

## Regulation No. XXX

### UNIFORM PROVISIONS CONCERNING THE APPROVAL OF I EMERGENCY CALL DEVICES (AECD) II VEHICLES WITH REGARD TO THE INSTALLATION OF AN AECD OF AN APPROVED TYPE III VEHICLES WITH REGARD TO THEIR AECS

#### Contents

#### Preliminary comments from the Secretary of GRSG informal group on AECS

1. This document was produced by the informal group Secretary as a **working document**, for serving as a basis for discussions within the GRSG informal group on AECS. It is expected to evolve and improve along the discussions that will take place during the meetings of the informal group.
2. This document is an attempt to show the status of the discussions after the 6<sup>th</sup> meeting of the informal group.
3. For clarity, the proposal from RUS per document AECS-01-05 is not present in the document. This does not prevail the recognition of the RUS position by the informal group.
4. Basis of the document is AECS-02-02-r1e (Secretary), AECS-05-05e (OICA) and AECS-06-02-r1e (CLEPA).
5. The document reflects the main agreements and pending items of the informal group:
  - a. Main agreements:
    - i. Scope:
      1. Regulation to focus on “red” components (see document WP29-164-31)
      2. Exclusion of the vehicles not in the scope of UN R94 and R95 and not fitted with an automatic triggering system (detailed definition still pending)
    - ii. AECD (device) main test conditions
    - iii. Emergency call assessment limited to checking of hardware fitment
    - iv. Warning signal
    - v. Power supply in post-crash conditions
  - b. Main pending items
    - i. AECD sled test (resistance to high decelerations)
    - ii. Homologation procedure according to OICA proposal AECS-05-04
    - iii. GNSS provisions: full deletion vs. “if fitted” requirements for complete set of the 3 existing GNSS. This document endorses the option of “if fitted” requirements.
    - iv. Minimum Set of Data emission assessment
6. The document includes some proposals still under discussions as e.g. the OICA proposed three test procedures. This does not prevail the decision of the informal group with regard to these proposals.

## 1. Scope

1.1. This Regulation applies to:

- (a) Part I: the AECDs which are intended to be fitted to vehicles of categories M1 and N1<sup>1</sup>;
- (b) Part II: the installation on vehicles of categories M1 and N1<sup>1</sup> of AECDs which have been approved to Part I of this regulation.
- (c) Part III: vehicles of categories M1 and N1<sup>1</sup> with regard to their AECS or equipped with an AECD which has not been separately approved according to Part I of this Regulation.

1.2. Unless otherwise prescribed in this regulation, it does not apply to connectivity and communication to the mobile communication networks and the operation of PSAP.

1.3. Operational requirements, including, but not limited to, mechanism of data transmission, data exchange protocol, operation modes and conditions of transitions between such modes, performance of the test call and test data transfer, response to protocol commands received from infrastructure, network connectivity and registration logic are excluded from the scope of this regulation and shall be identified in the Contracting Parties' national regulations. AECD shall comply with aforementioned national regulations in regard of its functionality.

1.4.3. Vehicles in the scope of neither Regulation No. 94 nor Regulation No. 95 and not fitted with an automatic triggering system shall be excluded from the scope of this regulation.

### Part I: EMERGENCY CALL DEVICES (AECD)

## 2. Definitions

For the purposes of this Regulation:

- 2.1 “AECD (*Accident Emergency Call Device*)” means a device or a set of devices that at least :
- generates a communication toward emergency services if a vehicle suffers a serious road accident and provides two-way voice communication on existing mobile telephone communication networks; and
  - has the ability to provide the vehicle location using signals from (an) existing external-global navigation satellite system(s).
- 2.2 “*Global Navigation Satellite System receiver*” (“*GNSS receiver*”) means a component of an AECD designed to determine time, the coordinates-position and direction of the vehicle using signals from global navigation satellite systems; the GNSS receiver can be included in the AECD or in another external

<sup>1</sup> As defined in Section 2 of the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document TRANS/WP.29/78/Rev.2) – [www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html](http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html).

control unit, as long as the AECD ensure its ability to provide the vehicle location in case of an event.

- 2.3 “Satellite-Based Augmentation System” (SBAS) is a system ensuring the correction of local errors of GNSS systems due to interferences via a network of ground-based stations. (ex: EGNOS, WAAS, SDCM, QZSS)
- 2.4 “*Communications module*” means a component of an AECD designed for voice communication and to transmit data about an accident using terrestrial mobile telephone communications networks;
- 2.5 “*User interface*”, or “*HMI*”, means a component or function of an AECD designed to allow the user to interact with the device, including by receiving visual information, obtaining visual information and introducing control commands;
- 2.6 “*Control module*” means a component of an AECD designed to ensure the combined functioning of all components of the AECD;
- 2.7 “*Type of AECD*” means devices that do not differ in such essential respects as:
- (a) The manufacturer's trade name or mark;
  - (b) Their construction;
  - (c) Dimensions, structure and materials of the attachments and supports
- 2.8 “*Data exchange protocol*” means the set of rules and agreements that define the content, format, time parameters, sequence and error checks in messages exchanged between an AECD and the devices and/or information systems used for data transfer to / from ~~of~~ Public Service Answering Party (PSAP).
- 2.9 “*Public/Private Safety Answering Point (PSAP)*” means a call center responsible for answering calls to an emergency telephone call. It can be of two types
- Public Safety Answering Point managed by the public services of a Contracting Party to the 58 Agreement;
  - Private Safety Answering Point managed by a private company, working on behalf of the responsible authorities.

