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ANNEX 1

ANNEX

to the

Commission Delegated Regulation (EU) .../...

**amending Regulation (EU) No 540/2014 of the European Parliament and of the Council
as regards the Acoustic Vehicle Alerting System requirements for vehicle EU-type
approval**

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"ANNEX VIII

MEASURES CONCERNING THE ACOUSTIC VEHICLE ALERTING SYSTEM (AVAS)

SECTION I

This Annex sets out measures concerning the Acoustic Vehicle Alerting System (AVAS) for hybrid electric and pure electric vehicles.

1. Notwithstanding points 2(a) and (b), the provisions of section II shall apply to an AVAS installed:
 - (a) in any vehicle type approved before 1 July 2019;
 - (b) in any new vehicle based on the type referred to in point (a) before 1 July 2021.
2. The provisions of section III shall apply to an AVAS installed:
 - (a) in any vehicle type approved before 1 July 2019, where the manufacturer so chooses;
 - (b) in any new vehicle based on the type referred to in point (a);
 - (c) in any vehicle type approved on or after 1 July 2019;
 - (d) in any new vehicle based on the type referred to in point (c);
 - (e) in any new vehicle on or after 1 July 2021.

SECTION II

II.1 System performance

If AVAS is installed on a vehicle, it shall comply with the requirements referred to in points II.2 and II.3.

II.2. Operation conditions

(a) Sound generation method

The AVAS shall automatically generate a sound in the minimum range of vehicle speed from start up to approximately 20 km/h and during reversing. Where the vehicle is equipped with an internal combustion engine that is in operation within the vehicle speed range defined above, the AVAS shall not generate a sound.

For vehicles having a reversing sound warning device, it is not necessary for the AVAS to generate a sound whilst reversing.

(b) Switch

The AVAS shall be fitted with a switch which is easily accessible by the vehicle driver in order to allow engaging and disengaging. Upon restarting the vehicle, AVAS shall default to the switched on position.

(c) Attenuation

The AVAS sound level may be attenuated during periods of vehicle operation.

II.3. Sound type and volume

- (a) The sound to be generated by the AVAS shall be a continuous sound that provides information to the pedestrians and other road users of a vehicle in operation. The sound should be easily indicative of vehicle behaviour and should sound similar to the sound of a vehicle of the same category equipped with an internal combustion engine.
- (b) The sound to be generated by the AVAS shall be easily indicative of vehicle behaviour, for example, through the automatic variation of sound level or characteristics in synchronization with vehicle speed.
- (c) The sound level generated by the AVAS shall not exceed the approximate sound level of a vehicle of the M1 category equipped with an internal combustion engine and operating under the same conditions.

SECTION III

III.1. System performance

The AVAS shall comply with the requirements set out in points III.2 to III.6.

III.2. Operation conditions

(a) Sound generation method

The AVAS shall automatically generate a sound in the minimum range of vehicle speed from start up to approximately 20 km/h and during reversing. Where the vehicle is equipped with an internal combustion engine that is in operation within that vehicle speed range, the AVAS shall not generate a sound.

Vehicles having overall sound levels complying with the requirements in paragraph 6.2.8 of UNECE Regulation No 138¹ with a margin of +3 dB(A), are not required to be equipped with AVAS. The requirements laid down in paragraph 6.2.8 of UNECE Regulation No 138 for one-third octave bands and the requirements laid down in paragraph 6.2.3 of UNECE Regulation No 138 for the frequency shift as defined in paragraph 2.4 of the same UNECE Regulation ("frequency shift") shall not apply to those vehicles.

For vehicles having a reversing sound warning device, it is not necessary for the AVAS to generate a sound whilst reversing, on condition that the reversing sound of the warning device complies with the requirements laid down in the second subparagraph of paragraph 6.2 and in paragraph 6.2.2 of UNECE Regulation No 138.

The sound generated by the vehicle type submitted for approval shall be measured in accordance with the methods set out in Annex 3 and subparagraphs 6.2.1.3 and 6.2.2.2 of UNECE Regulation No 138.

¹ OJ L 9, 13.1.2017, p. 33.

(b) Switch

The AVAS may be fitted with a mechanism to enable the driver to halt the operation of an AVAS ("pause function"), which is easily accessible by the vehicle driver in order to allow engaging and disengaging. Where a pause function is fitted, the AVAS shall default to the switched on position upon restarting of the vehicle.

In addition, the pause function shall comply with the requirements laid down in paragraph 6.2.6 of UNECE Regulation No 138.

(c) Attenuation

The AVAS sound level may be attenuated during periods of vehicle operation. In those cases, the AVAS sound level shall comply with the requirements laid down in paragraph 6.2.8 of UNECE Regulation No 138.

III.3. Sound type and volume

- (a) The sound to be generated by the AVAS shall be a continuous sound that provides information to the pedestrians and other road users of a vehicle in operation. The sound shall be easily indicative of vehicle behaviour, for example, through the automatic variation of sound level or characteristics in synchronisation with vehicle speed. The sound shall be similar to the sound of a vehicle of the same category equipped with an internal combustion engine.

The following rules shall apply:

- (i) where it is generated when the vehicle is in motion, the AVAS sound shall comply with the requirements laid down in paragraphs 6.2.1.1, 6.2.1.2, 6.2.1.3, 6.2.2.1, 6.2.2.2 and 6.2.3 of UNECE Regulation No 138, as applicable;
- (ii) the vehicle may emit a sound when stationary, as set out in paragraph 6.2.4 of UNECE Regulation No 138.
- (b) The vehicle manufacturer may provide for the possibility for the driver to select from among different sounds, which shall comply with the requirements laid down in paragraph 6.2.5 of UNECE Regulation No 138.
- (c) The sound level generated by the AVAS shall not exceed the approximate sound level of a vehicle of the M₁ category equipped with an internal combustion engine and operating under the same conditions. In addition, the requirements in paragraph 6.2.7 of UNECE Regulation No 138 shall apply.
- (d) The overall sound level emitted by a vehicle complying with the second subparagraph of point 2(a) shall not exceed the approximate sound level of a vehicle of the M₁ category equipped with an internal combustion engine and operating under the same conditions.

III.4 Test track requirements

Until 30 June 2019, the standard ISO 10844:1994 may be applied as an alternative to the standard ISO 10844:2014 to check compliance of the test track as described in Annex 3, paragraph 2.1.2., of UNECE Regulation No 138.

III.5. Type-approval certificate

The vehicle manufacturer shall provide, as an attachment to the EU type-approval certificate, any of the following documents:

- a) the communication referred to in paragraph 5(3) of UNECE Regulation No 138, in accordance with the model set out in Annex 1 to that Regulation;
- b) the test results of AVAS sound emission levels, measured in accordance with this Regulation.

III.6. Markings

Each component of the AVAS shall bear the following markings:

- (a) the trade name or mark of the manufacturer;
- (b) a designated identification number.

The markings shall be indelible and clearly legible.

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