

**APPLICATION
EXAMPLES
INCLUDED**



Code 60018

GSMA HD Voice

HD Voice Logo Minimum Requirements for Mobile Devices and Headsets

OVERVIEW

GSMA HD Voice

Code 60018

HD Voice Logo Minimum Requirements for Mobile Devices and Headsets

GSMA has specified test methods to assess the minimum performance requirements for allowing manufacturers of mobile devices and headsets to make use of the HD Voice logo registered as trademark by GSMA.

HEAD acoustics has implemented speech quality measurements required by the GSMA HD Voice specifications (cf. below: "Applications") into the automated test suite GSMA HD Voice for the ACQUA communication quality analysis system.

GSMA HD Voice thus allows manufacturers to ensure that their mobile devices and headsets meet the specifications required for using the HD Voice logo.

KEY FEATURES

Complete implementation as ACQUA standard of:

- › Minimum Technical Requirements for use of the HD Voice logo with GSM/UMTS issued by GSMA (Annex C) Version 2.0 – November 12, 2013
- › Minimum Requirements for Mobile Networks and Terminals for the usage of the HD voice logo with CDMA2000 (Annex D) Version 2.0 – November 12, 2013
- › Minimum Technical Requirements for the HD Voice logo with LTE issued by GSMA (Annex F) Version 3.0 – August 10, 2016
- › Minimum Technical Requirements for the usage of the HD voice logo. Headset Electrical Interface (Annex G) Version 2.0 – March 22, 2017

Measurements for bandwidths: narrowband and wideband

Determining ECRP for handsets providing non-traditional earpiece (HaNTE devices)

Supports close-to-reality noise playback measurements

Generates automated MS Excel reports according to GSMA specifications

APPLICATIONS

Conformance tests of narrowband and wideband mobile devices:

- › Handset
- › Headset
- › Handheld hands-free
- › Headset electrical interface

DETAILS

DESCRIPTION

General

The tests implemented in the ACQUA standard GSMA HD Voice cover all relevant acoustic requirements for GSM/UMTS/CDMA/LTE mobile terminals for narrowband and wideband scenarios. GSMA HD Voice includes preset measurements and automated measurement sequences and enables fast and easy acquisition, analysis, and documentation of measurement data. The requirements from GSMA HD Voice are automatically compared to the measurement results. Conformity with the requirements is immediately visible in ACQUA.

ACQUA Projects and Standards

The ACQUA standard divides into five ACQUA projects according to the specifications of the device under test.

- › Handheld hands-free
- › Handset (CDMA)
- › Handset (GSM/UMTS/LTE)
- › Headset (GSM/UMTS/CDMA/LTE)
- › Headset socket and jack interface (GSM/UMTS/LTE)

Special Features

GSMA HD Voice implements automated measurement sequences 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

Test results are automatically added to the Excel report template during the measurement. These Excel reports simplify your process of applying for HD Voice certification from GSMA.

- › Excel report Annex C: GSM / UMTS
 - » 3GPP TS 26.131
- › Excel report Annex D: CDMA2000
 - » 3GPP TS C.S0056-A
 - » 3GPP TS 26.131
- › Excel report Annex F: LTE
 - » 3GPP TS 26.131
 - » ITU-T P.381
- › Excel report Annex G:
 - » ITU-T P.381



Handset measurement



Headset measurement

DATABASE CONTENTS

The following measurements can be performed with GSMA HD Voice:

Handheld Hands-free (GSM/UMTS/CDMA/LTE)

Narrowband and Wideband:

- › Frequency response SND / RCV
- › Loudness rating
- › Echo loss

Handset (CDMA)

Narrowband and Wideband:

- › Frequency response SND / RCV
- › Loudness rating SND / RCV
- › Loudness contrast
- › MAX loudness
- › Echo loss
- › Distortion SND / RCV
- › Idle noise SND / RCV
- › Speech quality with ambient noise
- › Sidetone characteristics

Handset (GSM/UMTS/LTE)

Narrowband and Wideband:

- › Frequency response SND / RCV
- › Loudness rating SND / RCV
- › Echo loss
- › Distortion SND / RCV
- › Idle noise SND / RCV
- › Speech path delay of mobile HD Voice devices
- › Speech quality with ambient noise
- › Speech quality in conditions with packet arrival time variations and packet loss
- › Noise reduction – Objective evaluation
- › Sidetone characteristics

GENERAL REQUIREMENTS

All Projects

Hardware Platform

labCORE (Code 7700)

- › Modular multi-channel hardware platform

Measurement and Analysis 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

ACQUA Standard

TS 26 131-32 (Code 6777)