Commenté [EM1]: Inspired by Reg.80 clause 2.3.3

Commenté [EM2]: Inspired by CEN 16062 & 16072

### 3. Application for approval of an AECD

- 3.1 The application for approval of a type of AECD shall be submitted by the holder of the trade name or mark or by his duly accredited representative.
- 3.2 A model of the information document is given in Annex 1.
- 3.3 For each type of AECD, the application shall be accompanied by samples of complete sets of AECDs in sufficient quantities for the tests prescribed by this regulation. Additional specimens may be called for at the request of the technical service responsible for conducting the test.

### 4. Markings of an AECD

- 4.1 The samples of AECD submitted for approval shall bear the trade name or mark of the manufacturer. This marking shall figure at least on the unit or units containing the navigation system-GNSS receiver and communications module. It shall be clearly legible and be indelible.

- 4.2 The unit or units containing the ~~navigation system-GNSS~~ receiver and communications module shall possess a space large enough to accommodate the approval mark. This space shall be shown on the drawings referred to in Annex 1.

## 5. Approval

- 5.1 If the samples submitted for approval meet the requirements of paragraph 6 of this Regulation, approval of the pertinent type of AECD shall be granted.
- 5.2 An approval number shall be assigned to each type approved. The first two digits (at present 00) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another type of AECD.
- 5.3 Notice of approval or of refusal, or of extension or withdrawal of approval, or of production definitively discontinued of a type of AECD pursuant to this Regulation shall be communicated to the Parties to the Agreement which apply this Regulation by means of a form conforming to the model in annex 3 to this Regulation.
- 5.4 There shall be affixed, conspicuously and in the space referred to in paragraph 4.2 above, to every AECD conforming to a type approved under this Regulation, in addition to the mark prescribed in paragraph 4.1., an international approval mark conforming to the model given in annex 5, consisting of:
- 5.4.1 A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval;<sup>2</sup>
- 5.4.2 The number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in paragraph 5.4.1.
- 5.5 The approval mark shall be clearly legible and be indelible.

## 6. General requirements

- [6.1. The effectiveness of AECD shall not be adversely affected by magnetic or electrical fields. This requirement shall be met by ensuring compliance with Regulation No. 10.05]

6.2 ~~Reception and processing of navigation signals~~ Position determination

AECD shall be able to determine its position.

If AECD is fitted with GNSS receiver supporting at least three GNSS including GLONASS, Galileo and GPS, and is capable of reception and processing of SBAS signals, then AECD shall comply with the requirements of 6.2.1-6.2.5, and AECD compliance with respect to positioning capabilities shall be demonstrated by performing test methods described in Annex XX: Test methods for the navigation module.

6.2.1 Horizontal position error under open sky conditions and speed up to [140] km/h shall not exceed 15 m for 95% of the measurements done.

6.2.2 Horizontal position error in urban canyon conditions and speed up to [140] km/h shall not exceed 40 m for 95% of the measurements done.

6.2.3 Sensitivity at receiver input shall be:

- acquisition - at least minus 144 dBm

Commenté [EM3]: Based on preliminary discussion by GU, GSA, and CLEPA

- tracking: at least minus 155 dBm
- reacquisition - at least minus 150 dBm

6.2.4 Time to first fix shall not exceed

- 60 sec for signal level down to minus 130 dBm
- 300 sec for signal level down to minus 140 dBm

6.2.5 Re-acquisition time after block out of 60 sec at signal level down to minus 130 dBm shall not exceed 20 sec.

If AECD is not fitted with GNSS receiver supporting at least three GNSS including GLONASS, Galileo and GPS, and capable of reception and processing of SBAS signals, then AECD shall comply with the Contracting Party national regulation requirements.

The testing procedures in Annex 5 can be performed either on the AECD unit including post processing ability or directly on the GNSS ~~chipset~~receiver being a part of the AECD.

6.3 Mean of access to mobile networks

The AECD shall be fitted with an embedded hardware allowing registration/authentication on and access to the mobile network

AECD requirements in regard of its Communications module are excluded from the scope of this regulation. Communications module of the AECD shall comply with Contracting Parties' national regulations.

6.4 Base function and operation principles

The AECD shall send data and establish hands-free duplex voice connection with the PSAP.

If the sending of data failed then the AECD shall retry sending the data.

If the AECD has successfully sent the data and then loses the voice connection, it shall try to reestablish voice connection.

In case it was not possible to establish voice connection and/or send data using mobile communication networks, the AECD shall store the data in non-volatile memory and attempt re-transmission of the data and to establish a voice connection.

[Whenever, a third party emergency system is installed in the vehicle compliant with regional or national standards for private Ecall [e.g. for EU CEN 16102:2011 standard "Operating requirements for third party support" (TPS Ecall)], the driver has the free choice to use this system. It has to be ensured that there is only one system active at a time"].

6.5. AECD information and warning signal

The following provisions are applicable if the AECD warning signal verification is not part of the installation approval of an AECD in a vehicle per Part II of this regulation.

6.5.1. Information shall be provided regarding the status of the connection when the AECD is automatically or manually activated.

6.5.2. A warning signal shall be provided to the driver when the AECD is not functioning properly. Visual indication of the AECD malfunction shall be displayed at all times while ignition is turned on.

