

# OICA Comments to AECS-02-02-Rev. 08

## I. Comments related to consistency of Rev. 08

### Par. 7.6 Resistance impact

The AECD shall remain operational after impact. This shall be demonstrated according to Annex 7 and a verification of the MSD and HMI functionality according to test method 1, 2 or 3 of Annex 9, ~~paragraphs 1 (MSD emission), paragraph 2 (MSD emission assessment) and paragraph 5.2 (status indication).~~

### 16.5. Hands-free audio performance

The AECS shall provide sufficient voice intelligibility for the vehicle driver.

Subject to paragraph 1.4a, this shall be demonstrated as follows:

Pre-crash voice intelligibility shall be demonstrated **either**

by proving compliance with ITU-T P.1140 06/15 in a vehicle prior to conducting any of the tests according to Regulations No.94 and No.95.

**AECS compliance shall be checked based on ITU-T P.1140 06/15 with the following additions to paras 8.8.1. and 8.8.3. of this ITU Standard:**

- a. **TCLw: TCLw should be at least 46 dB for all settings of the AGC which has to be verified by the manufacturer of the IVS system. During testing the maximum setting of the volume control cannot be reliably determined due to activated AGC. Therefore, the test is conducted with nominal system setting in quiet as described in chapter 8.8.1 of ITU-T P.1140 06/15.**
- b. **Echo performance with time variant echo path and speech: Note that for some vehicles, opening and closing the door may lead to unwanted acoustic warning signals during the measurement, which may impact the test. In such event the test is conducted by positioning a person on the co-driver's seat, who is quietly moving the inboard arm (e.g. left arm for left-hand drive vehicles) up and down during the measurement (according to Paragraph 8.8.3. of ITU-T P.1140 06/15).**

The compliance with ITU-T P.1140 shall apply as follow:

- o Paragraphs XXX: shall not apply
- o Paragraph YYY: 15dB instead of 6dB
- o Etc...

Or,

- o **by subjective testing in accordance with paragraph 16.5.1 before performing tests according to Regulations No.94 and No.95,**

Post-crash voice intelligibility shall be demonstrated either

- o ~~by compliance with certain (TBD) sections of P1140, or~~
- o by subjective testing in accordance with paragraph 16.5.1 after performing tests according to Regulations No.94 and No.95.

### Par. 26.3.3.1

Crash Control Unit	Internal failure	If not in good condition, then the automatic <del>Ecall</del> <b>emergency call</b> is not possible. If CCU internal failure verification is not part of AECS approval (Part II), then it must be subject to AECD approval (Part I)
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## II. Proposal related to the addition of a component based AECD approval

### Par. 3.1

3.1 “AECD (Accident Emergency Call Device)” means a unit or a set of units performing at least **one of** the following functions;

- receiving and/or generating the automatic and manual triggering signals,
  - sending the data.
  - receiving or determining the vehicle location,
  - providing a warning signal
  - allowing bidirectional audio signals for voice communication;
- ~~unless specified otherwise in this regulation.~~

#### Justification/explanation:

- We can assume that a device can have various configurations
  - “One box” device that has all emergency call functions on board
  - “Semi-integrated” device that does not perform all the functions and makes use of other vehicle systems (audio, navigation, warning signal)
  - “individual” components that performs at least one emergency call related function
    - e.g. MNO antenna
    - e.g. power supply
    - e.g. control unit
- This assumption would allow suppliers that provide components for use in emergency call systems to perform the relevant test under their responsibility and offer these components as AECD approved devices to Manufacturers

### Par. 6.

6. Approval

6.1 If the samples submitted for approval meet the requirements of par. 7 that are relevant to available functions on the device, approval of the pertinent type of AECD shall be granted

The tests and verifications covered by this approval shall be clearly indicated in the communication document

7. General: sending MSD and voice connection

7.1 EMC

7.2 Position determination (& Annex 8)

7.3 Means of access to MNO

7.4 AECD information and warning signal

7.5 Power supply

7.6 Resistance to impact (& Annex 7)

#### Further explanation to this part I

**Example 1:** If a power supply is presented for an approval as AECD:

- the applicable requirements should be at least resistance to impact with a functional check after the impact test (e.g. battery test)
- a power supply test still would have to be incorporated in the text as a post-sled test check
- Further power supply requirements (5-60-5) can be verified at vehicle installation level as foreseen in Par. 16.6.

**Example 2:** If a MNO antenna is presented for an approval as AECD the applicable requirement should be at least resistance to impact with a functional check after the impact test (e.g. VSWR measurement according to annex 9 par. xx).

