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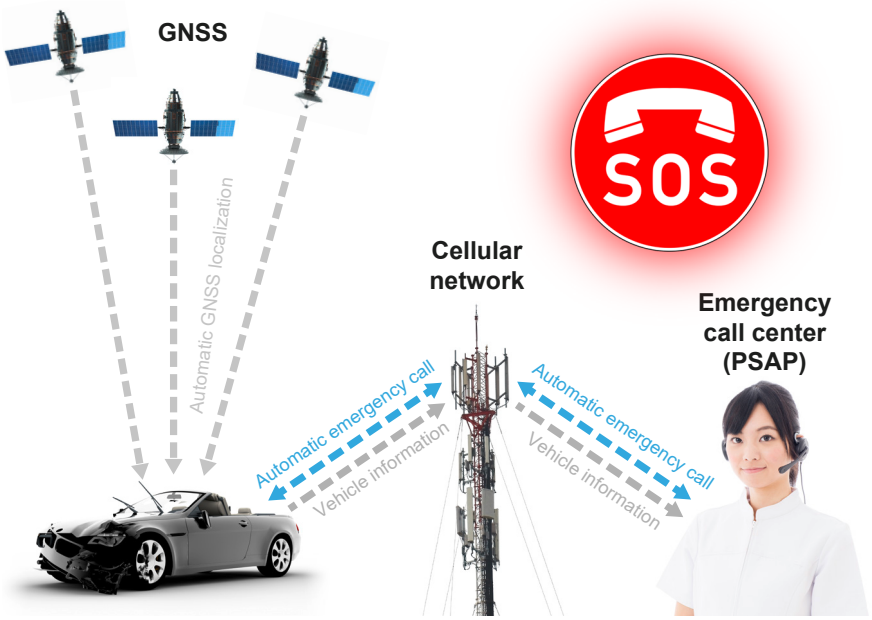
Data Sheet

GOST 33468-NB (Code 60030)

GOST 33468 (ERA-GLONASS), Emergency Call (eCall) Devices, Narrowband Part



Overview

In the event of a car accident, emergency call systems trigger an automatic hands-free call to an emergency call center. To ensure optimal call quality between car and response service, the EASC specified comprehensive test methods for hands-free emergency calls in the standard GOST 33468-2015. HEAD acoustics implemented these methods for narrowband communication in the measurement standard GOST 33468-NB.

Special emphasis lays on full repeatability of all test scenarios including recordings for auditive tests. As such, GOST 33468-NB allows manufacturers and suppliers of the automotive industry to easily qualify and optimize their emergency call systems for compliance with the EASC standard.

Key Features

- Complete implementation of EASC standard GOST 33468-2015 in convenient, automated test suite
- Extensive auditive testing with recorded results for later "offline" evaluation
- 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 EASC standard GOST 33468-2015

Description

GOST 33468-2015 is administered by EASC, the Euro-Asian Council for Standardization, Metrology and Certification (formerly ISC). The standard verifies elemental as well as advanced quality criteria for in-vehicle hands-free communication in case of an emergency. It contains tests for the analysis of:

- Single-talk speech transmission quality in sending and receiving direction
- Echo attenuation
- Delay
- Double talk performance
- Quality of background noise transmission

In terms of acoustic scenarios inside and outside of the vehicle, GOST 33468-2015 contains combinations of the following factors to create lifelike emergency call situations:

- Vehicle engine (on / off)
- Vehicle velocity (0 / 60 / 120 km/h)
- Vehicle windows (open / closed)
- Vehicle A/C fan noise (off / low / medium)
- Vehicle environment (inner city traffic, highway traffic)
- Talker location in the car cabin (driver seat, passenger seat, rear seat)
- Talker speech level (incl. Lombard effect)

Some measurements are based on test methods laid out in ITU-T Recommendation P.1100 for speech quality assessment of narrowband car hands-free terminals.

The HEAD acoustics implementation of EASC standard GOST 33468-2015 offers fully reproducible test conditions. 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. Tests are fully synchronized to repeat any scenario accurately. As testing is performed in laboratory conditions with a stationary car, GOST 33468-NB allows fast and convenient testing and optimization of in-vehicle emergency call systems for compliance with the EASC Standard.

Another important aspect of GOST 33468-2015 are its mandatory auditive tests. After optimizing the eCall system with instrumental methods, auditive third-party listening tests (TPLT) serve to verify system performance in various close-to-life eCall scenarios. GOST 33468-NB takes an advanced approach on TPLTs based on pre-recorded conversations between the vehicle occupant and the emergency call center dispatcher. The recordings can then be evaluated by arbitrarily large groups of test persons to judge all aspects of communication quality.

Upon customer request, the vehicle's eCall system can also be tested according to GOST R 55531-2013.