6.5.3. AECD Control

If the emergency call control assessment is not part of the installation approval of an AECD in a vehicle approval per Part II of this regulation, the emergency

call control assessment shall be conducted according to the procedure let down in Annex XXX, paragraph XXX

6.6. Power supply

The AECD shall be able to operate autonomously for a period of first not less than 5 minutes in voice communication (definition to be added – Qualcomm future email) mode followed by 60 minutes in call-back (definition to be added) mode and finally not less than 5 minutes in voice communication mode.

This capability is tested in following conditions:

- battery has to be fully charged at the time the test begins, at the discretion of the applicant;
- Ambient air temperature:  $(25 \pm 10)^{\circ}\text{C}$

6.7 Resistance to impact

The AECD shall remain operational after impact. This shall be demonstrated according to Annex 4.

6.8 Hands-free audio performance

The AECD should be capable of processing audio signals in such a way that, being installed in a vehicle, it is able to provide sufficient voice intelligibility for near and far listeners according to [Annex XXX] [P.Emergency ITU-T Recommendation]

**8. Modification and extension of approval of the type of AECD**

**9. Conformity of production**

**10. Penalties for non-conformity of production**

**11. Production definitively discontinued**

**12. Names and addresses of technical services responsible for conducting approval tests, and of administrative departments**

**Part II VEHICLES WITH REGARD TO THE INSTALLATION OF AN AECD OF AN APPROVED TYPE**

**12. Definitions**

For the purposes of this Regulation:

- 12.1. “*Type of vehicle*” with regard to its AECD means vehicles that do not differ in such essential respects as:
- (a) Their manufacturer’s trade name or mark;
  - (b) the type of their AECD
  - (c) vehicle features which significantly influence the performances of the AECD

- 12.2. “Safe Zone” means the zone limited by the safe zone borders and in which a fixed AECD is assumed to be safe from impact deterioration.
- 12.3. “Safe Zone borders” means the limits of the safe zone and are defined by
  - In X direction: Between two z-y planes coinciding with front axle and rear axle
  - In Y direction: Between the two z-x planes crossing the outer surface of the driver’s seat and crossing the outer surface of the outermost front passenger’s seat.
- 12.4. “Total permissible laden mass” means the vehicle technically permissible maximum mass stated by the manufacturer.
- 12.5. “R point” means a reference point defined for each seat by the manufacturer in relation to the vehicle’s structure, as indicated in Annex 6 to Regulation No.94
- 12.6. “Triggering signal” means a logic signal that requests MSD transmission.

**13. Application for approval of a vehicle type equipped with an AECD which has been approved to Part I of this regulation**

- 13.1. The application for approval of a vehicle type equipped with an AECD shall be submitted by the holder of the trade name or mark or by his duly accredited representative.
- 13.2. A model of the information document is given in Annex XXX.
- 13.3. For each vehicle type equipped with an AECD, the application shall be accompanied by samples of complete sets of vehicles in sufficient quantities for the tests prescribed by this regulation. Additional specimens may be called for at the request of the technical service responsible for conducting the test.

**14. Approval**

- 14.1. If the vehicle type submitted for approval pursuant to this Regulation meets the requirements of paragraph 15. below, approval of that vehicle type shall be granted.

Approval may be granted according to one of the approval procedures let down in Table 1:

Approval procedure	HMI	Triggering signal emission	Resistance to impact	GNSS and mobile communication
Procedure I	Paragraph 15.2. Paragraph 15.3.	Paragraph 16.1.1. Paragraph 16.1.2.	Paragraph 16.2.1. Paragraph 16.2.2.	Paragraph 16.3.1.
Procedure II				Paragraph 16.3.2.
		Paragraph 16.3.3.		
Procedure III	Paragraph 16.1.3.	Paragraph 16.2.3.	Paragraph 16.3.1.	
				Paragraph 16.3.2.
				Paragraph 16.3.3.

Table 1: approval procedures

Commenté [EM4]: This was not agreed to be a valid method. Decision to be made by the group.

- 14.2. An approval number shall be assigned to each type approved. The first two digits (at present 00) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue

of the approval. The same Contracting Party shall not assign the same number to another type of vehicle.

- 14.3 Notice of approval or of refusal, or of extension or withdrawal of approval, or of production definitively discontinued of a type of vehicle pursuant to this Regulation shall be communicated to the Parties to the Agreement which apply this Regulation by means of a form conforming to the model in annex 3 to this Regulation.
- 14.4 There shall be affixed, conspicuously and in the space referred to in paragraph 14.2 above, to every vehicle conforming to a type approved under this Regulation, in addition to the mark prescribed in paragraph 4.1., an international approval mark conforming to the model given in annex 5, consisting of:
- 14.4.1 A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval;
- 14.4.2 The number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in paragraph 14.4.1.
- 14.5 The approval mark shall be clearly legible and be indelible.

