

**Proposal for amendments to the working document:**

- **ECE/TRANS/WP.29/GRBP/2024/2: (TF QRTV) Proposal for a new series of amendments to UN Regulation No. 138**

The text reproduced below was prepared by the expert from Australia to amend working document ECE/TRANS/WP.29/GRBP/2024/2 in order to clarify the text to ensure that the language used is robust for use in regulation and is consistent with the terms of the 1958 Agreement with respect to the application and adoption of UN Regulations by contracting parties.

**I. Proposal**

*Amend paragraph 2.2, to read*

“2.2        *"Natural sound"* means sound coming from the vehicle and its components as a result of ~~e.g. providing the primary vehicle dynamics of~~ propulsion, braking, ~~and steering~~ **cooling**, or any other function **inherent to enabling these vehicle dynamics, such as cooling**. ~~Natural sound does not include conveying audible information to external persons by use of systems designed to do so.~~”

*Amend paragraphs 2.3 and 2.3.1, to read*

“2.3        *"Acoustic Vehicle Alerting System"* (AVAS) means a component or set of components installed in vehicles with the primary purpose to ~~fulfil the requirements of this Regulation~~ **safely inform pedestrians and other road users of a vehicle's presence and operation acoustically with an AVAS sound to fulfil the requirements of this regulation;**”

“2.3.1     *"AVAS sound"* means a synthetic created sound ~~which is controllable by a acoustic vehicle alerting systems. This means the~~ sound(s) and sound characteristic(s) **designed to be emitted by an Acoustic Vehicle Alerting System (AVAS) to fulfil the requirements of this Regulation. The AVAS sound provides acoustic safety information to pedestrians and other road users on the vehicle's presence and operation.**

An exterior sound enhancement system, as defined in UN Regulation No. 51, Annex 9 paragraph 2.2., does not produce natural sound.”

*Amend paragraph 2.11, to read*

“2.11"     *Mandatory speed range*": the speed range where an ~~Acoustic Vehicle Alerting System (AVAS)~~ shall emit ~~sound (AVAS sound)~~ **sound** (AVAS sound) to fulfil the requirements of this regulation.”

Amend table 1, to read

<i>Symbol</i>	<i>Unit</i>	<i>Paragraph</i>	<i>Explanation</i>
Method (A)			Test of the complete vehicle in motion on an outdoor test track , limit values of paragraph. 6.2.8. means the whole vehicle sound
Method (B)			Test of the complete vehicle without movement in standstill condition on an outdoor test track with simulation of the vehicle movement to the AVAS by an external signal generator; <b>the</b> limit values of paragraph 6.2.8. <b>means are taken to mean the sound pressure limits for the AVAS sound only</b>
Method (C)			Test of the complete vehicle without movement with turning wheels in an indoor facility on a chassis dynamometer; limit values of paragraph. 6.2.8. means the whole vehicle sound
Method (D)			Test of the complete vehicle without movement in an indoor facility with simulation of the vehicle movement to the AVAS by an external signal generator; limit values of paragraph 6.2.8. <b>means are taken to mean the sound pressure limits for the AVAS sound only</b>

Amend paragraph 6.2, to read

“6.2 Acoustics characteristics

The sound emitted by the vehicle type submitted for approval shall be measured by the methods described in Annex 3 to this Regulation.

The specifications of this Regulation are applicable in forward and reverse driving condition for the mandatory speed range of greater than 0 km/h up to and inclusive 20 km/h. **An AVAS sound is only allowed for the vehicle speeds in Table 2a when driving in the forward direction. An AVAS sound is allowed for all speeds in the reverse direction.** Operation of an AVAS is permitted at **these** vehicle speeds outside the mandatory speed range; **only when** the maximum sound pressure levels for the AVAS sound **do not exceed the levels** specified in this Regulation in Table 2a and Table 2b of paragraph 6.2.8. **apply.** ~~An AVAS sound is only allowed in forward driving direction of the vehicle in the speed range mentioned in Table 2a and for all speeds in reverse direction.~~

AVAS characteristic beside the tested vehicle speeds during type approval can be declared either by manufacturer declaration in Annex 4 or by additional tests. These tests shall be agreed between the manufacturer and the type approval authority.

AVAS may be operational independent of the operation of an internal combustion engine inside or outside the mandatory speed range.

If a vehicle that is not equipped with an AVAS fulfils the minimum overall levels as specified in Table 2a below with a margin of +3 dB(A) by its natural sounds, the specification for one-third octave bands as specified in paragraph in 6.2.8. Table 3 and the frequency shift as specified in paragraph 6.2.3. do not apply.

If a vehicle in scope of UN Regulation No. 165 equipped with an audible reverse warning system, providing an audible signal, that exceeds the minimum overall levels as specified in Table 2b of this regulation, the audible reverse warning signal is deemed to fulfil this regulation in reverse driving, without the sound from an AVAS.”

*Renumber clauses*

“6.2.1.1.1., 6.2.1.1.2. and 6.2.1.1.3.” to

“6.2.1.1., 6.2.1.2. and 6.2.1.3.” respectively

*Amend paragraphs 6.2.1.1., 6.2.2.1., 6.2.5., 6.2.6., to read*

“6.2.1.1 The test speeds for approval tests are 10 km/h and 20 km/h. ~~Compliance with other speeds covered by Table 2a of paragraph 6.2.8. shall be given by a manufacturer declaration (Annex 4).”~~

“6.2.2.1 When tested under the conditions of Annex 3 paragraph 3.3.3. the vehicle must emit a sound that has a minimum overall sound pressure level according to Table 2b of paragraph 6.2.8., column 5. ~~Compliance with other speeds covered by Table 2b of paragraph 6.2.8. shall be given by a manufacturer declaration (Annex 4).”~~

“6.2.5. Driver selectable AVAS sounds

The vehicle manufacturer may define alternative sounds which can be selected by the driver; each of these sounds shall ~~be in compliance~~ **comply and approved** with the provisions in paragraphs 6.2.1. to 6.2.4.