### Par. 7.6

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7.6.3 In case the AECD application covers only one of the following components, the operation after impact shall be demonstrated as described in respectively Par. 7.6.4 and 7.6.5

7.6.4. Mobile network antenna including its connectors and wire harness as described in par. 7.6.1

This shall be demonstrated according Annex 7 followed by a measurement of the VSWR (Voltage Standing Wave Ratio) and verify that VSWR satisfies the specifications prescribed by the manufacturer for this antennas in the post-crash conditions of the test;

7.6.5. Power supply (if not part of the control module) including its connectors and wire harness<sup>2</sup>

This shall be demonstrated according Annex 7 followed by a verification that no cable connectors are unplugged during the event and a measurement if the voltage corresponds to the manufacturer's specification.

**Par. 15.1**

15.1 ...

Before granting approval for a vehicle type with regard to the installation of **one or more** AECD approved to Part I of this Regulation the competent authority shall ensure that the verifications not being part of **one of** the Part I approvals are included in the Part II approval. If in this case, the power supply other than back-up power supply is not covered in Part I according to paragraph 7.6.2., this shall be tested to Annex 7 for this Part. **Unnecessary duplication of tests and verifications shall be avoided.**

**Annex 1**

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13. requirements covered by this AECD approval

AECD	
Par. 7. (General)	yes/no
Par. 7.1 (EMC)	yes/no
Par. 7.2 (Position determination)	yes/no
Par. 7.3 (Access to Mobile Network)	yes/no
Par. 7.4 (Information & warning signal)	yes/no
Par. 7.5 (Power Supply)	yes/no
Par. 7.6 (Resistance to impact)	yes/no

**Annex 2**

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13. List of AECD approval(s) subject to this AECS

..... (mention approval No)

14. requirements covered by this AECS and the AECD approval(s) that are part of this AECS

AECD		AECS	
Par. 7. (General)	and	Par. 16.1 (General)	yes/no
Par. 7.1 (EMC)			yes/no
Par. 7.2 (Position determination)	or	Par. 16.2 (Position determination)	yes/no
Par. 7.3 (Access to Mobile Network)			yes/no
		Par. 16.3 (Control)	yes/no
Par. 7.4 (Information & warning signal)	or	Par. 16.4 (Information & warning signal)	yes/no
		Par. 16.5 (Objective pre-crash Audio)	yes/no
Par. 7.5 (Power Supply)	or	Par. 16.6 (Power supply)	yes/no
Par. 7.6 (Resistance to impact)			yes/no

### III. Proposal related to the Annex 9 functional checks

#### 1. Table for pre- and post-crash testing

Test method	Pre-crash functional check	Post crash functional check
1	Not required	Functional check using over the air transmission for MSD and voice call via a real PLMN (public Land Mobile network).
2	Not required	Functional check using over the air transmission for MSD and voice call via a network simulator
3	Not required	Functional check using a wired connection to a network simulator
4	Not required	After impact move the vehicle to a shielded environment and functional check using over the air transmission for MSD and voice call via a network simulator
5	<p>Required to perform either:</p> <ul style="list-style-type: none"> <li>- Functional check using over the air transmission for MSD and voice call via a real PLMN (public Land Mobile network), or</li> <li>- Functional check using over the air transmission for MSD and voice call via a network simulator, or</li> <li>- Functional check using a wired connection to a network simulator</li> </ul> <p>For this specific procedure, the subjective voice intelligibility test method can be chosen, <del>with the rated performance at least "3" (appendix 3 to Annex 9), the objective test method can also be chosen at the demand of applicant.</del></p>	<p>Functional check using the HMI <b>(by checking the AECS information and warning signals) if in-vehicle AECD or AECS is capable of:</b></p> <ul style="list-style-type: none"> <li>- to discriminate a network failure (*) from an internal failure of the AECD Unit,</li> </ul> <p><del>The communication with GNSS and mobile networks and PSAP is deemed to be compliant if no failure warning is indicated by the HMI.]</del></p>

#### 2. ~~Pre-requisiterements~~ for test method 5 : This test method can be only used if the in-vehicle AECD/AECS is capable, ~~as justified through analytical design method such as ISO 26262:~~

- ~~a) to check and diagnose the electrical connections between all of the following devices :~~
- ~~\_\_\_\_\_ AECD control module~~
  - ~~\_\_\_\_\_ PLMN communication module + antenna~~
  - ~~\_\_\_\_\_ GNSS receiver + antenna~~
  - ~~\_\_\_\_\_ Power source (from vehicle or back-up source)~~
  - ~~\_\_\_\_\_ Warning/Information device (HMI)~~

~~Hand free audio equipment (microphone, speaker)~~

~~b) to discriminate a network failure from an internal failure of the AECS. The communication with GNSS and mobile networks and PSAP is deemed to be compliant if no internal failure warning is indicated by the vehicle HMI.]~~

