HEAD acoustics

DATA SHEET

APPLICATION EXAMPLE INCLUDED

Code 60070

GB/T 45314 eCall

GB/T 45314-2025, Clause 5, Chinese eCall Requirements

OVERVIEW

GB/T 45314 eCall

Code 60070

GB/T 45314-2025, Clause 5, Chinese eCall Requirements

In the event of a car accident, emergency call systems automatically trigger a hands-free call to an emergency call center. For ensuring optimal call quality between car and response service, the Standardization Administration of China (SAC) specified comprehensive tests in GB/T 45314-2025 for speech communication during emergency calls originating from vehicles. HEAD acoustics implemented the included methods for narrowband (NB) and wideband (WB) communication in the ACQUA standard GB/T 45314 eCall.

The ACQUA standard provides assessments according to GB/T 45314-2025.

KEY FEATURES

Implementation of GB/T 45314-2025, Clause 5 as ACQUA project

GB/T 45314-2025 is the national standard of the People's Republic of China including measurements and requirements for eCall quality testing

Speech signals in Chinese language

Background noise test signals included

Optional measurement for assessing listening effort (according to ETSI TS 103 558) under the influence of background noise

Useful measurements for packet-switched networks from Recommendation P.1140 (07/2022)

APPLICATIONS

Quality analysis, experimental development, and optimization of speech communication with emergency call in-vehicle systems in accordance with clause five of *GB/T 45314-2025: Road vehicles – Hands-free call and voice interaction performance requirements and test methods.*

DETAILS

Ensuring sufficient speech communication quality at both ends of an emergency call is vital. GB/T 45314-2025 verifies elemental as well as advanced quality criteria for in-vehicle hands-free communication in case of an emergency. Testing according to GB/T 45314-2025 includes integrated eCall in-vehicle systems as well as aftermarket eCall kits.

DESCRIPTION

General

The ACQUA standard GB/T 45314 eCall provides an implementation of measurements and requirements to verify compliance of audio performance according to GB/T 45314-2025 (Clause 5) for narrowband and wideband speech transmission. All speech signals used in acoustic measurements are in Chinese language.

Structure

The ACQUA standard consists of one ACQUA project. It includes measurements and analyses for eCall systems which are capable of processing narrowband signals and/or wideband signals. The project provides measurements and analyses for assessing test results according to the requirements from GB/T 45314-2025 (Clause 5).

Equipment

Applying the ACQUA standard GB/T 45314 eCall includes various equipment which is mostly provided by HEAD acoustics. This equipment comprises, among others, operating software (ACQUA), a background noise simulation system (3PASS *flex*), sophisticated analysis methods (ABLE, Double Talk), as well as hardware devices (*lab*CORE, HMS II.3). The measurement equipment is complemented by third-party equipment (pressure-field microphone, radio communication tester).

DATABASE CONTENTS

GB/T 45314 eCall consists of measurements and requirements for the analysis of:

- Delay
- Loudness rating
- Frequency response
- Idle channel noise
- Echo attenuation
- Switching characteristics
- Double Talk performance

› Background noise transmission
  » Changes in loudness rating
  » Silent call performance
  » Listening effort (optional)

GB/T 45314 eCall consists of additional useful measurements:
› Delay and speech quality for packet-switched connections

OPTIONS

ACOPT 37 (Code 6869)
› Option ABLE – Assessment of Binaural Listening Effort according to ETSI TS 103 558

*core*IP-IMP (Code 7771)
› *lab*CORE VoIP impairment option (*core*IP module required)

ACOPT 30 (Code 6857)
› Option POLQA

HRR I (Code 6597)
› HEAD acoustics Rotating Reflector

RELEASE NOTES

Database revision and specification version		
Database revision	**Based on specification**	**ACQUA version**
Revision 01	GB/T 45314-2025, Clause 5	at least 6.2.100

SCOPE OF DELIVERY

GB/T 45314 eCall (Code 60070)
› delivered as ACQUA database backup
V2C File
› License file for ACQUA dongle
Revision history
› PDF file
Background noise test signals (*.dat)

GENERAL REQUIREMENTS

Hardware Platform

*lab*CORE (Code 7700)
› Modular multi-channel hardware platform
*core*BUS (Code 7710)
› *lab*CORE I/O bus mainboard
*core*OUT-Amp2 (Code 7720)
› *lab*CORE power amplifier board
*core*IN-Mic4 (Code 7730)
› *lab*CORE microphone input board
*core*BEQ (Code 7740)
› *lab*CORE binaural equalization, incl. filter set for one artificial head (delivered with *lab*CORE)

Head and Torso Simulator

One of the following Head Measurement Systems:

HMS II.3
› HMS II.3 (Code 1703)
  » Head Measurement System, basic version with right ear simulator, 3.3 pinna, and artificial mouth
› HIS L (Code 1701)
  » Head Impedance Simulator, left
HMS II.3 LN
› HMS II.3 LN (Code 1703.1)
  » Head Measurement System, low-noise version with right ear simulator, 3.3 pinna, and artificial mouth
› HIS L LN (Code 1701.1)
  » Head Impedance Simulator, left, low-noise version
HMS II.3 LN HEC
› HMS II.3 LN HEC (Code 1703.2)
  » Head Measurement System, low-noise version with human-like ear canal simulator right and artificial mouth
› HIS L LN HEC (Code 1701.2)
  » Head Impedance Simulator, left, low noise, human-like ear canal version

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GENERAL REQUIREMENTS

HMS II.6

› HMS II.6 (Code 1706)[1]
  » Head Measurement System, with artificial mouth and free-field microphones (left and right)