## 15. Requirements

- 15.1 General
- 15.1.1 The AECD installed in the vehicle shall be of a type approved under Part I of this Regulation.
- 15.1.2 The AECD shall be connected to the vehicle's on-board electrical network, so that the AECD functions in all the required modes, and the backup battery (if fitted) is charged.
- 15.1.3 The installation of the AECD shall be such to obtain:
- ~~Localisation accuracy-Positioning performance~~ as defined in paragraph 6.2. (~~Position determination Reception and processing of navigation signals~~)
  - ~~Access to mobile networks~~ as defined in paragraph 6.3. (Mean of access to mobile networks)
  - ~~Operation after vehicle collision, which shall tested as described in 15.1.4-15.1.6~~
- 15.1.4 Vehicles of category M1 shall be subject to the following:
- 15.1.4.1 Vehicles of category M1 with a total permissible laden mass less or equal to 2,5 tons and R-point height at or below 700 mm:
- 15.1.4.1.1 paragraphs 16.1.1. and 16.1.2., or paragraph 16.1.3.
- 15.1.4.1.2 paragraphs 16.2.1. and 16.2.2., or paragraph 16.2.3.
- 15.1.4.1.3 paragraph 16.3.
- 15.1.4.2 Vehicles of category M1 with a total permissible laden mass less or equal to 2,5 tons and R-point height above 700 mm:
- 15.1.4.2.1 paragraph 16.1.1. or frontal impact provisions of paragraph 16.1.3.
- 15.1.4.2.2 paragraph 16.2.1. or frontal impact provisions of paragraph 16.2.3.
- 15.1.4.2.3 paragraph 16.3.
- 15.1.4.3 Vehicles of category M1 with a total permissible laden mass above 2,5 tons and R-point height less or equal to 700 mm:
- 15.1.4.3.1 paragraph 16.1.2. or side impact provisions of paragraph 16.1.3.

**Commenté [EM5]:** This was not agreed to be a valid method. Decision to be made by the group. Russian Federation suggest to reserve this method to vehicles not in scope of Reg 94 or Reg 95, and equipped with triggering mechanism.

**Commenté [EM6]:** Same as previous comment

**Commenté [EM7]:** Same as previous comment

**Commenté [EM8]:** Same as previous comment

**Commenté [EM9]:** Same as previous comment



- 15.1.4.3.2. paragraph 16.2.2. or side impact provisions of paragraph 16.2.3.
- 15.1.4.3.3. paragraph 16.3.
- 15.1.4.4. Vehicles of category M1 with a total permissible laden mass above 2,5 tons and R-point height above 700 mm: paragraphs 16.1.3., 16.2.3. and 16.3.
- 15.1.5. Vehicles of category N1 shall be subject to the following:
  - 15.1.5.1. Vehicles of category N1 with a R-point height at or below 700 mm:
    - 15.1.5.1.1. paragraph 16.1.2. or side impact provisions of paragraph 16.1.3.
    - 15.1.5.1.2. paragraph 16.2.2. or side impact provisions of paragraph 16.2.3.
    - 15.1.5.1.3. paragraph 16.3.
  - 15.1.5.2. Vehicles of category N1 with a R-point height above 700 mm: paragraph 16.3.
- 15.1.6. Regardless of paragraph 15.1.5, vehicles that meet the technical requirements of Regulation No 95 without a side airbag or any other triggering mechanism are not subject to paragraph 16.1.2 or paragraph 16.1.3
- 15.2. AECD control
 

When the vehicle is fitted with an AECD control, the AECD control shall fulfil the requirements of paragraphs 15.2.1. to 15.2.3.

  - 15.2.1. The AECD control shall be installed such to comply with the relevant installation requirements of Regulation No.121.
  - 15.2.2. The emergency call control shall be designed and/or placed in such a way that the risk of an accidental activation is reduced.
  - 15.2.3. Manual emergency call activation control shall be labelled in compliance with ISO 2575:2010/ Amd.1:2011.
  - ~~15.2.34.~~ If the emergency call control assessment is not part of the AECD approval per Part I of this regulation, the emergency call control efficiency shall be verified according to the procedure let down in Annex XXX, paragraph XXX
- 15.3. AECD information and warning signal
 

The following provisions are applicable if the AECD warning signal verification is not part of the approval of an AECD in a vehicle per Part I of this regulation.

  - 15.3.1. Information shall be provided regarding the status of the connection when the AECD is automatically or manually activated.
  - 15.3.2. A warning signal shall be provided to the driver when the AECD is not functioning properly. Visual indication of the AECD malfunction shall be displayed at all times while ignition is turned on.
- 15.4. [Whenever, a third party emergency system is installed in the vehicle compliant with regional or national standards for private Ecall [e.g. for EU CEN 16102:2011 standard “Operating requirements for third party support” (TPS Ecall)], the driver has the free choice to use this system. It has to be ensured that there is only one system active at a time”].
- 15.5. Hands-free audio performance

The AECD should be installed in a vehicle in a such a way that it provides sufficient voice intelligibility for near and far listeners according to [Annex XXX] [P.Emergency ITU-T Recommendation]

Commenté [EM10]: Same as previous comment

Commenté [EM11]: Same as previous comment

Commenté [EM12]: Same as previous comment

Commenté [EM13]: Reg 121 references earlier version ISO 2575:2004 which does not contain this symbol

Commenté [EM14]: Even if AECD is capable of providing a signal as per Part I, it still needs to be installed in such a way that the signal is recognized by vehicle occupants.

