via Ethernet or analog connection to *labCORE*, depending on the type of network. ACQUA controls measurements and signal path from the test suite UG TS 26 EL ITF Tests. Measurement results are analyzed, saved and assessed in the test suite according to the requirements of 3GPP TS 131 and 3GPP TS 132.



Analog connection via *labCORE* and HIB I

Measurement configuration for an analog connection. The mobile terminal connects via HIB I to *labCORE*. HIB I simulates an analog headset to the mobile terminal. A radio communication tester provides the desired network for the measurements. It connects either via Ethernet or analog connection to *labCORE*, depending

on the type of network. ACQUA controls measurements and signal path from the test suite UG TS 26 EL ITF Tests. Measurement results are analyzed, saved and assessed in the test suite according to the requirements of 3GPP TS 131 and 3GPP TS 132.



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