

DATA SHEET

UG P.1140-WB (Code 60044)

ITU-T P.1140, Emergency Call (eCall) Devices, Extension Wide- band

Overview

In the event of a car accident, emergency call systems automatically trigger a hands-free call to an emergency call center. To ensure optimal call quality between car and response service, the ITU-T specified comprehensive test methods for hands-free emergency calls originating from vehicles in Recommendation ITU-T P.1140. HEAD acoustics implemented the included methods for wideband (WB) communication in the measurement standard UG P.1140-WB. Recommendation ITU-T P.1140 currently is the only globally accepted standard for eCall system functionality and quality. By qualifying and optimizing their emergency call systems and devices for compliance with P.1140, manufacturers and suppliers of the automotive industry ensure that their products comply with a reference standard that is recognized worldwide.

Description

Ensuring proper communication quality at both ends of an emergency call can be vital. Recommendation ITU-T P.1140 verifies elemental and also advanced quality criteria for in-vehicle hands-free communication in case of an emergency. Where applicable, measurements are based on proven test methods laid out in Recommendations P.501, P.502, P.340 and P.1100 of ITU-T.

Testing according to P.1140 includes complete systems and single devices of built-in eCall systems as well as aftermarket eCall kits. The release in force is version 03/2017.

HEAD acoustics implemented the wideband (WB) part of the tests laid out in the standard in the automated test suite UG P.1140-WB. When combined with P.1140-NB (Code 60038), systems and devices can be tested as laid out in ITU-T P.1140 (03/2017) in narrowband (NB) and wideband (WB).

Recommendation ITU-T P.1140 contains tests for the analysis of:

- Delay
- Loudness ratings
- Variation of Receive Loudness Rating in the presence of background noise
- Frequency responses
- Idle channel noise

- Echo attenuation
- Switching characteristics
- Double talk performance
- Background noise transmission ("silent call")

For testing under lifelike conditions, some measurements in P.1140 are performed in the presence of background noise. To ensure full repeatability, the test suite synchronizes playback of background noise with the measurements. An HMS artificial head system simulates the vehicle occupant conducting a hands-free emergency call. The background noise of typical driving situations is simulated via HAE-car or the more advanced 3PASS flex.

As testing is performed under laboratory conditions with a stationary car, UG P.1140-WB allows fast and convenient testing and optimization of wideband in-vehicle emergency call systems for compliance with the ITU-T Recommendation.

Key Features

- Complete implementation of wideband part of Recommendation ITU-T P.1140 as automated test suite
- P.1140 is the only globally published standard for eCall quality testing
- Full repeatability of all tests due to triggered background noise simulation

Applications

- Automated quality analysis, experimental development and optimization of in-vehicle emergency call systems in accordance with
 - Recommendation ITU-T P.1140 (03/2017) (WB part)

Overview of database revision and specification version

Database Revision	Based on Specification Version	Min. ACQUA Version
Rev. 1, Service pack 2	Recommendation ITU-T P.1140 (03/2017), wideband (WB) part	4.0.200 with Update 1 & 2

General requirements

Software

- **ACQUA**, communication analysis system as one of the following variants:
 - Full-license (Code 6810)
 - Workplace (Code 6830, for post-analysis and documentation only)
 - Compact system (Code 6860)
- **ACOPT 32 (Code 6859)**, Speech-based double talk analysis
- **P.1140-NB (Code 60038)**, ITU-T P.1140, Emergency Call (eCall) devices, narrowband part

Hardware

- **labCORE (Code 7700)**, modular multi-channel hardware platform with labCORE modules:
 - **coreBUS (Code 7710)**, I/O bus mainboard
 - **coreOUT-Amp2 (Code 7720)**, power amplifier output module (two channels)
 - **coreIN-Mic4 (Code 7730)**, microphone input module, (four channels)
 - **coreBEQ (Code 7740)**, binaural equalization
 - One of the following **HMS Measurement Systems**
 - **HMS II.3-33 (Code 1230.1)**, HEAD Measurement System, basic version with 3.3 Pinna, right ear simulator & artificial mouth with
 - **HIS L (Code 1231)**, HEAD Impedance Simulator, left, for HMS II.3/4/5
 - or
 - **HMS II.3-LN (Code 1230.3)**, HEAD Measurement System, low-noise version with 3.3 Pinna, right ear simulator & artificial mouth (based on IEC 60318-4, low-noise, high dynamics)with
 - **HIS L-LN (Code 1231.3)**, HEAD Impedance Simulator, left, for HMS II.3/4/5
- One of the following **background noise simulation systems**
 - **HAE-car (Code 6971)**, background noise simulation system for car cabins with semi-automated equalization
- or
- **3PASS flex (Code 6995)**, Advanced background noise simulation system with automated equalization - flex version