## 16. Performance requirements after vehicle collision

- 16.1. Verification of the triggering signal emission
- Subject to the approval procedures defined in paragraph 14.1., the verification of the triggering signal emission shall be performed either
- 16.1.1. When simulating a collision of the vehicle during tests under Regulation No.94 (frontal collision),
- 16.1.2. When simulating a collision of the vehicle during tests under Regulation No.95 (lateral collision), or
- 16.1.3. At the request of the manufacturer, when demonstrating with existing documentation (report, images, simulation data or equivalent) that during a Regulation No.94 and Regulation No.95 test a triggering signal was generated.
- 16.2. Verification of the AECD and its installation resistance to ~~impact~~vehicle collision
- Subject to the approval procedures defined in paragraph 14.1.1., the verification of the AECD resistance to impact shall be performed either
- 16.2.1. When simulating a collision of the vehicle during tests under Regulation No.94 (frontal collision),
- 16.2.2. When simulating a collision of the vehicle during tests under Regulation No.95 (lateral collision), or
- 16.2.3. At the request of the manufacturer, when demonstrating that
- the pulse according to Regulation No.17, annex 9 has no negative effect on the AECD functioning,
  - the AECD is located within the safe zone border as defined in paragraph 2.13.,
  - specific components that are located outside of the safe zone are not negatively affected, and
  - if components of the AECS are out of the above defined area, the requirements are also deemed to be fulfilled if the manufacturer can show to the satisfaction of the technical service that the post-crash functioning is given. This can be e.g.:
    - Relevant components are in non-deformed areas,
    - Relevant functions are redundant,
    - Devices are mounted on/in windows (e.g. windshield, rear window, ...), or
    - .... (others, tbd.)
- AECD and its installation compliance in regard of resistance to vehicle collision shall be demonstrated by performing test methods described in Annex 6.
- 16.3. Verification of communication with GNSS
- Communication with GNSS shall be verified at the request of the manufacturer. When applicable, this shall be performed before testing under paragraphs 16.1 and 16.2., either
- 16.3.1. by using actual GNSS signal per the test methods described in Annexes 5 ~~and~~or 6,
- 16.3.2. by using simulated GNSS signal per the test methods described in Annexes 5 ~~and~~or 6, or

**Commenté [EM15]:** This was not agreed to be a valid method. Decision to be made by the group. Russian Federation suggest to rephrase this to cover vehicles not in scope of Reg 94 or Reg 95, and equipped with triggering mechanism.

**Commenté [EM16]:** This was not agreed to be a valid method. Decision to be made by the group. Russian Federation suggest to rephrase this to cover vehicles not in scope of Reg 94 or Reg 95, and equipped with triggering mechanism.

**Commenté [EM17]:** Russian Federation assume that Annex 6 will include verification of position transmission, which is sufficient after the crash

**Commenté [EM18]:** Same as previous comment

16.3.3. by functional check according to Annex 8.

**17. Modifications and extension of approval of a vehicle type equipped with an AECD which has been approved to Part I of this regulation**

17.1 Every modification of the vehicle type shall be notified to the administrative department which approved the vehicle type. The department may then either:

17.1.1 Consider that the modifications made are unlikely to have an appreciable adverse effect, and that in any case the vehicle still complies with the requirements; or

17.1.2 Require a further test report from the technical service responsible for conducting the tests.

17.2 Notice of the confirmation of approval, specifying the alterations made, or refusal shall be communicated to the Parties to the Agreement applying this Regulation by means of a form conforming to the model in annex XXX to this Regulation.

17.3 The competent authority issuing the extension of approval shall assign a series number to each communication form drawn up for such extension.

**18. Conformity of production**

18.1 The conformity of production procedure shall comply with the requirements set out in the Agreement, Appendix 2 (E/ECE/324 E/ECE/TRANS/505/Rev.2).

18.2 Every vehicle approved under this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set out in paragraph 15 above.

**18. Penalties for non-conformity of production**

18.1 The approval granted in respect of a vehicle type pursuant to this Regulation may be withdrawn if the requirement laid down in paragraph 17.1 above is not complied with or if the vehicle fails to pass the checks prescribed in paragraph 17.2 above.

18.2 If a Party to the Agreement which applies this Regulation withdraws an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation by means of a copy of the approval form bearing at the end, in large letters, the signed and dated annotation "APPROVAL WITHDRAWN".

**19. Production definitively discontinued**

If the holder of the approval completely ceases to manufacture a vehicle type approved in accordance with this Regulation, he or she shall so inform the authority which granted the approval. Upon receiving the relevant communication, that authority shall inform thereof the other Parties to the Agreement which apply this Regulation by means of a copy of the approval form bearing at the end, in large letters, the signed and dated annotation "PRODUCTION DISCONTINUED".

**20. Names and addresses of technical services responsible for conducting approval tests, and of administrative departments**

The Parties to the Agreement which apply this Regulation shall communicate to the United Nations Secretariat the names and addresses of the technical services responsible for conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval or refusal, or extension or withdrawal of approval, issued in other countries, are to be sent.

**Part III VEHICLES WITH REGARD TO THEIR AECS**

**21. Definitions**

21.1.

21.2. "*Common space*" means an area on which two or more information functions (e.g. symbol) may be displayed but not simultaneously.

**22. Application for approval of a vehicle type equipped with an AECS**

**23. Approval**

**24. Requirements**

24.1 General

24.2 Performance requirements

**25. Modifications and extension of approval of a vehicle type equipped with an AECS**

**26. Conformity of production**

**27. Penalties for non-conformity of production**

**28. Production definitively discontinued**

**29. Names and addresses of technical services responsible for conducting approval tests, and of administrative departments**

**Annex 1**

**Information document relating to the type approval of an e-call device (AECD)**

The following information, if applicable, shall be supplied in triplicate and shall include a list of contents.

