













# OICA comments on GTR22

EVE-IWG #66  
06.-07.12.2023

- Part 1 of proposal for paragraph 6.5.1.

<p><b>[PART C:]</b></p> <p>6.5. <u>Verification of reported virtual distance</u></p> <p>6.5.1. <u>Verification procedure</u></p>			<p>OICA (04.12.)  </p> <p>Proposal for making clear that verification procedure only required if the option is applied.</p> <p><input type="text" value="@erwähnen oder antworten"/></p>
<p><u>A verification of the reported virtual distance is only required if the manufacturer is requesting to apply the equivalent virtual distance option.</u></p>			
<p><u>A verification of the reported virtual distance may be undertaken upon need.</u></p>			<p>OICA (04.12.)  </p> <p>Replaced by the first sentence. Can be deleted.</p> <p><input type="text" value="@erwähnen oder antworten"/></p>
<p><u>In order to verify the virtual distance read by the vehicle, a test shall be performed with adequate and representative use of the vehicle in V2X or non-traction purposes, if applicable, to verify whether the increase in virtual distance reported is accurate. The total discharge energy during this use shall be measured in order to calculate the measured virtual distance. The verification procedure use case (including the minimum amount of discharged energy [corresponding to at least 50 km virtual distance. If 50 km virtual distance cannot be reached with a fully charged battery, virtual distance required for verification shall be set to a value recommended by the manufacturer]) shall be agreed and approved by the responsible authority.</u></p>	 		<p>OICA (04.12.)  </p> <p>Proposal to add this that it's clear that all available V2X interfaces - which are used to calculate virtual distance - need to be used in a representative way.</p> <p><input type="text" value="@erwähnen oder antworten"/></p>
			<p>OICA (04.12.)  </p> <p>Proposal to add this wording to make clear that use case has to fulfill specific quality criteria which have to be discussed with and agreed by the responsible authority.</p> <p><input type="text" value="@erwähnen oder antworten"/></p>

- Part 2 of proposal for paragraph 6.5.1.

Table xy: The following steps shall be performed to determine the necessary verification results:

Step nr.	Input	Description	Output
Step 1	n.a.	Read the initial virtual distance and the worst case certified energy consumption of PART B family according to Annex 2	$d_{virt, onb, init}$ [km] $EC_{PART B}$ [Wh/km]
Step 2	n.a.	Perform the V2X-use case and measure the discharged energy	$E_{V2X, meas}$ [Wh]
Step 3	n.a.	Read the final virtual distance according to Annex 2	$d_{virt, onb, final}$ [km]
Step 4	From step 1: $d_{virt, onb, init}$ [km] $EC_{PART B}$ [Wh/km]	Calculate the delta of onboard virtual distance: $\Delta d_{virt, onboard} = d_{virt, onb, final} - d_{virt, onb, init}$	$\Delta d_{virt, onboard}$ [km]
	From step 2: $E_{V2X, meas}$ [Wh] From step 3: $d_{virt, onb, final}$ [km]	Calculate the measured virtual distance: $\Delta d_{virt, meas} = \frac{E_{V2X, meas}}{EC_{PART B}}$	$\Delta d_{virt, meas}$ [km]

OICA (04.12.)

Proposal to clarify what needs to be determined, what needs to be calculation and what needs to be compared.

Required clarification which makes proceeding more clear and robust

4. Dezember 2023, 14:33

@erwähnen oder antworten

- Part 1 of proposal for paragraph 6.5.2.

6.5.2 Pass or fail of reported virtual distance

An agreed verification procedure use case (as mentioned in paragraph 6.5.1.) shall be performed with an adequate number of vehicles (at least 1 and not more than 4) ~~A single test with one to three vehicles used in V2X or non-traction purposes.~~ The verification of the reported virtual distance shall lead to a fail in the verification procedure if the reported virtual distance ~~Ad<sub>virt, onboard</sub> acc. to Table xy is more than 5% higher than the measured virtual distance Ad<sub>virt, meas</sub> acc. to Table xy, where the measured virtual distance deviates more than 5% from the reported virtual distance shall lead to a fail of the reported virtual distance.~~



OICA (04.12.)  
"A single test" is to unspecific...more clear description required: "an agreed verification procedures..."  
@erwähnen oder antworten

OICA (04.12.)  
Proposal to use wordings already used in other context of Part A. Furthermore reflection of increased number of maximum vehicles (4 instead of 3)  
@erwähnen oder antworten

OICA (04.12.)  
Tolerance should be only in one direction. Lower reported virtual distance (than measured virtual distance) should be always allowed as not to the benefit of the manufacturer. Just higher reporting should be kept to a maximum of +5%.  
4. Dezember 2023, 14:39  
@erwähnen oder antworten

- Part 2 of proposal for paragraph 6.5.2.

