OICA Position Paper
on new 02 Series of Amendments to
UN Regulation No. 138
GRBP/2024/02 and GRBP-79-34
Original Idea of TF QRTV
shown in GRBP-79-06 Revised List of GRBP Priorities

STEP 1 at 79th GRBP (Feb. 2024):
- Review of UN-R138 for AVAS (technical, language, consistency, interpretation, operation range)
- To be considered:
  - US FMVSS 141 & UN-R138 AVAS.
  - Review sound specifications & test conditions.
  - ISO 16254 Technical results expected

STEP 2 at 83rd GRBP (Feb. 2026):
- Ensure compatibility/ consistency between UN R138 and Draft UN R51.03 RD-ASEP
- Ramp-up max. sound level curve under any driving condition to establish a handshake between UN R138 maximum sound and RD-ASEP of UN R51.
- 2nd step linked to RD-ASEP from UN R51.

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| Priority | Revision of UN-R138-AVAS | Review of UN-R138 for AVAS (technical, language, consistency, interpretation, operation range) Ensure compatibility/conistency between UN R138 and Draft UN R51.03 RD-ASEP Ramp-up max. sound level curve under any driving condition to establish a handshake between UN R138 maximum sound and RD-ASEP of UN R51. | UN-R138 Draft UN-R51.03 (including RD-ASEP) | TF QRTV 1st step:  
- GRBP-78 (Sept.2023): Informal doc.  
2nd step:  
- GRBP-82 (Sept.2025): Informal doc.  
- GRBP-83 (Jan./Feb.2026): Working doc. | Chair: Germany Secretariat OICA | To be considered:  
- US FMVSS 141 & UN R138 AVAS.  
- Review sound specifications & test conditions.  
- ISO 16254 Technical results expected  
2nd step linked to RD-ASEP from UN R51. |
OICA is concerned that the initial concept for a 2-stage approach as agreed among all stakeholders in TF-QRTV has been given up for going immediately to a new series of amendments.

- We deem this step pre-mature, as the draft UN R138.02 raises more questions and open grey zones, rather than it helps to solve issues.
- Considerations of safety have mainly been suppressed – changes are not sufficiently validated in that direction.
- Other topics, such as uncertainty have been addressed, but it is still unclear, what could be the real improvement.

The biggest concern of OICA is about non-validated new definitions regarding the maximum sound level.

We see no need for such stringent cutting of AVAS sound

- What is the environmental benefit? For societies' health? For “single vehicle annoyance”?

Source: TF-QRTV-10-03 OICA concerns on draft UNR138-02.pdf
OICA understanding of agreed direction as of TF-QRTV #10:

- Requirements when AVAS Sound shall be respectively, may be emitted.
- Agreed AVAS Sound Limitations including additional microphone locations for demonstrating maximum sound level compliance.
- Handshake to UN R51 defined

ISO proposals to improve that measurement results reflect pedestrian perception and reduces measurement variations. (supp. by GRBP-79-30)
New Document **GRBP-79-34**

- ISO proposals (GRBP-79-30) have been incorporated.
- **Agreed direction** as of TF-QRTV #10 has been **modified by some Contracting Parties only**:
  - Handshake to UN R51 has been deleted.
  - **New Requirements** to limit and forbid any “non-natural” sound.

**Document GRBP-79-34 - (TF QRTV) Proposal to amend ECE/TRANS/WP.29/GRBP/2024/2**

- was created by some Contracting Parties only without any input/attendance of NGOs.
- brings back the concerns already expressed by OICA (TF-QRTV-10-03 OICA concerns on draft UNR138-02)
- **is therefore not an output of TF QRTV!**
Classification of EV’s Sound Emission
ASEP Database compared with EMISIA and TF QRTV Limits

- ASEP Database shows a wide spread of vehicle sound emission during all driving conditions.
- EMISIA-Study by EC confirmed: Sound pressure levels lower than or equal to 75 dB(A)* are no subject of concern!

* Regarding UN R51.03 Annex 7 at 7.5m distance in the control range of Annex 7
Classification of EV’s Sound Emission
Electric vehicles have no need for stricter limits!

- EVs are substantially below the quietest vehicle that have been used during the ASEP development work of the years 2005-2010.
- Even when equipped with sound enhancement systems operating beyond the scope of UN R138.01
- OICA sees no need for such stringent cutting of AVAS sound!
Classification of the Sound Emission
Maximum sound limits shall not jeopardize safe minimum sound!

- **“Safe Minimum Sound”** (NHTSA scientific approach*) with a safety margin of 6 dB is just reached by cruising EVs.