Any drawings shall be supplied in appropriate scale and in sufficient detail on size A4 paper or on a folder of A4 format.

Photographs, if any, shall show sufficient detail.

1. Make (trade name of manufacturer):.....
2. Type and general commercial description(s):.....
3. Means of identification of type, if marked on the device: .....
4. Name and address of manufacturer: .....
5. Location of and method of affixing the approval mark: .....
6. Address(es) of assembly plant(s):.....
7. Arrangement (indicate components included on delivery):.....
8. Description of method(s) of attachment to the vehicle: .....
9. Sufficiently detailed drawings to identify the complete device, including installation instructions; the position for the type-approval mark must be indicated on the drawings: .....

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## Annex 2

### **Information document relating to the type approval of a vehicle with regard to the installation of e-call devices**

The following information, if applicable, shall be supplied in triplicate and shall include a list of contents.

Any drawings shall be supplied in appropriate scale and in sufficient detail on size A4 paper or on a folder of A4 format.

Photographs, if any, shall show sufficient detail.

#### General

1. Make (trade name of manufacturer):.....
2. Type and general commercial description(s):.....
3. Means of identification of type, if marked on the vehicle: .....
4. Location of the marking: .....
5. Location of and method of affixing the approval mark: .....
6. Category of vehicle:.....
7. Name and address of manufacturer: .....
8. Address(es) of assembly plant(s):.....
9. Photograph(s) and/or drawing(s) of a representative vehicle: .....
10. E-call device/system
- 10.1 Make (trade name of manufacturer):.....
- 10.2 Type and general commercial description(s):.....
- 10.3 Arrangement (indicate components included in delivery):.....
- 10.4 Description of means of automatic transmission of information about the accident (if fitted): .....
- 10.5 Description of method(s) of attachment to the vehicle: .....
- 10.6 Drawing(s) showing the position of the e-call device/system: .....
11. Approval procedure (I, II, III).....

**Annex 3**

**Information document relating to the type approval of a vehicle with regard to AECS**

The following information, if applicable, shall be supplied in triplicate and shall include a list of contents.

Any drawings shall be supplied in appropriate scale and in sufficient detail on size A4 paper or on a folder of A4 format.

Photographs, if any, shall show sufficient detail.

General

- 1. Make (trade name of manufacturer): .....
- 2. Type and general commercial description(s): .....
- 3. Means of identification of type, if marked on the vehicle: .....
- 4. Location of the marking: .....
- 5. Location of and method of affixing the approval mark: .....
- 6. Category of vehicle: .....
- 7. Name and address of manufacturer: .....
- 8. Address(es) of assembly plant(s): .....
- 9. Photograph(s) and/or drawing(s) of a representative vehicle: .....
- 10. E-call device/system
- 10.1 Make (trade name of manufacturer): .....
- 10.2 Type and general commercial description(s): .....
- 10.3 Arrangement (indicate components included in delivery): .....
- 10.4 Description of means of automatic transmission of information about the accident (if fitted): .....

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**Annex 4**

**Test method for resistance to mechanical impact  
(paragraphs 6.4. and 16.2.3.)**



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**Annex 5**

**Test method for navigation solution (paragraphs 6.2. and 16.3.)**

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## Annex 6

### Test method for emergency call (paragraphs.)

1. MSD emission assessment shall include verification of at least the following:
  - 1.1. Vehicle position accuracy is within the limits defined by paragraph 6.2, and
  - 1.2. Trigger time is transmitted correctly, and
  - 1.3. Vehicle identification number is transmitted correctly
2. MSD emission assessment can be performed either
  - 2.1. By transmitting MSD to a simulator, or
  - 2.2. By transmitting MSD via real PLMN
3. Hands-free voice communication assessment (subjective test) shall include verification of the following:
  - 3.1. Voice originating inside the vehicle can be clearly heard by the remote listener with satisfactory intelligibility, and
  - 3.2. Speech of the remote speaker can be clearly heard in the vehicle with satisfactory intelligibility
4. Hands-free voice communication assessment can be performed either
  - 4.1. By establishing voice communication to a simulator, or
  - 4.2. By establishing voice communication via real PLMN
5. HMI operation assessment shall include the following
  - 5.1. Manual trigger (call generation) is working correctly. This is verified by checking if manual trigger leads to
    - 5.1.1. MSD transmission, which is verified according to paragraph 1 of this Annex, and
    - 5.1.2. Voice communication being established, which is verified according to paragraph 3 of this Annex.
  - 5.2. Call status indication is working properly. This is verified by checking that the following statuses are displayed during test according paragraph 5.1 of the current Annex: [
    - 5.2.1. Call initiated (dialing)
    - 5.2.2. MSD transmitted
    - 5.2.3. Waiting for PSAP operator to answer
    - 5.2.4. Call in progress]
  - 5.3. Malfunction indication is working properly. This is verified by checking malfunction indication in at least one of the following conditions:
    - 5.3.1. Communication module antenna is disconnected, or
    - 5.3.2. GNSS receiver antenna is disconnected, or
    - 5.3.3. Microphone(s) is (are) disconnected, or
    - 5.3.4. Loudspeaker(s) is (are) disconnected, or
    - 5.3.5. AECD control module is disconnected from the HMI module