Overview of database revision and specification version

Database Revision	Based on Specification Version	Min. ACQUA Version
4	EASC Standard GOST 33468-2015	4.0.40

(Older releases are available upon request)

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 09 (Code 6819)**, option SLVM P.56
- **HAE-car (Code 6971)**, automated equalization for background noise simulation in car cabins

Hardware

- ***lab*CORE* (Code 7700)**, modular multi-channel hardware platform with *lab*CORE modules:
  - ***core*BUS (Code 7710)**, I/O bus mainboard
  - ***core*OUT-Amp2 (Code 7720)**, power amplifier output module (two channels)
  - ***core*IN-Mic4 (Code 7730)**, microphone input module, (four channels)
  - ***core*BEQ (Code 7740)**, binaural equalization
- One of the following **HMS Head and Torso Simulators**:
  - **HMS II.3 (Code 1230)**, Head and Torso Simulator (HATS) according to ITU-T P.57 and P.58 with pinna type 3.3 or 3.4. **Note:** additional left ear simulator (HIS L, Code 1231) required for binaural headset measurements.

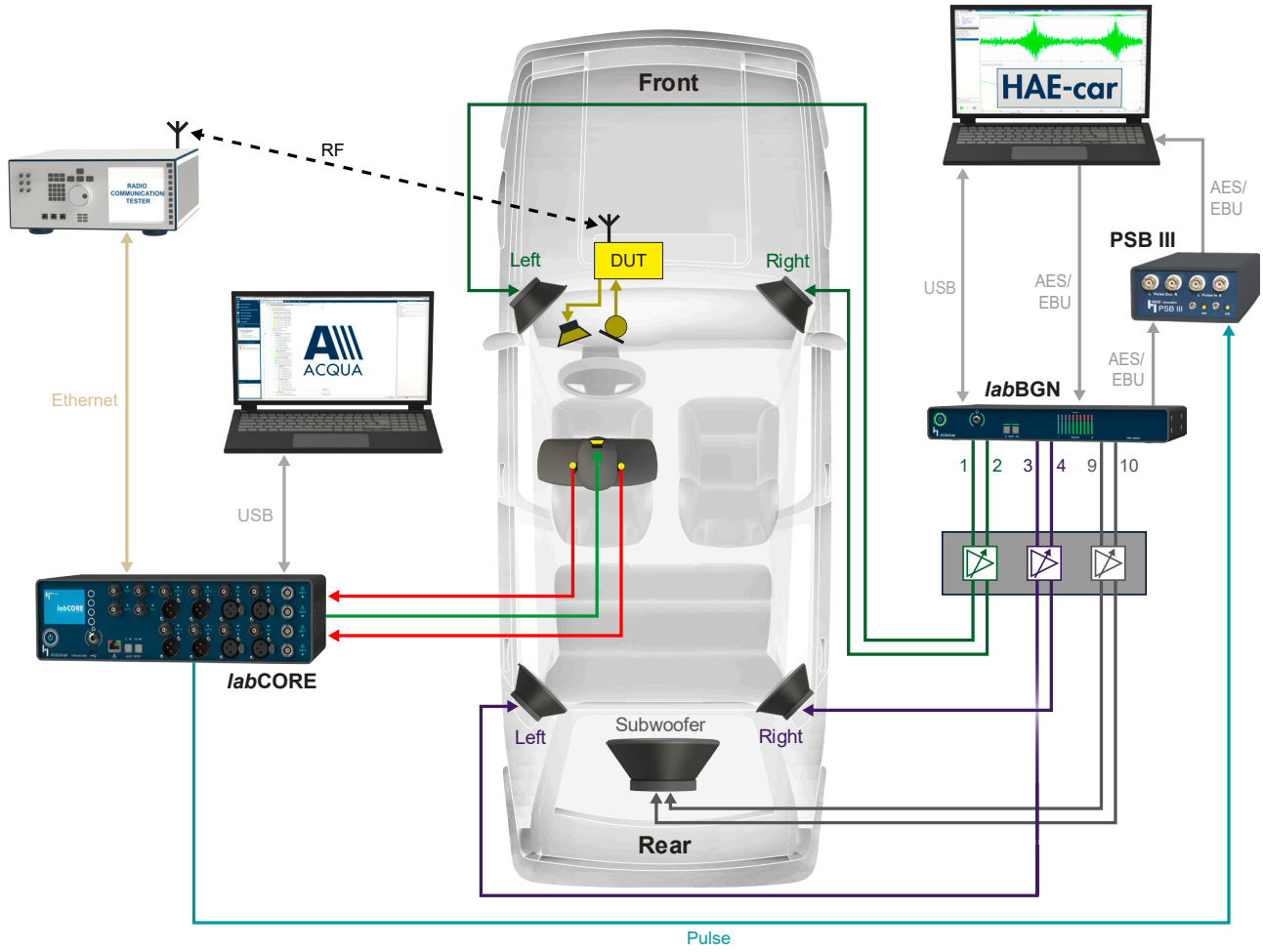
  or
  - **HMS II.6 (Code 1389)**, with artificial mouth and free-field microphones
- **Calibrated playback system**:
  - **labO2-V1 (Code 3731-V1)**, HEADlab 2-channel output module, rackmount type

  or
  - **labP2-V1 (Code 3732-V1)**, HEADlab 2-channel playback module, labBGN housing

  with headphone:
  - **HD IV.1 (Code 2380)**, Dynamic Headphone for labP2, PEQ V, HDA IV,SQuadriga II and III, SQobold

  or
  - **HD IV.2 (Code 2481)**, Dynamic Headphone for labP2, PEQ V, HDA IV,SQuadriga II and III, SQobold
- **Radio Communication Tester** (not delivered by HEAD acoustics)