- › 3GPP TS 26.131/132, Mobile Terminals

Network Simulation

Radio communication tester (third-party device)

For detailed requirements of each project, refer to *Project Requirements on page 6*

SCOPE OF DELIVERY

GSMA HD Voice (Code 60018)

- › Delivered as ACQUA database

V2C file

- › License file for ACQUA dongle

Revision history

- › PDF file

Manual

- › PDF file

Headset (GSM/UMTS/CDMA/LTE)

Narrowband and Wideband:

- › Loudness rating SND / RCV
- › Frequency response SND / RCV
- › Idle noise SND / RCV
- › Sidetone characteristics SND / RCV speech path delay of mobile HD Voice devices
- › Speech quality in conditions with packet arrival time variations and packet loss

Headset Socket and Jack Interface

Electrical Interface Measurements

Narrowband and Wideband:

- › Level SND / RCV
- › Frequency response SND / RCV
- › Sidetone rating
- › Noise SND / RCV
- › Distortion SND / RCV
- › One-way speech quality SND / RCV
- › Terminal coupling loss weighted

Acoustic Headset Measurements

Narrowband and Wideband:

- › Sensitivity SND / RCV
- › Frequency response SND / RCV
- › Noise SND
- › Distortion SND
- › Terminal Coupling loss weighted

Multimedia Mode

- › Sensitivity RCV

OPTIONS

Bluetooth Volume Control

CBA IV-V1 (Code 6599-V1)

- › Bluetooth transceiver for *lab*CORE module *core*BT2 (USB-based, includes antenna)

*core*BT2HID (Code 7786)

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

RELEASE NOTES

Database revision and specification version		
Database revision	Based on specification	ACQUA version
Revision 04	GSMA Internal Masterdocument – HD Voice Logo Technical Annexes Version 7.0, March 23, 2017. 3GPP TS 26.131-32 Release 13 3GPP2 C.S0056-A V1.0 ITU-P.381 (03/2017)	at least 6.1.100

PROJECT REQUIREMENTS

Product Required: ✓ Not required: ✗	Project	Handset	Headset	Headset socket and Jack interface	Handheld Hands-Free
One of the following Head Measurement Systems:					
<ul style="list-style-type: none"> › HMS II.3 (Code 1703) <ul style="list-style-type: none"> » Head Measurement System, basic version with right ear simulator, 3.3 pinna and artificial mouth › HMS II.3 LN (Code 1703.1) <ul style="list-style-type: none"> » Head Measurement System, low-noise version with right ear simulator, 3.3 pinna and artificial mouth 		✓	✓	✓	✓
One of the following Head Impedance Simulators for the respective Head Measurement System:					
<ul style="list-style-type: none"> › HIS L (Code 1701) <ul style="list-style-type: none"> » Head Impedance Simulator, left › HIS L LN (Code 1701.1) <ul style="list-style-type: none"> » Head Impedance Simulator, left, low-noise version 		✗	✓	✓	✓
One of the following handset positioners:					
<ul style="list-style-type: none"> › HHP IV (Code 1406) <ul style="list-style-type: none"> » Handset positioner, MotoMount (Hexapod) version › HHP III.1 (Code 1403) <ul style="list-style-type: none"> » Handset positioner, VariMount version 		✓	✗	✗	✗
One of the following software applications for background noise simulation:					
<ul style="list-style-type: none"> › 3PASS lab (Code 6990) <ul style="list-style-type: none"> » Advanced background noise simulation system with automated equalization – lab version › HAE-BGN (Code 6971) <ul style="list-style-type: none"> » Basic background noise simulation system with semi-automated equalization (no longer available) 		✓	✗	✗	✓
› coreBUS (Code 7710)		✓	✓	✓	✓
<ul style="list-style-type: none"> » labCORE I/O bus mainboard 					
› coreOUT-Amp2 (Code 7720)		✓	✓	✓	✓
<ul style="list-style-type: none"> » labCORE power amplifier board 					
› coreIN-Mic4 (Code 7730)		✓	✓	✓	✓
<ul style="list-style-type: none"> » labCORE microphone input board 					
› coreBEQ (Code 7740)		✗	✗	✗	✓
<ul style="list-style-type: none"> » Binaural equalization for one artificial head 					

