Proposal: Paragraph 6.4.1. and Annex 2 (online input for EVE-48) – rev.2

UN GTR for In-Vehicle-Battery Durability

For abnormal or extended usage a solution for small sample is already drafted:

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

Virtual mileage is independent from sample size:

V2X will be a reality in future for electrified vehicles. From a certain ratio onwards it will use the battery more that it was defined for.

An example that could be driven by public incentives for grid stabilisation

- A BEV passenger car owner drives on average 50 km/day
  In 5 years, less than 400 cycles is required for the battery
- If the grid requests 1 cycle/day (or more)
  In 5 years more than 1800 additional cycles! (or more)

This use case cannot be reflected with the MPR based on mileage or calendar age!

It should be addressed by the virtual mileage approach independent from the sample size

→ A threshold and a possible cap for the maximum virtual mileages to be added to the driven mileage has to be defined

UN GTR for In-Vehicle-Battery Durability
Online input for EVE-48 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, basing on the criteria defined in Annex 2 Cases B.

For vehicles with extended V2X usage, the following provisions shall apply independent from the sample size:

$$Distance_{virtual} - Distance_{Driven} \leq [x] thousand\ km$$

Where:

$Distance_{Driven}$ is the actual distance driven with the vehicle (battery used for traction)

$Distance_{virtual}$ is calculated as follows: $Distance_{virtual} = Distance_{Driven} \times \frac{Total\ UBE\ throughput}{UBE\ throughput\ during\ driving}$

With:

$UBE\ throughput\ during\ driving$ 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 operations

UN GTR for In-Vehicle-Battery Durability
Online input for EVE-48 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 Case A Flag ON:

Part A: 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.

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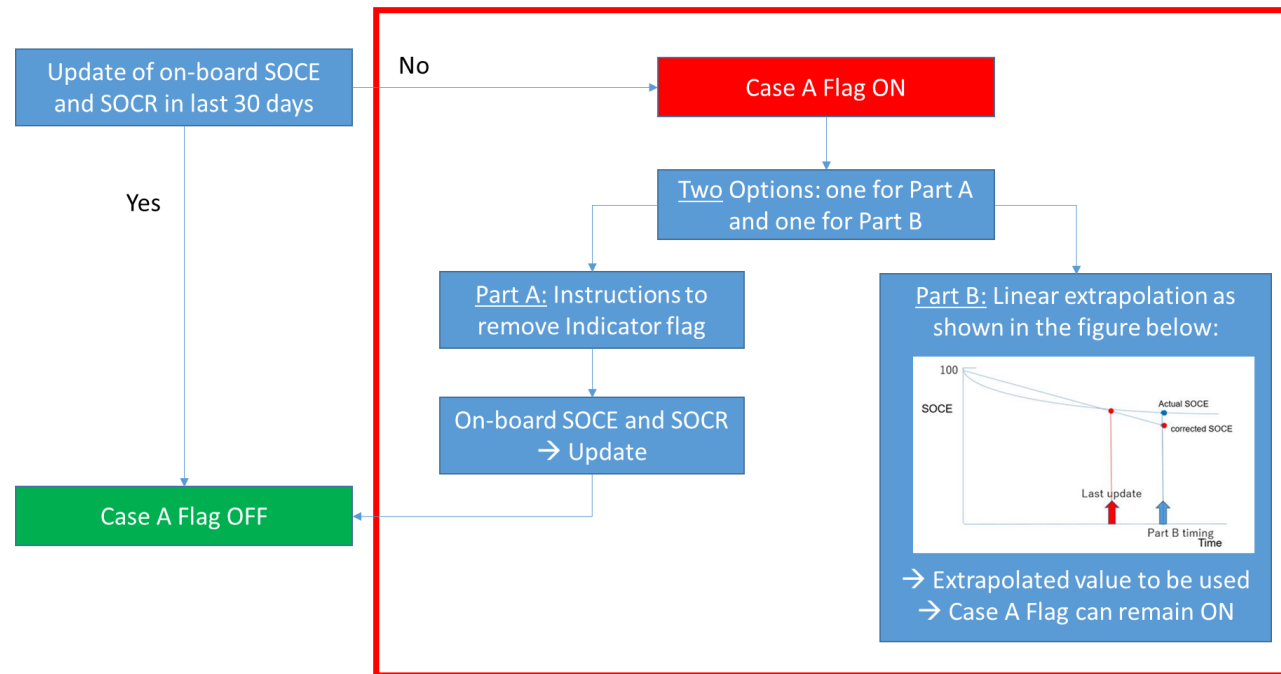
The data read shall be those of the SOCR and SOCE monitors (and other relevant data, such as the flags according to Annex 2). SOCR and SOCE monitors of vehicles of category 2 and SOCR monitors of category 1-1 and 1-2 vehicles shall be monitored.

UN GTR for In-Vehicle-Battery Durability
Online input for EVE-48 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.