HEAD acoustics

DATA SHEET

APPLICATION EXAMPLES INCLUDED

Code 60072

P.381-3 Terminals

ITU-T P.381-3, Tests for Digital and Analog Terminal Interfaces

OVERVIEW

P.381-3 Terminals

Code 60072

ITU-T P.381-3, Tests for Digital and Analog Terminal Interfaces

P.381-3 Terminals is an ACQUA standard containing specified measurements and requirements according to Recommendations ITU-T P.381/P.382/P.383 for terminals. The ACQUA standard provides comprehensive tests for manufacturers of terminals and network operators to evaluate the signal and voice quality of analog or digital interfaces (wired/wireless) in terminals, such as mobile phones. It supports various types of connectivity – analog (TRRS), digital wired (USB), and digital wireless (Bluetooth® wireless technology).

KEY FEATURES

Complete implementation as ACQUA standard of:

- Recommendation ITU-T P.381 (03/2023), Clause 7
- Recommendation ITU-T P.382 (03/2023), Clause 7
- Recommendation ITU-T P.383 (03/2023), Clause 9

Testing of terminals with an analog interface (3.5 mm jack, TRS and TRRS) for headsets/headphones

Testing of terminals with digital interfaces for headsets:

- Bluetooth® wireless technology
- USB

Measurements for all bandwidths: narrowband, wideband, super-wideband, fullband

Testing of audio and voice call communication quality

APPLICATIONS

Automated testing of terminals with analog interfaces and terminals with digital interfaces (wired/wireless) according to Recommendations ITU-T P.381/P.382/P.383 (03/2023)

DETAILS

State-of-the-art digital mobile terminals include analog or digital interfaces for connecting headsets or headphones. While headphones are limited to media playback, headsets additionally support communication. ITU-T Recommendations P.381/P.328/P.383 specify test methods and performance requirements for both communication and media playback scenarios. The measurements and requirements for terminals with headset interfaces in Recommendation ITU-T P.381/P.382/P.383 have been adopted in ACQUA standard P.381-3 Terminals for compliance assessment of appropriate devices.

DESCRIPTION

Equipment

The P.381-3 Terminals test suite is applied in the ACQUA software and provides measurements and analyses for terminals with headset interfaces according to Recommendation ITU-T P.381/P.382/P.383. The *lab*CORE hardware platform distributes signals from devices to ACQUA for recording and analysis, and distributes signals from ACQUA to devices for playback. Further, the headset connection type (digital or analog) of the terminal determines the application of either *lab*CORE (*core*BT2/*core*USB-DR) or HIB I as headset simulator. A radio communication tester (not supplied by HEAD acoustics) simulates a mobile network to establish a call with the terminal.

Structure

The ACQUA standard divides into two ACQUA projects according to the specifications of the device under test. One project covers measurements and requirements for wired analog headset interfaces of terminals according to Recommendation ITU-T P.381/P.382. The other project provides measurements and requirements for wired or wireless digital headset interfaces of terminals according to Recommendation ITU-T P.383.

DATABASE CONTENTS

Measurements with Requirements According to Recommendation ITU-T P.381

Communication mode:

- Level
- Frequency response
- Activation sensitivity
- Idle channel noise
- Distortion
- Sidetone loss/delay
- One-way speech quality
- Noise cancellation

- Terminal coupling loss (echo performance)
- Temporal echo effects
- Double Talk performance

Multimedia playback mode:
- Output level
- Frequency response
- Noise
- Distortion
- Crosstalk

Measurements with Requirements According to Recommendation ITU-T P.382

Communication mode:
- See P.381

Multimedia record mode:
- Input level
- Acoustic input range
- Phase response
- Distortion at maximum input
- Time offset and sampling accuracy

Measurements with Requirements According to Recommendation ITU-T P.383

Communication mode (no signal processing by terminal):
- Loudness rating
- Linearity
- Frequency response
- Noise
- Distortion
- Presence of noise reduction
- Presence of echo cancellation