~~The compliance of paragraph 6.2.8. Table 2a and Table 2b of non-tested sound modes during type approval in respect to Annex 3 paragraph 3.2.3. shall be confirmed by the manufacturer declaration (Annex 4).”~~

“6.2.6 **Sound level variation** of AVAS ~~Sounds Level Variation~~

If fitted, an AVAS may operate at different sound levels either automatically managed by the control unit or manually selected by the driver. Each selected sound level shall ~~be in compliance~~ **comply** with the specifications outlined in paragraphs 6.2.1. to 6.2.4. and paragraph 6.2.8.

~~The compliance of paragraph 6.2.8., Table 2a and Table 2b of non-tested sound modes during type approval in respect to Annex 3 paragraph 3.2.3. shall be confirmed by the manufacturer declaration (Annex 4).~~

~~All combinations of AVAS sound level variations and AVAS sound shall fulfil the requirements of paragraph 6.2.8., Table 2a, Table 2b and Table 3.”~~

*Renumber clauses*

“6.2.3, 6.2.3.1.1 and 6.2.3.1.2” to

“6.2.3, 6.2.3.1 and 6.2.3.2” respectively

*Amend paragraph 6.2.8.*

**6.2.8** Specifications on minimum and maximum sound level for AVAS sound

When tested under the conditions of Annex 3 paragraph 3.3.2., a vehicle which is equipped with an AVAS shall fulfil the requirements of Table 2a, Table 2b and Table 3.

~~The sound emission of the vehicle under typical on road driving conditions, which are different from those under which the type approval test set out in Annex 3 was carried out, shall not deviate from the test result in a significant manner.~~

In the speed range of Table 2a and Table 2b and when tested under the conditions of Annex 3 paragraph 3.3.2., a vehicle which is equipped with an AVAS, shall not emit an AVAS overall sound level of more than 75 dB(A), if driving in forward direction. This test can be stated by manufacturer declaration.

During measurement in reverse the maximum level requirement in the frontline of the vehicle for forward driving has to be fulfilled in addition. This can be stated by manufacturer declaration.

The sound levels measured and reported shall be mathematically rounded to the nearest integer value.

*Delete text under Table 2a*

~~In the case that another UN Regulation specifies the maximum sound pressure levels in its additional sound emission provisions in an overlapping speed range regarding to the speed range of table 2a, the requirements of the other regulation, with its maximum levels and the related test method, should apply only for:~~

- ~~—— the speed range that is specified in this other UN Regulation and~~
- ~~—— the effected vehicle categories of the other UN Regulation.~~

*Insert new paragraph 6.2.9.*

**6.2.9.** All combinations of acoustic characteristics of AVAS sounds allowed in paragraph 6.2 and subparagraphs shall fulfil the requirements of those functions within the sound limits required in paragraph 6.2.8 and respective tables. Compliance of all allowable untested alternative driver selectable and sound level variations of AVAS sounds, and compliance with untested speeds, shall be made by declaration of the the manufacturer (Annex 4).

*Insert new paragraph 6.2.8.1.*

**6.2.10.** The AVAS shall continue to function during typical on-road driving conditions in the same way as it was original tested during type approval.

## II. Justification

As regulators, we need to ensure the texts we draft are consistent and can be more readily adopted into the national legislation of contracting parties. Care needs to be taken to avoid ambiguities as these can be detrimental to the mutual recognition arrangements of type approvals.

For the same reason, we should also be careful when referencing the requirements of other UN Regulations. The text under Table 2a is very problematic as it becomes a dynamic clause without any transitional provisions. If a change to another UN Regulation causes a change to this regulation, then this regulation should be amended at that time with due consideration for the effect it may have on the requirements and impact on type approvals. It also assumes a contracting part has applied or adopted all UN Regulations related to sound emissions, which is a decision for each contracting party.

Summary of changes:

2.2 amended to make this a complete sentence and to remove the ambiguity of '*or any other function*'.

2.3 and 2.3.1 amended for logic. The AVAS is the functional system with respect to this regulation, not the AVAS sound.

2.11 amended for consistency

Table 1 amended for clarity

6.2 amended for clarity. Suggest considering to amend further by making the last two paragraphs sub-clauses.

Renumbering of clauses under 6.2.1 to address numbering error.

6.2.1.1., 6.2.2.1., 6.2.5 and 6.2.6 have been amended to remove reference to the manufacturer declaration and replaced with a new paragraph 6.2.9. This simplifies the clauses and makes it clearer that the whole AVAS implementation needs to be compliant. This will also make it easier to amend in the future, if required. Removed 'and approved' from 6.2.5 as compliance can be declared by the manufacturer.

Renumbering of clauses under 6.2.3 to address numbering error.

6.2.8 deleted text as this has no place in specific requirements. It also has no place in a text meant to be used across such a broad range of environments. Such clauses are better suited to national laws that cover such issues. I've attempted to include a new paragraph at 6.2.10. to cover what I believe is the intent of this clause.

Deletion of text under Table 2a as this causes a dynamic reference that is not good regulatory practice under most regulatory frameworks.

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