Need for addition of an objective test procedure for post-crash testing and improvement in currently described subjective HF audio assessment procedure

1. Proposal for test setup description for a subjective post-crash assessment of HF audio performance (Annex 9, Appendix II and III)

Current procedure described in Annex 9, Appendix II and III does not include test setup description and cannot ensure repeatable results

The following text is proposed:

"Subjective post-crash assessment of HF audio performance shall be made by Third Party Listening Tests based on binaural recordings according to ITU-T P.832. Subjects judge the quality of conversational recordings made using a pair of diffuse field equalized HATS and reproduced by equalized headphones, as third-party listeners, in the role of observers of the conversation.

Recording of the conversation is carried out with one HATS positioned in the vehicle. The AECD / AECS shall be connected to a network simulation to be independent of network coverage.

Subjects judge listening examples, which are recorded at the acoustic interface both in the vehicle and on the far end side.

Speech material

Speech recordings for PSAP side are carried out in quiet environment using an omnidirectional measurement microphone positioned close to the talkers' mouth.

One male voice is used to simulate the PSAP side. The speech signal is narrowband filtered (200 Hz to 3.4 kHz) and applied with -16 dB_{m0} ASL according to ITU-T P.56 at the POI of the system simulator.

Drivers' voice shall include one male and one female voice.

Recording procedure

The AECD/AECS is connected to the mobile network simulator during the recordings in order to be independent of network influences.

The HATS in the vehicle is positioned on the drivers' respectively co-drivers' seat.

The second HATS, simulating the PSAP operator on the far end side, uses a handset mounted with 8N application force to the type 3.3 artificial ear according to ITU-T P.57. The handset terminal shall be connected to the mobile network simulator to best reproduce a connected PSAP PBX.

The test setup and the used equipment shall be documented in order to guarantee reproducibility.

Alternatively the characteristics of the PSAP terminal on far end side can be simulated by measured impulse responses (RLR, Receiving Frequency Response, STMR, sidetone frequency response), assuming linear and time-invariant transmission characteristics.

The PSAP terminal handset shall comply with the following:

- test signal level of -16 dB_{m0} ASL according to ITU-T P.56 at the POI of the system simulator implicitly simulates a terminal with SLR in the range of 8 dB ± 3 dB.
- RLR 2 dB ± 3 dB.
- STMR 16 dB ± 4 dB.

The conversation shall be applied as test signal:

- Drivers' voice is played back via the artificial mouth of the HATS in the vehicle.
- PSAP voice is applied at the POI of the system simulator (narrowband filtered (200 Hz to 3.4 kHz), -16 dB_{m0} ASL)."

2. Proposal for an objective P.1140 based procedure to assess the AECD/AECS system post-crash performance to be included in chapter 16.5 of AECS-02-02-Rev.7

This section is proposed to be inserted in chapter 16.5 of the main body AECS-02-02-Rev.6:

"The post-crash performance of the AECD/AECS system is verified based on selected tests form Recommendation ITU-T P.1140. The test setup is according to ITU-T P.1140. The HATS (head and torso simulator) as described in Recommendation ITU-T P.1140 may be replaced by a simplified test setup as described in section 6.3.2 of Recommendation ITU-T P.313. Instead of a HATS an artificial mouth conforming to Recommendation P.51 and a separate free-field microphone can be used. The artificial mouth is positioned with the lip plane at the location of the HATS lip plane. The free-field microphone is positioned in the middle above the artificial mouth at the height of the artificial ears of the HATS.

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To confirm sufficient operation of the AECD/AECS system the following tests form Recommendation ITU-T P.1140 are conducted:

Section 8.3: Loudness Ratings

The nominal loudness ratings SLR and RLR at the drivers' position are verified. Care should be taken to ensure a sufficient low background noise level during the tests. Guidance on background noise levels is available in Recommendation P.1140.

Section 8.5: Sensitivity frequency responses

The sensitivity responses are determined in send and receive."