

UN GTR for In-Vehicle-Battery Durability

Online input for EVE-47 in context of Annex 2 (“Monitor Flag”) – Paragraph 5.1.

5.1. State-of-Certified Range and State-of Certified Energy (SOCR and SOCE) monitors

The manufacturer shall install SOCR and SOCE monitors that operate during the life of the vehicle. The SOCR monitor shall maintain an estimate of the state of certified range (on-board SOCR), and the SOCE monitor shall maintain an estimate of the state of certified energy (on-board SOCE).

The manufacturer shall determine the algorithms by which on-board SOCR and on-board SOCE are determined for the vehicles they produce. The manufacturer shall update the on-board SOCR and SOCE with sufficient frequency as to maintain the necessary degree of accuracy during all normal vehicle operation. As defined in Annex 2, in cases when the monitor would not have appropriate data to produce an accurate value or when the vehicle was abnormally used, the monitor shall distinguish these cases and put a flag on the values read.

(...)

- Paragraph 5.1. is referencing Annex 2
- Paragraph 5.1. can remain unchanged

UN GTR for In-Vehicle-Battery Durability

Online input for EVE-47 in context of Annex 2 (“Monitor Flag”) – Paragraph 6.3.2.

6.3. Part A: Verification of SOCR/SOCE monitors

(...)

6.3.2. Verification procedure

In order to verify the SOCR/SOCE monitors, the values for range and battery usable energy shall be measured at the time of the verification and the related values from the monitors read. In cases where the either monitor is reporting a flag for not being able to monitor accurately according to Annex 2, Cases A, then these vehicles shall be corrected, according to the instructions of the manufacturer, until the flag disappears and then tested. The manufacturer shall provide instructions on what is required to make the monitor able to provide an accurate value.

(...)

- Paragraph 6.3.2. is referencing Annex 2 Cases A
- Paragraph 6.3.2. can remain unchanged

UN GTR for In-Vehicle-Battery Durability

Online input for EVE-47 in context of Annex 2 (“Monitor Flag”) – Update of paragraph 6.4.1.

6.4. Part B: Verification of Battery Durability

(...)

6.4.1. Frequency of verification

Data shall be collected yearly by the authorities from a statistically adequate sample of vehicles within the same battery durability family. The decision on the number of the vehicles in the sample may be taken by the responsible authority based on risk assessment methodology, but in principle should not be less than [500].

~~If the number of vehicles in the sample is less than [500], then on the request of the manufacturer, a maximum of 5% of the values might be excluded from the sample. (→ sentence move to new paragraph 6.4.4.)~~

~~In cases where the either monitor is reporting a flag for not being able to monitor accurately according to Annex 2 Cases A, the manufacturer shall do a linear extrapolation based on the monitor value of 100% and the latest updated on-board SOCE and SOCR value. The extrapolation shall be done time based and the extrapolated on-board SOCE and SOCR value shall be considered in Part B verification.~~

The data read shall be those of the SOCR and SOCE monitors (and other relevant data, such as the flags according to Annex 2). SOCR and SOCE monitors of vehicles of category 2 and SOCR monitors of category 1-1 and 1-2 vehicles shall be monitored.

Paragraph 6.4.1.:

- Sentence with exclusion to be moved to new paragraph 6.4.4.
- Worst case approach with linear extrapolation in case of a Annex 2 Case A required to be added
→ details and boundary conditions of linear extrapolation still need to be described in a better way

UN GTR for In-Vehicle-Battery Durability

Online input for EVE-47 in context of Annex 2 (“Monitor Flag”) – Update of paragraph 6.4.1.

6.4. Part B: Verification of Battery Durability

(...)

6.4.4. Exclusion of vehicles from Part B verification

6.4.4.1. If the number of vehicles in the sample is less than [500], then on the request of the manufacturer, a maximum of [5%] of the values might be excluded from the sample, basing on the criteria defined in Annex 2 Cases B.

6.4.4.2. Depending on the selected minimum performance requirements according to paragraph 5.2., vehicles shall be excluded from the sample where the virtual mileage $Mileage_{virtual}$ is higher than higher maximum mileage of the selected minimum performance requirements.

The virtual mileage shall be determined as follows: $Mileage_{virtual} = Mileage_{Driven} \times \frac{Total\ UBE\ throughput}{UBE\ throughput\ during\ driving}$

Where:

$Mileage_{Driven}$ is the mileage which the vehicle was driven

$UBE\ throughput\ during\ driving$ is the UBE throughput while the vehicle was driven

$Total\ UBE\ throughput$ is the total UBE throughput of the vehicle in driving and non-driving conditions

New Paragraph 6.4.4.:

- Idea to cover the cases where vehicles can be excluded in a separate paragraph
- Adding virtual mileage approach to this new paragraph (→ need to be further evaluated)

UN GTR for In-Vehicle-Battery Durability

Online input for EVE-47 in context of Annex 2 (“Monitor Flag”) – Update of Annex 2

Annex 2 Monitor Flag

Cases where the monitor will raise a flag, since it will not be able to produce an accurate value or the vehicle or the battery has been used abnormally:

Cases A: where the monitor does not have enough data to produce an accurate value:

The manufacturer shall update the on-board SOCE and SOCR only if the conditions required for an accurate determination are fulfilled.

The manufacturer shall flag the monitors in cases they have not been updated within the last [max. 30 days].

Cases B: where the battery or vehicle was used “abnormally”:

1. The vehicle was stored (not connected to the grid) and not accumulating mileage for a significant amount of occasions per year
2. The vehicle was stored (connected to the grid) at high state of charge levels for a significant amount of occasions per year
3. The vehicles was exposed to extreme ambient temperature conditions
4. The vehicle was fast charged for significant percentage of the total charge throughput

Further criteria can be taken into consideration after discussion and with approval of the responsible authorities.

UN GTR for In-Vehicle-Battery Durability

Online input for EVE-47 in context of Annex 2 (“Monitor Flag”) – Flow chart in case of no indicator update

Proceeding for Part A and Part B in case of Flag ON due no indicator update