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**Annex 7**

**Test method for SMS transmission**

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## Annex 8

### Test method for verifying the on-board AECD via functional check (paragraph 16.3.3.)

1. The functional check of the in-vehicle system shall be performed via one out of the four methods laid down in paragraphs 2. to 5. below.
2. Verification of functional state of the in-vehicle system by using HMI (visual control of tell-tale)  
When the in-vehicle AECD is capable to
  - check and diagnose all devices belonging to the AECD scope (Antennas, power supply, Mic, speaker, ...), and
  - discriminate a network failure (\*) from an internal failure of the AECD Unitthe communication with GNSS and mobile networks and PSAP is deemed to be compliant if no failure warning is indicated by the HMI.
- (\*) An obstruction of the antenna by a metallic part could be detected and indicated as a network failure. In this case, a visual control can be performed around the antenna (or AECD Unit in the case of an internal antenna), if the antenna is not within the safe zone.
3. Verification of functional state of the in-vehicle system by internal memory checking  
When
  - the vehicle's diagnostic bus is still functioning and the AECS Unit is still powered (e.g. by main or auxiliary battery), or after AECD Unit disassembly and test bench analysis, and
  - the in-vehicle AECD is capable to
    - o check and diagnose all devices belonging to the AECD scope (Antennas, power supply, Mic, speaker, ...), and
    - o memorize all steps of an emergency call transaction (e.g.: trigger signal reception, construction of MSD, etc.)the communication with GNSS and mobile networks and PSAP is deemed to be compliant if the AECD unit has memorized the correct emergency call transaction, and no failure is present in memory.
4. Verification of functional state of the in-vehicle system by separated functional test  
When
  - the in-vehicle AECD is capable to memorize all steps of an emergency call transaction (e.g.: trigger signal reception, construction of MSD, etc.), and
  - all devices belonging to the AECD scope are removable and their connectors are accessible (for electrical testing), for the visual control or/and for functional teststhe communication with GNSS and mobile networks and PSAP is deemed to be compliant if the AECD unit has memorized the correct emergency call transaction, if all electrical tests are satisfactory and if all devices belonging to the AECD scope are in good condition and functioning correctly.
5. Verification of functional state of the in-vehicle system by functional transmission test with wired procedure  
When

- the mobile phone antenna connector is accessible, and
- all other parts (wire) between this antenna and the AECD Unit are accessible/removable for the visual control or/and for functional tests

the communication with GNSS and mobile networks and PSAP is deemed to be compliant if the emergency call transaction is correct (with PSAP simulator) and if all the electrical tests between antenna and the AECD unit are satisfactory

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**Justifications:**

- Paragraph 1.1: the Regulation is compartmented in three parts according to the decision made at AECS-01:
- Part I aims the approval of a type of Ecall device (AECD)
  - Part II aims the approval of a vehicle type when fitted with Ecall device (AECD) approved to Part I
  - Part III aims the approval of a vehicle type when fitted fully integrated Ecall system (AECS)
- Paragraph 1.2: according to the decision of AECS-06, the regulation covers a restricted scope i.e. the capabilities of the ecall to connect to the mobile phone networks shall not be part of the approval. This was agreed by the informal group on the following reasons:
- Mobile phone networks legislation is not under the control of UNECE/WP29
  - Mobile phones networks evolve too rapidly to be regulated by a UN regulation in the frame of the 58 Agreement.
  - Regulating the capabilities of the ecall to connect to the mobile phone networks would jeopardise the efforts of the vehicle and AECD manufacturers to best match the evolution of technology.
- Paragraph 1.3: In order to avoid extra costs due to the implementation of the ecall, only the vehicles that are designed by construction to be fitted with an automatic triggering system related to the detection of an impact, are included in the scope of the regulation. For defining these vehicles, it is assumed that all vehicles approved, or subject to the approval to the regulations dedicated to the assessment of the resistance to impact, are fitted with an automatic triggering system. This is because, in the current state of the technology, there is no other way to fulfil the requirements of these regulations than by equipping the vehicles in stake with "airbags" whose inflation must be triggered by an automatic triggering system. The informal group was keen to take the opportunity of the pre-existence of these airbag automatic triggering systems for triggering the ecall intervention.
- Paragraph 2: All definitions are taken from the CLEPA document AECS-06-02-Rev.1
- Paragraphs 3, 4 and 5: Provisions taken from the CLEPA document AECS-06-02-Rev.1
- Paragraph 6.1: decision taken at AECS-05 to refer to the last series of amendments to UN R10, and to introduce the sentence in [ ], until the group has solved the question at a future step.
- Paragraph 6.2: Provisions taken from the CLEPA document AECS-06-02-Rev.1
- Paragraph 6.3: SIM-chip or similar technology is targeted in this paragraph for identification and authentication on the mobile phone network or the PSAP. No need for further details as telecommunication performances requirements are out of the scope of the regulation.
- Paragraph 6.4: Basic description of the sequence of operation of the ecall. The references to the TPS are still subject to debate in the informal group.
- Paragraph 6.5: Provisions with regard to Human Machine Interface. Consistency necessary with the provisions of Part II (installation section). The group agreed that the ecall regulation should focus on when the warning shall be given to the driver, while a dedicated regulation (i.e. UNR121 – controls and tell-tales) should address how the warning shall be given.
- Paragraph 6.6: Provisions with regard power supply. AECS-06 reached the proposed text as an agreement in principle.