- Higher **“Safe Minimum Sound”** for accelerating EVs needed (see study *Perception of electric vehicles with AVAS (udv.de)*).

- From 32 km/h proposed cutting of AVAS sound will jeopardize a **“Safe Minimum Sound”**

* described in and published with the New Proposal for Rule Making (NPRM) Docket No. NHTSA-2011-0148, RIN 2127-AK93, presented by OICA in TF-QRTV-08-03
Alternative Concept for Electric Vehicles
UN R51.03 Annex 7 ASEP provisions

- OICA suggests to mandate for EVs fitted with sound enhancement systems compliance with UN R51.03 Annex 7 ASEP provisions (up to 80 km/h).

GRBP-79-43
Alternative Concept for Electric Vehicles
UN R51.03 Annex 7 ASEP provisions

This provision will
- connect and close any open area between UN R138 and UN R51.
- avoid overlapping regulations for Hybrids.
- sufficiently ensure that EVs are designed to ensure a significant benefit.
- welcome your comments for improvement and be presented as a working document to 80th GRBP in Sept. 2024.
What could be achieved with a bit more time for finding a solution acceptable to all stakeholders?

- Moving to a new series 02 of UN R138 will have limited effect in Europe, if it is not introduced into EU Regulation 540/2014, since there is no delegated act for the EU Commission any more since 2019.

- OICA proposal can be applied sooner by splitting safety and environment requirements with Supplement in each Regulation (UN R51 & UN R138).
  - Avoid regulatory conflict between safety and environmental aspects – sufficient margin between sound levels for UN R138 and UN R51.
  - Use in each discipline the required individual scientific approaches:
    - **Safety sound levels** are derived from considerations on audibility and recognition described by frequency bands and masking effects. This is addressed by UN R138 Annex 3, UN R28, UN R165, …
    - **Environmental aspects** are addressed by UN R51.03 Annex 3 ($L_{eq}$ & health effects) and Annex 7 (annoyance).

- Quality of documents will be improved:
  - Avoid overlapping of max sound level requirements for Hybrids from UN R138 and UN R51 Annex 7.
  - Exclude ambiguous definition “natural sound”. Replace them with performance-based requirements.
  - Consistently address whole vehicle sound, avoid requirements that cannot be proven in real life.
  - Check requirements regarding the support of upcoming/needed developments, e.g. AD vehicles, quieter tyres/roads, low budget EVs.
OICA’s Position
Summary

Classification of EV’s sound emission

- Sound pressure levels lower than or equal to 75 dB(A)* are no subject of concern (EMISIA Study, 2021).
- EVs are substantially below the quietest vehicles (ASEP Database 2005-2010), even when equipped with sound enhancement systems beyond the scope of UN R138.01.
- “Safe Minimum Sound”** with a margin of 6 dB is just reached by cruising EVs, while even higher level of “Safe Minimum Sound” for accelerating EVs is needed.

Proposals of GRBP-79-34 need more development:

- Proposed cutting of AVAS sound above 32 km/h will preclude an improved “Safe Minimum Sound”**.
- Proposed definition of “natural sound” prevents performance-based requirements, preferred by OICA.
- Proposed requirements above 32 km/h
  - create overlapping regulations for Hybrids with potential conflicts.
  - need test-modes or indoor testing. OICA recommends compliance can be proven in real life.
  - ignore/hinder upcoming/needed developments, e.g. ADV, low-cost-EVs, etc.

* Regarding UN R51.03 Annex 7 at 7.5m distance
** based on NHTSA Scientific Approach
OICA’s Alternative Concept
Summary

- First step: **Introduce Supplements** that
  - address BEVs with extended* Sound Enhancement Systems by UN R51.03, Annex 7 (ASEP).
  - refrain from changes to requirements – limit values, speed range and new definitions of sound types.
  - clarify min./max. sound requirements as function of vehicle speed and operating conditions to UN R138.01 suggested by ISO, OICA, TF-QRTV, …

- Second step: **Mature the new series of amendments** that
  - address **environmental aspects through Annex 9** (RD-ASEP) of UN R51 (await analysis of the monitoring data).
  - secure/improve safety aspects through UN R138.

- What’s the catch?
  - Industry would commit to accept the required Supplement to UN R51.03 with shorter transitional provisions.
  - Freeze **improved technical requirements** of UN R138.01 in the first step.
  - Develop a **viable and feasible solution for EVs** in cooperation with industry.

* "extended" means sound exceeding the mandatory operation range (RD-ASEP draft definition to be refined)