The following statistics shall be used to take a decision on the accuracy of the virtual distance.

For the purposes of deciding on a pass/fail result for the sample, 'p' is the count of passed results, and 'f' is the count of failed results. Each passed test result shall increase the 'p' count by 1 and each failed test result shall increase the 'f' count by 1 for the relevant open statistical procedure.

Upon the incorporation of valid V2X energy test results to an open instance of the statistical procedure, the responsible authority shall perform the following actions:

- update the cumulative sample size 'n' for that instance to reflect the total number of valid tests incorporated to the statistical procedure;
- following an evaluation of the results, update the count of passed results 'p' and the count of failed results 'f';
- check whether a decision is reached with the procedure described below.

The decision depends on the cumulative sample size 'n', the passed and failed result counts 'p' and 'f'. For the decision on a pass/fail of a verification sample the responsible authority shall use the decision chart in Figure 1. The charts indicate the decision to be taken for a given cumulative sample size 'n' and failed count result 'f'.

Two decisions are possible for a statistical procedure for a given vehicle family:

- 'Sample pass' outcome shall be reached when the decision chart from Figure 1 gives a "PASS" outcome for the current cumulative sample size 'n' and the count of failed results 'f'.
- 'Sample fail' decision shall be reached when, for a given cumulative sample size 'n', when the applicable decision chart from Figure 1 gives a "FAIL" decision for the current cumulative sample size 'n' and the count of failed results 'f'.

If no decision is reached, the statistical procedure shall remain open and further results shall be incorporated into it until a decision is reached.

OICA (04.12.)

This is required to explain table which describes when sample is pass or fail.

4. Dezember 2023, 14:44

@erwähnen oder antworten

- Part 3 of proposal for paragraph 6.5.2.

<b>Failed result count f</b>	3			<u>FAIL</u>	<u>FAIL</u>
	2		<u>UND</u>	<u>UND</u>	<u>PASS</u>
	1	<u>UND</u>	<u>PASS</u>	<u>PASS</u>	<u>PASS</u>
	0	<u>PASS</u>	<u>PASS</u>	<u>PASS</u>	<u>PASS</u>
		1	2	3	4

**OICA (04.12.)** ✎ ...

In EVE-65, maximum sample size of 3

Proposal to extend required sample size to 4 to get a pass or fail (instead of 3).

Not more than 2 vehicles can fail.  
Pass not possible with fail quota > 50%

4. Dezember 2023, 14:47

@erwähnen oder antworten

- Proposal for paragraph 6.5.3.

6.5.3.

Corrective measures for reported virtual distance

~~In case of a failed reported virtual distance, all reported virtual distances for this battery family shall be corrected by the deviation between the measured and reported values according to point 6.5.1 and the procedure for verification of Part B shall be repeated to confirm the pass or fail. Corrective measures shall also be taken with the agreement of the responsible authority in order to correct the virtual distance calculator in all affected and future vehicles.~~

A fail decision for the sample means that the virtual distance calculators (algorithm) fail to report accurately the virtual distance of the system and appropriate action shall be taken by the manufacturer with the agreement of the responsible authority. This may lead to the requirement that the manufacturer repairs or replaces the faulty virtual distance calculator in all affected and future vehicles in the battery durability family, to correct already reported virtual distances for this family and to repeat the procedure for verification of Part B in order to confirm the pass or fail.

OICA (04.12.)

Numbering to be adjusted.

@erwähnen oder antworten

OICA (04.12.)

Proposal for better wording.

Justification:

- similar wording used for Part A (§6.3.4.)
- Correction of reported virtual distance and repeating Part B is seen already as part of the "appropriate action taken" and therefore should be moved to later of the paragraph following "this may lead..." (Required actions cannot be decided before not knowing the reason for fail. Depending on that)

4. Dezember 2023, 14:49

@erwähnen oder antworten



- Editorial Point 1:

Values requireds if manufacturer applies virtual mileagedistance option

OICA (04.12.)  
Required instand of requires  
Use "distance" instead of "mileage"  
--> consistency with rest of GTR  
4. Dezember 2023, 14:53

- Editorial Point 2:

11. Total discharge energy for non-traction purposes [kWh], only applicable for category 2 vehicles and if requested by the manufacturer

OICA (04.12.)  
In OICA proposal during EVE-63.  
(<https://wiki.unece.org/download/attachments/198675471/EVE-63-11e%20-%20UN%20GTR%2022%20OICA%20comments%20on%20Annex%202-3%20and%20Part%20A%20monitoring.pdf?api=v2>)  
--> in EVE-65, EVE agreed to reflect OICA proposal in working document  
--> But restriction to category was missed to be reflected as well as sentence that only applicable if requested by the manufacturer  
4. Dezember 2023, 14:59