

I. Proposal by Germany

7.7. Provisions for the periodic technical inspection of the AECD

It shall be possible to verify the Minimum Set of Data and the functionality of the AECD via the electronic vehicle interface. Therefore all necessary information shall be made freely available.

II. Justification:

A. Motivation for PTI

A test by the means of a warning signal to ensure the functionality of the AECS over the entire lifespan is not sufficient. Especially in older vehicles more faults can occur caused by

- Degradation (e. g. defective speaker, dusty microphone)
- Mechanical defects (e. g. button damaged, broken antenna)
- Manipulations (e. g. jamming the GNSS- and GSM-Signal, warning signal)
- Incorrect maintenance (e. g. replacement with unpermitted components or retrofit solutions).

Due AECS is an “inactive” system and is only needed in an emergency, the detection of a malfunction of the relevant components by the means of a warning signal is not possible in all cases. Especially reception problems of the GNSS and GSM signal as well as degradation of the audio components cannot be detected by the self-diagnosis of the vehicle. The self-diagnosis is limited to the detection of electrical failures, so that independent functionality tests within the scope of the PTI are crucial to verify the original safety level of the system.

The possibility to use a generic scan tool via the electronic vehicle interface allows the inspector a more efficient and reliable assessment about the system. Moreover it is the only way to find manipulations which are not shown up by the warning signal in case of a malfunction.

B. Current legislation regarding PTI

1. The EU eCall Regulation ¹ regards periodic roadworthiness test: “(18) The 112 based eCall in vehicle system, as an emergency system, requires the highest possible level of reliability. The **accuracy of the minimum set of data and of the voice transmission, and quality, should be ensured**, and a uniform testing regime should be developed to ensure the longevity and durability of the 112 based eCall in vehicle system. Periodic roadworthiness tests should therefore be carried out regularly in accordance with Directive 2014/45/EU of the European Parliament and of the Council.”
2. The PTI-Directive² describes in Annex III the “Minimum requirements concerning roadworthiness facilities and test equipment. Number I. “Facilities and equipment” requires under paragraph (14) **“A device to connect to the electronic vehicle interface, such as an OBD scan tool”**

¹ REGULATION (EU) 2015/758 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2015 concerning type-approval requirements for the deployment of the eCall in-vehicle system based on the 112 service and amending Directive 2007/46/EC

² DIRECTIVE 2014/45/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 3 April 2014 on periodic roadworthiness tests for motor vehicles and their trailers and repealing Directive 2009/40/EC

3. PTI type approval requirements are already considered and accepted in other relevant UN/ECE regulations on electronic safety systems, such like
 - a. R13-H³ paragraph 5.1.4. “Provisions for the periodic technical inspection of braking systems” and ANNEX 8 “Special requirements to be applied to the safety aspects of complex electronic vehicle control systems
 - b. R79-H⁴ paragraph 5.5 “Provisions for the periodic technical inspection of steering equipment” and ANNEX 6 “Special requirements to be applied to the Safety Aspects of Complex Electronic Vehicle Control Systems”

C. Technical considerations

1. The AECS test during the PTI can be realized by a generic scan-tool which reads out the relevant data (e. g. Minimum Set of Data, availability of Public Land Mobile Networks) and activates an in-vehicle test procedure to check the functionality of the voice communication by audible means (e. g. short in-vehicle echo test). There are no changes either on the physical standard diagnostic connector (OBD) or the manufactures diagnostic protocol necessary.
2. For reading out the Minimum Set of Data and available Public Land Mobile Network are no special requirements on the diagnostic architecture and it is also conform to all existing CEN/TS and ETSI standards.
3. The above recommended audio echo test is similar to the “voice-prompt-mode” described i. a. in the GOST Standard R 54620-2011 paragraph 7.6.12. The main difference is the triggering, which should be ensured by the use of the electronic vehicle interface.
4. Testing the AECS via a test-call within the context of PTI is not practical. In case of a fault there is a high risk not to distinguish weather the AECD is not working or the Mobile-Network is temporary not function correctly. This could lead to faulty results during the PTI. Also the expected duration for such a test-call would lead to high costs, which are not comparative to the benefit. Moreover it is not clarified who is responsible for the cost for setup and providing a test-server which receives the calls and who bears the cost for the test-call itself. Furthermore there is no specification and requirement to implement a free long-dialing-number on the USIM. This could lead in the need to change existing Standards (e. g. ETSI).

³ Regulation No 13-H of the Economic Commission for Europe of the United Nations (UN/ECE) — Uniform provisions concerning the approval of passenger cars with regard to braking

⁴ Regulation No 79 of the Economic Commission for Europe of the United Nations (UN/ECE) — Uniform provisions concerning the approval of vehicles with regard to steering equipment