

Final Status of SG EV

Report on topics discussed in SG EV in the context of the GTR#15 Amendment#6

IWG WLTP web-audio meeting, June 4th, 2020

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WLTP SG EV – Final status of GTR#15 Amd#6 related EV topics

Low Temperature Test related topics

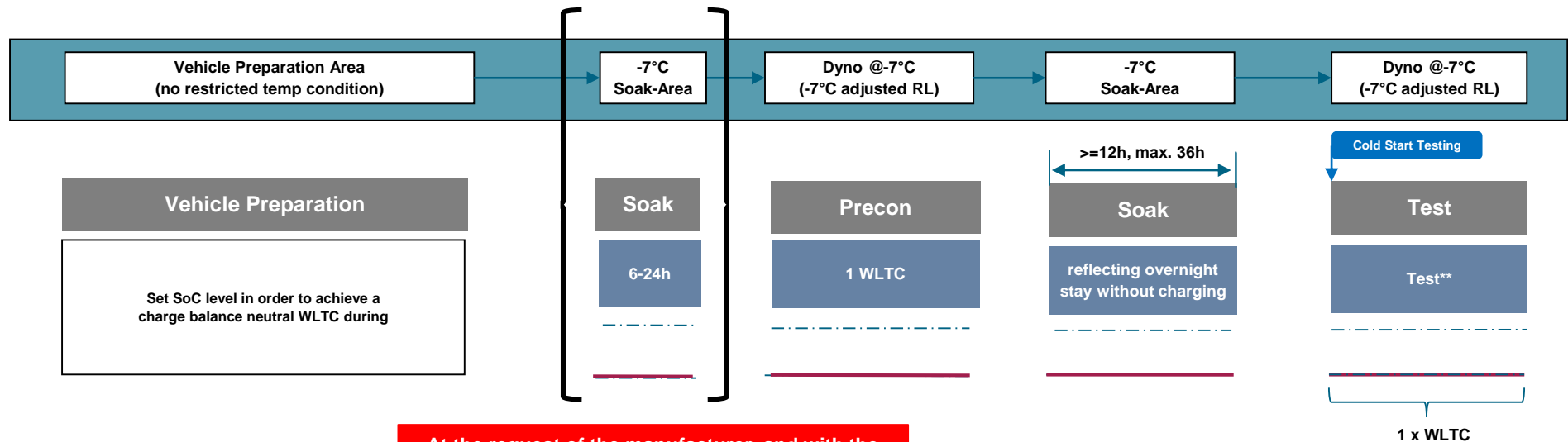
Item	Status	Remark
Low Temp Test Procedure for NOVC-HEVs, OVC-HEVs (see slides 3-4)	Closed*	*scrutiny during validation exercise; if required: adjustment
Low Temp Family concept for NOVC-HEVs, OVC-HEVs (see slide 5)	Closed*	*scrutiny during validation exercise; if required: adjustment
Low Temp Test Procedure for PEVs (see slide 6)	Closed*	*scrutiny during validation exercise; if required: adjustment
Low Temp Family concept for PEVs (see slide 7)	Closed*	*scrutiny during validation exercise; if required: adjustment

Agreed content: See informal document amending working document for GTR#15 Amendment#6

<https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>

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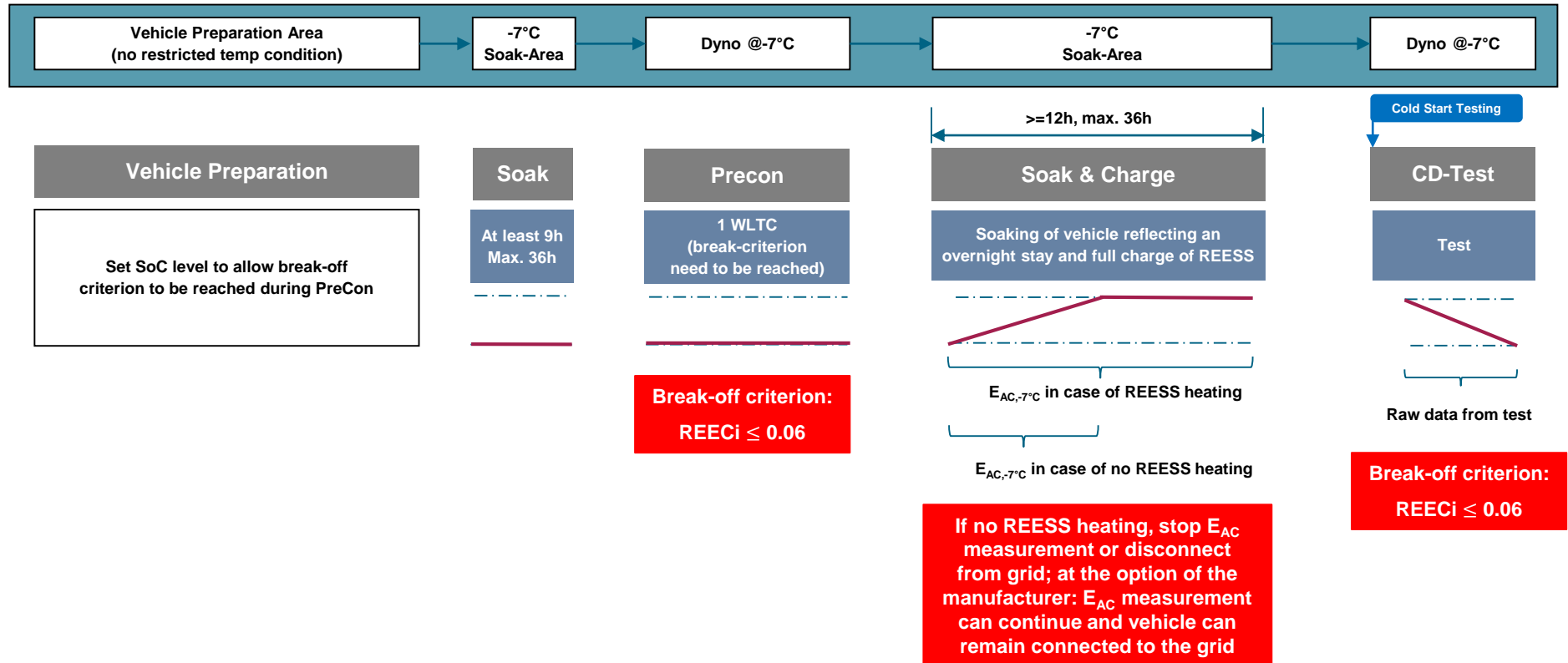
Agreed Low Temp Test Procedure for NOVC-HEV and for CS-Test of OVC-HEV