Paragraph 6.7:	Provisions with regard to the assessment of the resistance to impact. The informal group did not yet reach consensus on the test procedures and pass/fail criteria. These items are subject to Annex XXX
Paragraph 7:	Performance requirements: item deleted per the proposal from CLEPA AECS-06-02-Rev.1
Paragraphs 8 to 12:	conventional paragraphs per the 58 Agreement.
Paragraph 12:	Definitions that are considered necessary for Part II. This section is still under construction, some new definitions may need to be added. The proposed definitions include the OICA proposal for a “safe zone” that was introduced at AECS-05; there is currently no final decision of the group with regard to this principle.
Paragraph 13:	conventional text per a regulation annexed to the 58 Agreement.
Paragraph 14:	Approval provisions.
Paragraph 14.1:	attempt to capture the approval procedures as proposed by OICA per their document AECS-05-04. Some solution must still be found for limiting the application of Procedure II to the vehicles not subject to UN R94 or 95, and not fitted with any triggering mechanism.
Paragraph 14.2 to 14.5:	conventional text per a regulation annexed to the 58 Agreement.
Paragraph 15.1.1:	according to the definition of Part II of the regulation, the requirements for vehicles equipped with an approved AECD should apply only when the vehicles is indeed equipped with an AECD approved to Part I of the regulation.
Paragraph 15.1.2:	provision per the initial proposal AECS-01-05 (RUS), as a guarantee that the AECD has sufficient power supply at all time.
Paragraph 15.1.3:	requirement that the AECD capabilities with regard to localisation and access to mobile phone networks, which are assumed to be demonstrated par Part I of the regulation, are not jeopardised by the AECD installation in the vehicle.
Paragraph 15.1.4:	attempt to capture the provisions for vehicles of category M1 per the table established as in document AECS-04-14 paragraph 7.3.
Paragraph 15.1.5:	attempt to capture the provisions for vehicles of category N1 per the table established as in document AECS-04-14 paragraph 7.3.
Paragraph 15.1.6:	Verification of the triggering signal emission due to side impact is not relevant when the vehicle complies with the provisions of UN R94 despite the absence of airbag, because such vehicle does not have any triggering system.
Paragraph 15.2:	AECD manual control is not required on all vehicles and the informal group still must define a common position with regard to the manual control installation.
Paragraph 15.2.1:	it is of common understanding that the particular regulations must regulate WHETHER the manual control must be installed, while the UN R121 (controls and tell-tales) must regulate HOW the manual control must be installed.
Paragraph 15.2.2:	in spite of the comments above, when a regulation covers an item particularly related to safety in case of accident, this regulation may add specific requirements.
Paragraph 15.2.3:	agreement within the informal group that the assessment of the manual control can be conducted either per Part I of the regulation (paragraph 6.5.3), or per Part II of the regulation (paragraph 15.2.3).
Paragraph 15.3:	Provisions with regard to Human Machine Interface. Consistency necessary with the provisions of Part I (device section). The group agreed that the ecall regulation should focus on when the warning shall be given to the driver, while a dedicated regulation (i.e. UNR121 – controls and tell-tales) should address how the warning shall be given.
Paragraph 15.4:	item still under discussion within the informal group (see document AECS-06-07, paragraph 6.3.4.) : agreement to temporarily include provisions related to

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	TPS in [ ] in order to keep the door open in the regulation for the use of these systems.
Paragraph 16.1:	performance requirements for triggering signal emission. The verification shall be performed according to the approval procedure chosen par paragraph 14.1: frontal or lateral collision, or demonstration with documentation. This latter procedure should be primarily used when the vehicle is already approved to the frontal/lateral impact regulations, and were fitted with an AECD prior the entry into force of this regulation.
Paragraph 16.2:	performance requirements for resistance to impact. The verification shall be performed according to the approval procedure chosen par paragraph 14.1: frontal or lateral collision, or demonstration with functional provisions. This latter procedure should be primarily used when the vehicle is already approved to the frontal/lateral impact regulations, and were fitted with an AECD prior the entry into force of this regulation.
Paragraph 16.3:	All references to the communication with the mobile phone networks has been deleted due to the decision of the informal group to restrict the scope to the “red components”. This proposal indeed endorses the option that communication with GNSS shall be assessed as an option at manufacturer’s choice.
Paragraphs 17 to 20:	Conventional wording per regulations under the 58 Agreement
Part III:	Section still to be developed. It will be largely inspired from Part II of the regulation.
Annexes 1 to 3:	Conventional annexes per regulations under the 58 Agreement.
Annex 4:	Annex dedicated to the assessment of the resistance to mechanical impact. Details are still under discussions.
Annex 5:	Annex dedicated to the assessment of the navigation solution, at the request of the manufacturer. This annex is still under construction
Annex 6:	Annex dedicated to the assessment of the emission of an emergency call signal, and of the presence and content of the MSD. <u>Could be deleted according to the decision of the informal group to restrict the scope of the regulation.</u>
Annex 7:	Could be deleted
Annex 8:	Detailed justifications still need to be elaborated.
<u>Annex XXX:</u>	<u>HMI (AECD/AECS control) testing. Still to be added</u>

**Commenté [EM19]:** Russian Federation believe Annex 6 is required to describe methods to asses post-crash operation. Needs to be high level (see proposed content of Annex 6 above)