Communication mode (signal processing by terminal):
- Level
- Frequency response
- Idle channel noise
- Distortion
- Noise cancellation
- One-way speech quality
- Terminal coupling loss (echo performance)
- Temporal echo effects
- Double Talk performance
- Activation

GENERAL REQUIREMENTS

All ACQUA Projects

Hardware Platform

*lab*CORE (Code 7700)
- Modular multi-channel hardware platform

Operating Software

One of the following software applications:

ACQUA (Code 6810)
- Advanced Communication Quality Analysis Software, full license version

ACQUA Compact (Code 6860)
- Compact test system

Noise Cancellation Tests

Narrowband and wideband measurements
- ACOPT 21 (Code 6844)
  - Option 3QUEST – 3fold Quality Evaluation of Speech in Telecommunication (narrowband/ wideband)

Super-wideband and fullband measurements
- ACOPT 09 (Code 6819)
  - Option SLVM P.56
- ACOPT 35 (Code 6866)
  - Option 3QUEST super-wideband/fullband according to ETSI TS 103 281, Model A

Speech Quality

ACOPT 30 (Code 6857)
- Option POLQA – Perceptual Objective Listening Quality Analysis

Echo During Double Talk

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

Packet-Switched Network

*core*IP (Code 6859)
- *lab*CORE I/O module, Voice over IP Reference Gateway

Continued on next page

Multimedia playback mode:

- Output level
- Frequency response
- Noise
- Distortion
- Crosstalk

OPTIONS

*core*IP-AMR (Code 7772)

- *lab*CORE VoIP AMR codec option (*core*IP required)

*core*IP-EVS (Code 7773)

- *lab*CORE VoIP EVS codec option (*core*IP required)

*core*BT2-AAC-LDAC (Code 7783)

- *lab*CORE Bluetooth AAC and LDAC Codec Option (*core*BT2 required)

*core*BT2-LC3plus-A2DP (Code 7784)

- *lab*CORE Bluetooth LC3plus Option for A2DP (*core*BT2 required)

*core*BT2-LC3-HFP (Code 7785)

- *lab*CORE Bluetooth LC3 Option for HFP (*core*BT2 required)

*core*BT2HID (Code 7786)

- *lab*CORE Bluetooth Human Interface Device (*core*BT2 required)

RELEASE NOTES

Database revision and specification version		
Database revision	**Based on specification**	**ACQUA version**
Revision 01	ITU-T P.381 (03/2023) ITU-T P.382 (03/2023) ITU-T P.383 (03/2023)	at least 6.1.100 + Update 2

GENERAL REQUIREMENTS

Analog EL ITF P.381-2

Headset Interface Simulator

HIB I (Code 6002)

- Headset interface box

Digital EL ITF P.383

Headset Simulation Interface

One of the following interfaces for connecting to the device under test:

USB

- *core*USB-DR (Code 7705)
  - » *lab*CORE I/O module, USB device reference

Bluetooth

- *core*BT2 (Code 7782)
  - » *lab*CORE I/O module, Bluetooth reference access point, version 2

SCOPE OF DELIVERY

ITU-T P.381-3 Terminals (Code 60072)