Network Simulation

Radio communication tester (third-party equipment)

*lab*CORE requirements for using VoIP:

› *core*IP (Code 7770)
  » I/O module, Voice over IP reference gateway
› *core*IP-AMR (Code 7772)
  » *lab*CORE VoIP AMR codec option (*core*IP module required)
› *core*IP-EVS (Code 7773)
  » *lab*CORE VoIP EVS codec option (*core*IP module required), only applicable for LTE/4G or NR/5G

Reference Microphone

Measurement microphone (third-party equipment)

› 200 V polarization, LEMO 7-pin (1B), pressure field

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

Background Noise Simulation

3PASS *flex* (Code 6995)

› Advanced background noise simulation system with automated equalization – flex version

Echo During Double Talk

ACOPT 32 (Code 6859)

› Option Speech-based Double Talk analysis

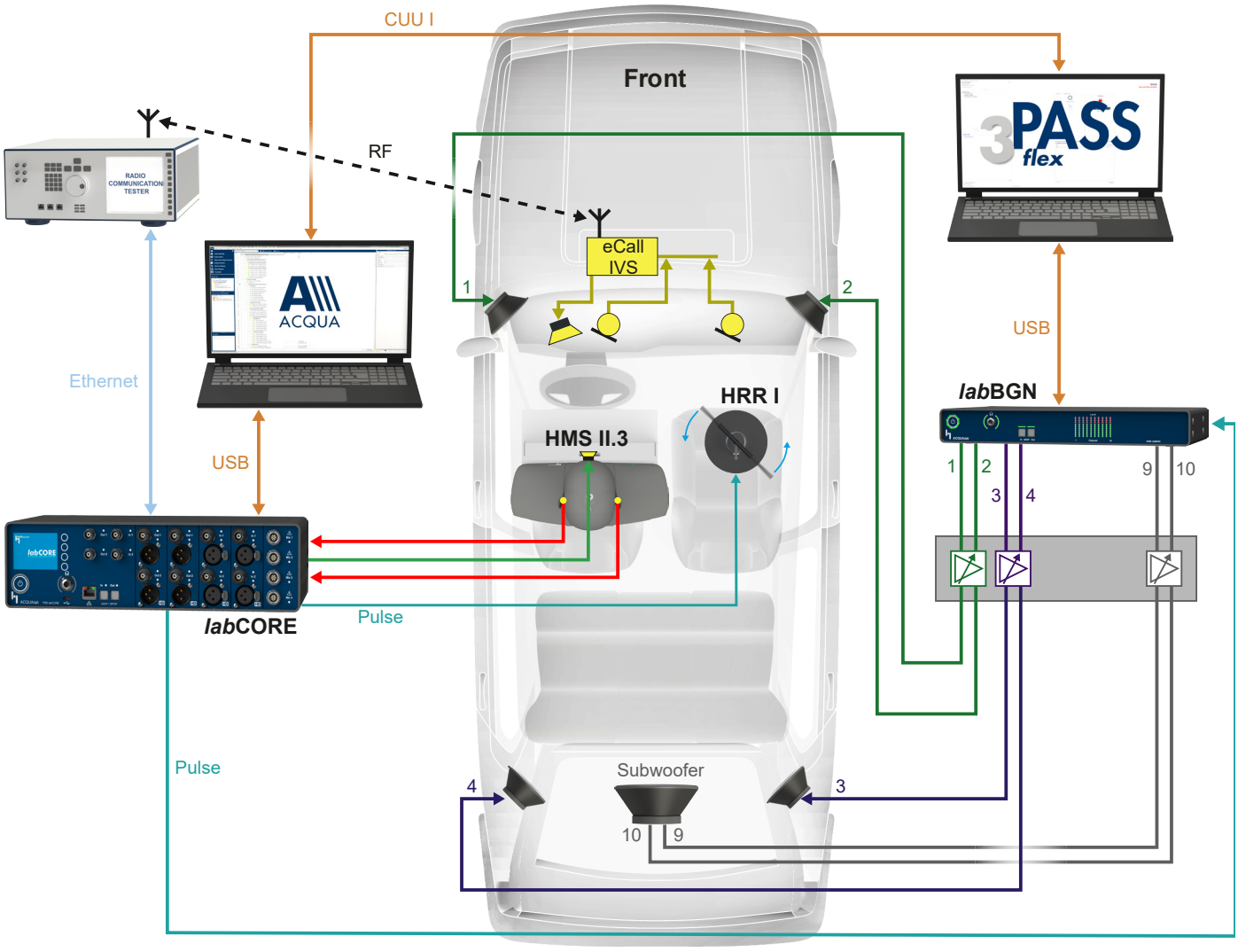
1 GB/T 45314-2025 specifies the usage of a head-and-torso simulator (HATS) according to Recommendation ITU-T P.58, which needs to be equipped with artificial ears according to Recommendation ITU-T P.57. However, for measurements of far-field scenarios, only the corresponding equalization (e.g., FF or DF) according to Recommendation ITU-T P.58 is relevant for comparable test results and HMS II.6 can be considered as compliant for testing of GB/T 45314-2025.

IN PRACTICE

APPLICATION EXAMPLE

Measurement Configuration

The device under test is a car with an eCall in-vehicle system (IVS). A radio communication tester establishes the RF connection to the eCall IVS. *lab*CORE and ACQUA distribute and receive signals for the measurements. HMS II.3 simulates the user conducting a hands-free emergency call. HRR I provides a time-variant echo path for the respective measurements. 3PASS *flex* simulates background noise. ACQUA automatically triggers background noise playback via *lab*CORE for synchronized and repeatable measurements.



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