- to check and diagnose the electrical connections between all of the devices listed in the table 3- § 16.4.3.1 or in the table 4 - §26.3.3.1 and the following devices :
  - Loud speaker
  - Microphone
  - Warning signal and Information signal devices
- to check and diagnose the status of the PLMN coverage
- to indicate by a visual or audible mean the status information for the following states :
  - AECS is operational
  - PLMN availability
  - Automatic trigger detection + Establishment of a connection with the PSAP
  - Connected to the PSAP + MSD sending
  - Voice communication with PSAP
  - End of normal call
  - Impossible to contact PSAP
- capable to establish an emergency call during the approval crash tests even if there is no mobile phone network coverage within the crash test area

3. The following tests shall be done for:

- the post-crash assessment of the AECS operation if using the test methods 1-4 listed in §1 of this annex,
- the pre-crash assessment of the AECS operation if using the test method listed 5 listed in §1of this annex,

~~3. [Pre-crash assessment of the AECS operation in case of test method 5 shall include the following:~~

3.1. The MSD emission assessment shall include the verification of at least the following:

3.1.1. Vehicle location data is transmitted ~~correctly~~, and

3.1.2. Time stamp is transmitted ~~correctly~~, and

3.1.3. Vehicle identification number is transmitted ~~correctly~~

3.2. The Hands-free voice communication assessment (subjective test) shall include verification of the following:

3.2.1. Voice originating inside the vehicle can be clearly heard by the remote listener with satisfactory intelligibility, and

3.2.2. Speech of the remote speaker can be clearly heard in the vehicle with satisfactory intelligibility

3.2.3. The language and sentence used for the test shall be one of those listed in appendix 2 to this Annex

3.2.4. The rated performance according to appendix 3 to this Annex shall, be at least “3”

To proceed the tests in this paragraph, the test methods as indicated in the table under the headers test method 5 and pre-crash can be used, at the choice of the applicant.]

~~4. Post-crash assessment of the AECS operation in case of test method 1, 2, 3 and 4 shall include the following:~~

~~4.1. The MSD emission assessment shall include the verification of at least the following:~~

~~4.1.1. Vehicle location data is transmitted correctly, and~~

~~4.1.2. Time stamp is transmitted correctly, and~~

~~4.1.3. Vehicle identification number is transmitted correctly~~

~~4.2. The Hands-free voice communication assessment (subjective test) shall include verification of the following:~~

~~4.2.1. Voice originating inside the vehicle can be clearly heard by the remote listener with satisfactory intelligibility, and~~

~~4.2.2. Speech of the remote speaker can be clearly heard in the vehicle with satisfactory intelligibility~~

~~4.2.3. The language and sentence used for the test shall be one of those listed in appendix 2 to this Annex~~

4.3. HMI operation assessment shall include a verification of the emergency call status indication operation. At least the following status shall be observed:

- system is processing (ecall is triggered, connection is being set up or data transmission is in progress or completed or voice call is in progress);
- transmission failed (connection failed or data transmission failed)

In agreement with the testing agency the manufacturer can choose to verify the HMI through a manual activation of the AECS.

4.4. In case of test method 3 additionally the following Mobile network antenna and Mobile network antenna wire check shall be carried out

- Measuring VSWR (Voltage Standing Wave Ratio) and verify that VSWR satisfies the specifications prescribed by the manufacturer for this antennas in the post-crash conditions of the test;
- Verify that no wire breakage or short-circuit of the antenna feed line occurred for that part of the wiring which is not included in the wired connection to the network simulator

~~5. [Post-crash assessment of the AECS operation in case of test method 5 shall include the following:~~

~~5.1 Verify that the AECS HMI indicates:~~

~~5.2 the HMI sequence defined by the manufacturer is conform~~

~~5.3 no AECS internal failure is shown by the HMI]~~

5. For test method 5 listed in par. 1 of this annex, the AECS operation shall include the following tests for the post-crash assessment

- 5.1. Before to proceed the crash tests, install inside the vehicle a mean of record the behavior of the warning and information signals during the crashes (R94 and/or R95).

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- ~~5.2. After the R94 or R95 crash, the Technical Service will check the recording of the warning and information signals to verify if the HMI sequence defined by the manufacturer is compliant.~~
- 5.3. A visual check will be done to verify the eventual damage on the audio devices (loud-speaker and the microphone), if visible. The PLMN antenna will be also verified if there is no PLMN coverage during crash test.
- 5.4. In the case of the audio devices are not easily visible, or if the audio devices show important damages, at the demand of the Technical Service, an additional subjective audio test should be done by test methods 1 to 4.

~~Annex 9, Appendix 1~~

~~**Verification of functional state of the in-vehicle system by functional transmission test with wired procedure**~~

~~(Delete this appendix)~~

Annex 9, appendix ~~2~~ 1