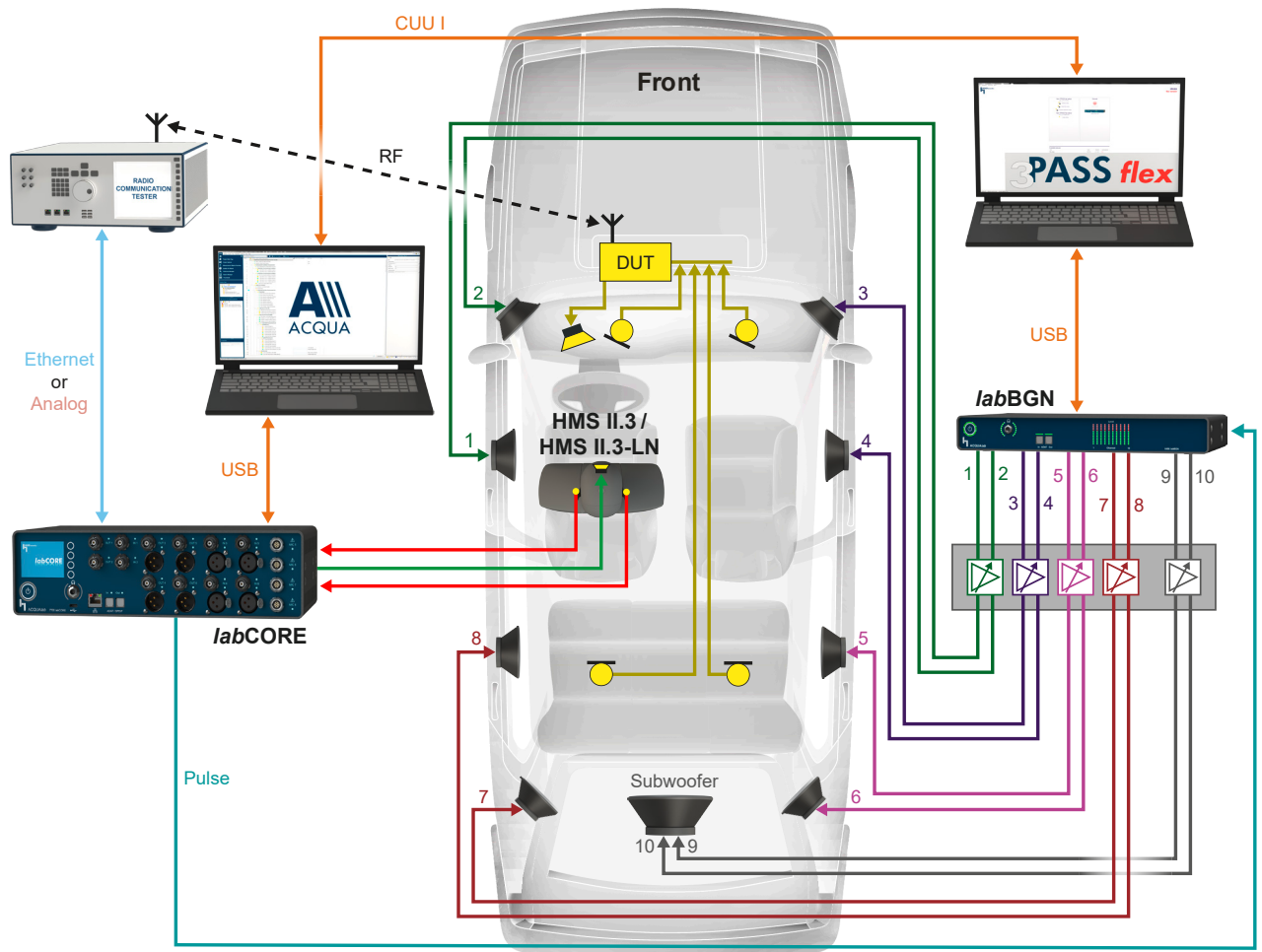
Overview of SMDs in UG P.1140-WB

SMD Title	In-vehicle Emergency Call (eCall) Systems Wideband Setup
DUT delay in SND, RCV, echo direction	•
Loudness rating	SND, RCV
Variation of loudness rating in the presence of background noise	RCV
Frequency response	SND, RCV
Idle channel noise	SND, RCV
TCLw	•
Temporal stability of echo signals attenuation	•
Echo performance with time variant echo path and speech	•
Activation	SND
Silent call performance (with background noise)	SND
Attenuation range in double talk mode	SND, RCV
Attenuation of echo signals in double talk mode	•

- **PSB III (Code 6001)**, Pulse Splitter Box, with connection cables (2 x CXX II.3) and power supply unit (only for use with HAE-car).
- **Radio Communication Tester** (not delivered by HEAD acoustics)

Delivery items

- **UG P.1140-WB (Code 60044)**, as ACQUA database
- **DAT files** with background noise recordings (for import in HAE-car)
- **V2C file** (for ACQUA)



Exemplary test configuration for compliance testing according to Recommendation ITU-T P.11140 (03/2017). The device under test is a car with a built-in eCall system. A radio communication tester establishes the RF

connection to the head unit, HMS II.3 (or its low-noise variant HMS II.3-LN) simulate the user conducting a hands-free emergency call. Background noise is simulated via 3PASS flex. In collaboration, labCORE and ACQUA gene-

rate, send and receive signals and automatically trigger background noise playback for precise synchronization