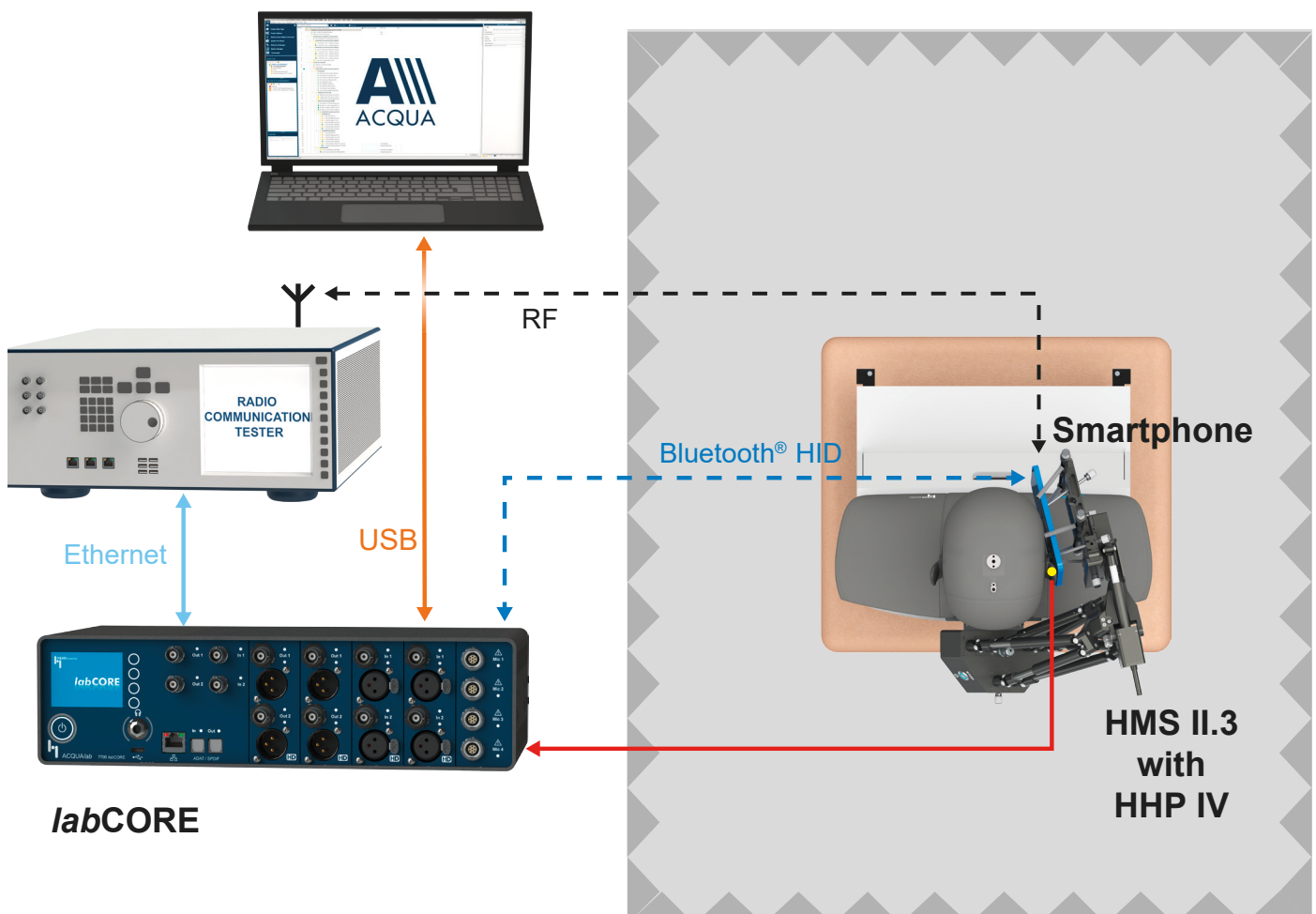
Product Required: ✓ Not required: ✗	Project	Handset	Headset	Headset socket and Jack interface	Handheld Hands-Free
Packet-switched network					
<ul style="list-style-type: none"> › coreIP (Code 7770) <ul style="list-style-type: none"> » labCORE I/O module, Voice over IP reference gateway › coreIP-AMR (Code 7772) <ul style="list-style-type: none"> » labCORE AMR codec option 	✓	✓	✓	✓	
Packet-switched network impairments					
<ul style="list-style-type: none"> › coreIP-IMP (Code 7771) <ul style="list-style-type: none"> » labCORE VoIP impairment option 	✓	✗	✗	✗	
<ul style="list-style-type: none"> › ACOPT 09 (Code 6819) <ul style="list-style-type: none"> » Option SLVM P.56 	✗	✗	✓	✗	
<ul style="list-style-type: none"> › ACOPT 21 (Code 6844) <ul style="list-style-type: none"> » Option 3QUEST – 3fold Quality Evaluation of Speech in Telecommunication (narrowband/wideband) › Measurement microphone (third-party equipment) 	✓	✗	✗	✓	
<ul style="list-style-type: none"> › ACOPT 30 (Code 6857) <ul style="list-style-type: none"> » Option POLQA 	✓	✗	✗	✗	
<ul style="list-style-type: none"> › ACOPT 32 (Code 6859) <ul style="list-style-type: none"> » Option Speech-based Double Talk analysis 	✓	✗	✗	✗	
<ul style="list-style-type: none"> › HIB I (Code 6002) <ul style="list-style-type: none"> » Headset Interface Box 	✗	✗	✓	✗	