- delivered as ACQUA database backup

V2C file

- License file for ACQUA dongle

Revision history

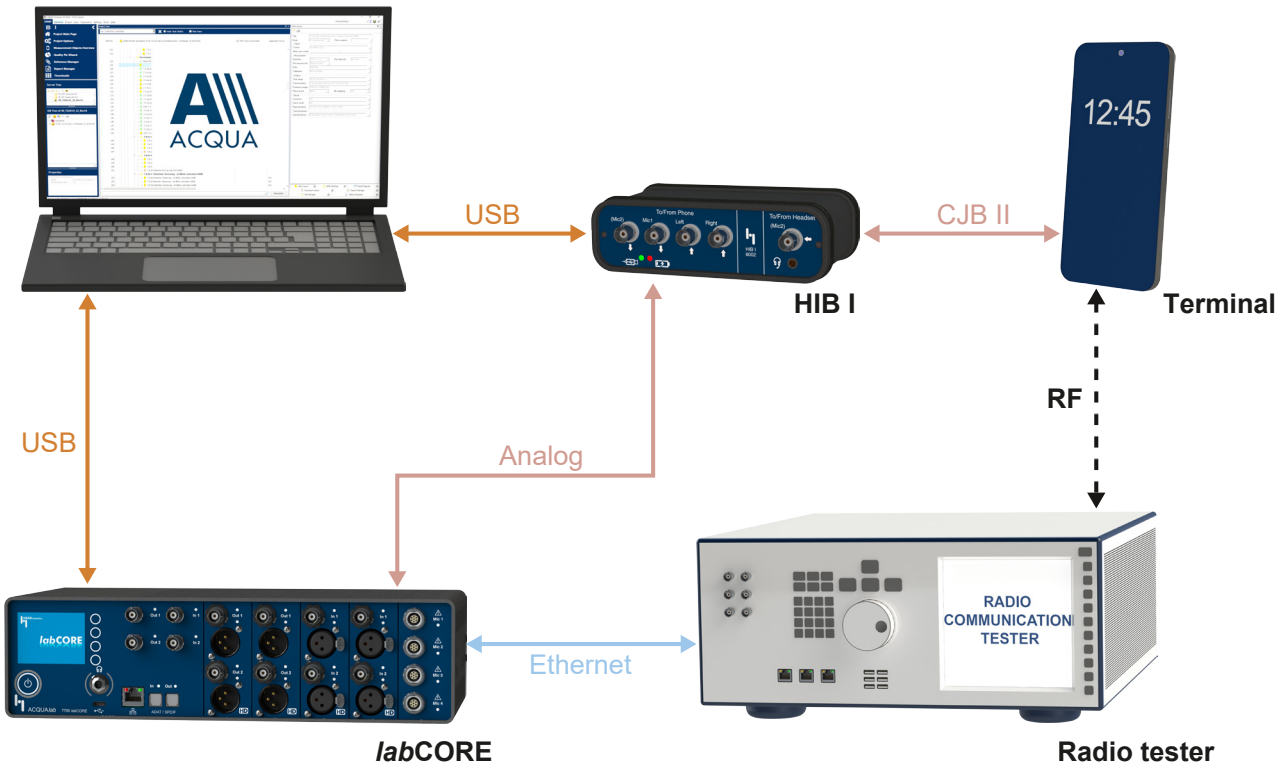
- PDF file

IN PRACTICE

APPLICATION EXAMPLES

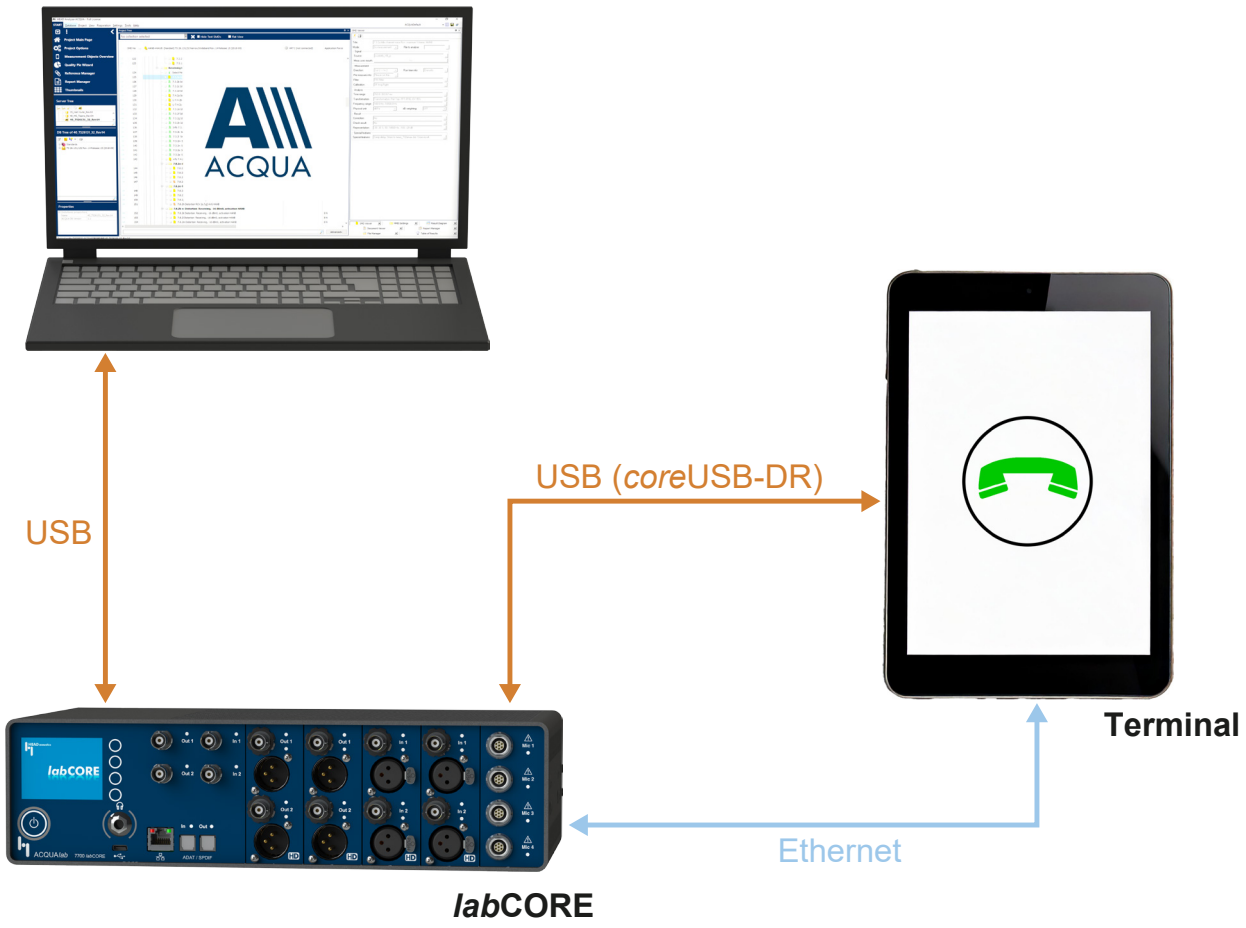
Testing Configuration for an Terminal with Analog Headset Interface According to Recommendations ITU-T P.381/P.382

This configuration presents testing of an analog headset interface of a terminal. The terminal is connected to the Headset Interface Box (HIB I) via the CJB II cable. HIB I (simulating a headset) receives signals from *lab*CORE and forwards them to the terminal. The terminal processes the signals and forwards them via a simulated network from the radio communication tester to *lab*CORE. Vice versa, *lab*CORE transmits signals to the radio communication tester which forwards them to the terminal. The terminal transmits the signals to HIB I via CJB II which forwards them to *lab*CORE. ACQUA controls *lab*CORE and HIB I. Further, it generates signals for playback and analyzes recorded signals.



Testing Configuration for a Terminal with Digital Headset Interface According to Recommendation ITU-T P.383

This configuration presents testing of a digital (USB) headset interface of a terminal. The terminal is connected to *lab*CORE via USB (*core*USB-DR). *core*USB-DR (simulating a headset) transmits signals to the terminal. The terminal processes the signals and forwards them via Ethernet to *lab*CORE. Vice versa, *lab*CORE transmits signals to the terminal and the terminal transmits the signals to *lab*CORE via USB (*core*USB-DR). ACQUA controls *lab*CORE, generates signals for playback, and analyzes recorded signals.



HEAD acoustics

Contact Information

Ebertstraße 30a
52134 Herzogenrath, Germany
Phone: +49 2407 577-0
E-Mail: sales@head-acoustics.com
Website: www.head-acoustics.com