Overview of SMDs in GOST 33468-NB	
SMD Title	**In-vehicle Emergency Call Systems Narrowband Setup**
DUT delay in SND, RCV, echo direction	•
Loudness rating	SND, RCV
Loudness rating deviation	SND, RCV
Frequency response	SND, RCV
Noise level	SND, RCV
Suppression of out-of-band signals	SND, RCV
Distortion	SND, RCV
TCLw	•
Temporal stability of echo signals attenuation	•
Spectral echo attenuation	•
Initial convergence of AEC in silence	•
Initial convergence of AEC in presence of noise	•
Echo signal loss depending on echo path changes	•
Activation	SND, RCV
Attenuation in half-duplex-mode	SND, RCV
Operation in acoustic noise conditions	SND, RCV
Background noise after connection	•
Attenuation range in double talk mode	SND, RCV
Attenuation of echo signals in double talk mode	•
Attenuation in transmit channel in double talk mode (additional test)	•
Quality of background noise transmission in case of near-end subscriber speech	•
Quality of background noise transmission in case of far-end subscriber speech	•
Quality of background noise transmission using “comfort noise for pauses”	•
Auditive quality assessment of IVS loudspeaker communication based on reference recordings	SND, RCV
SMD Title	**Useful Measurements**
Useful measurement - Loudness rating P.1140	SND, RCV
Useful measurement - MOS-LQO (TMOS) DVNB	SND, RCV
SMD Title	**Microphone Measurement Setup**
Microphone sensitivity	•
Microphone frequency response	•
Microphone distortion	•
Maximum sound pressure level	•
Microphone self noise	•
Spatial selectivity	•
Microphone sensitivity in vehicle compartment	•
Frequency Response of microphone in vehicle compartment	•
Microphone SNR improvement (directional properties)	•



Exemplary configuration with *lab*CORE* and HMS II.3 in driver position of the tested vehicle

Options

- **UG GOST 33468-NB (Code 60031)**, upgrade from P.1100 (Code 6797) to GOST 33468-NB
- **UG GOST 33468-WB (Code 60032)**, upgrade to wideband extension, requires Code 60030 or 60031
- **ACOPT 10 (Code 6820)**, option TOSQA, only for "useful measurements"

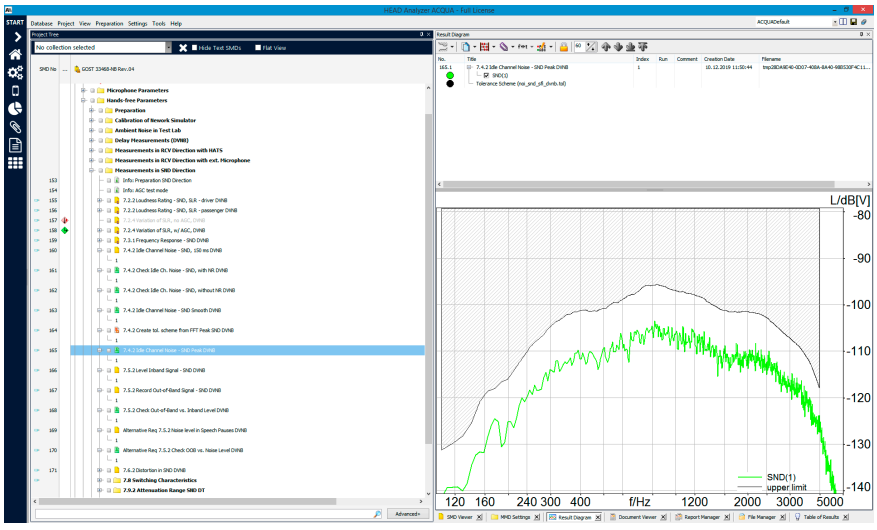
For generation of test signals in receiving direction for subjective (auditive) evaluation, TNC (Time-synchronous Noise Compensation) is highly recommended. For TNC, the following additional components are required:

- One of the following **front-ends**, each with BHS and ICP microphone
  - **SQuadriga III (Code 3324)**, Handheld 8-channel front-end

  or
  - **SQobold (Code 3302)**, Handheld 4-channel front-end,incl. bag, power supply
- **PSB III (Code 6001)**, Pulse Splitter Box, with connection cables (2 x CXX II.3) and power supply unit
  Note: Only for use with HAE-car.

Delivery items

- **GOST 33468-NB (Code 60030)**, as ACQUA database
- **DAT files** with background noise recordings (for import in HAE-car)
- **V2C file** (for ACQUA)
- **Documentation** as PDF



Measurement tree and result diagram for GOST 33468-NB in ACQUA

*The measurement setup with *lab*CORE as a hardware platform for GOST 33468-NB is in validation by Russian authorities.