IN PRACTICE

APPLICATION EXAMPLES

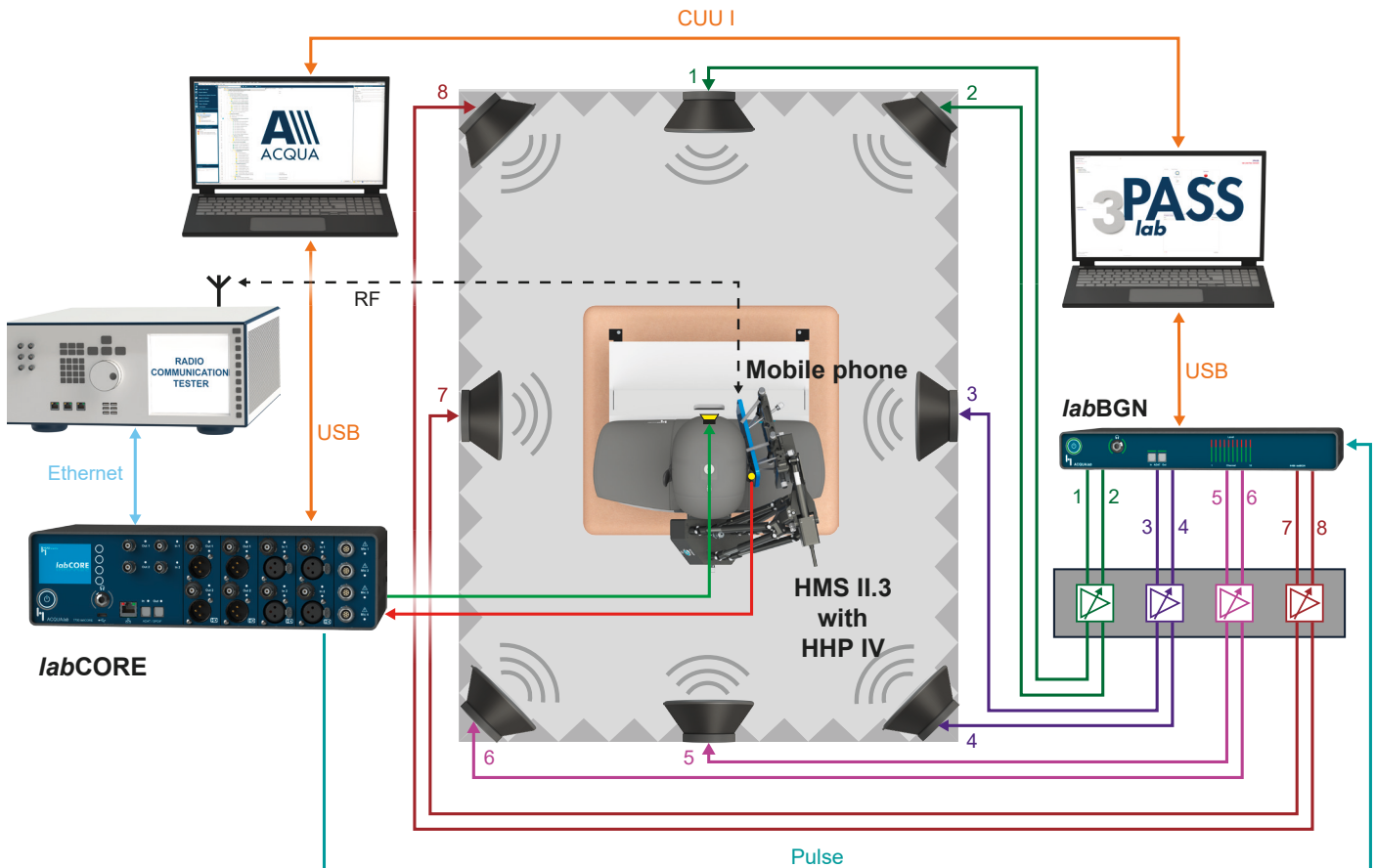
Handset: Automatic Determination of Nominal Volume

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 GSMA HD Voice.



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 GSM HD Voice.



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