At the request of the manufacturer, and with the approval of the responsible authority, the soak before preconditioning may be omitted if the manufacturer can justify that this soak will have negligible effects on the criteria emissions. As an example, the effects on the criteria emissions may be non-negligible in the case that the vehicle has an aftertreatment system that uses a reagent.

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Agreed Low Temp Test Procedure for CD-test of OVC-HEV)



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Overview family concept for OVC-HEV

Selection of OVC-HEVs for Type 6 testing

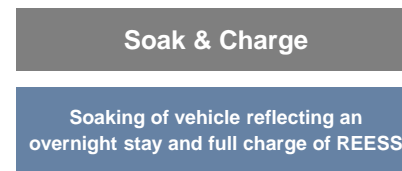
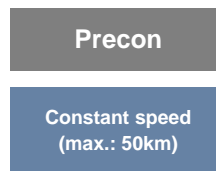
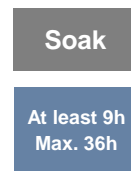
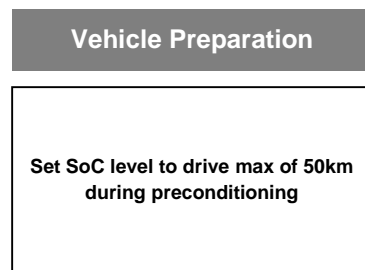
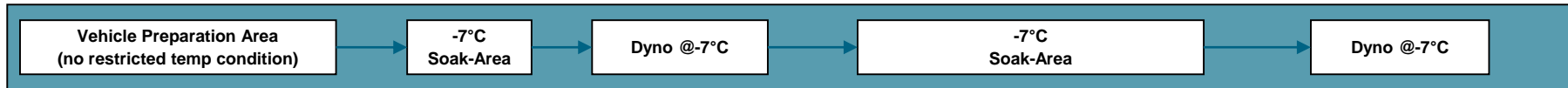
In the case of a Type 6 family consisting of OVC-HEVs, the manufacturer shall specify

- at least one vehicle configuration representative for either PMR_H or PMR_L , whichever is expected to be the worst-case for criteria emissions
→ measurement for criteria emissions

- the vehicle configuration with the highest combined energy consumption, i.e. the highest combined cycle energy demand and energy consumption for heating. The selection shall be made in agreement between the manufacturer and the approval authority
→ measurement for worst case range and electric energy consumption

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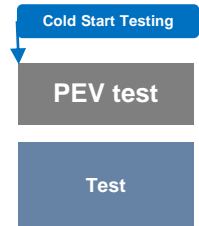
Agreed Low Temp Test Procedure for PEV



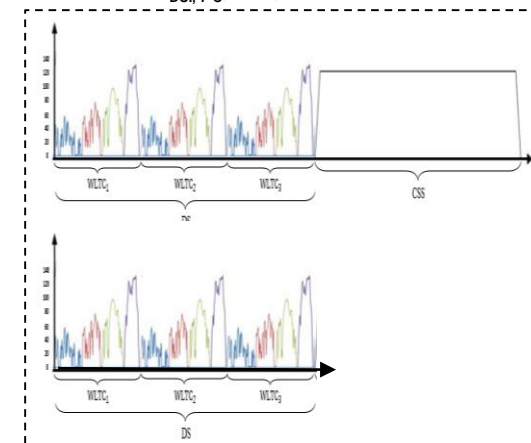
$E_{AC,-7^{\circ}C}$ in case of REESS heating

$E_{AC,-7^{\circ}C}$ in case of no REESS heating

If no REESS heating, stop E_{AC} measurement or disconnect from grid; at the option of the manufacturer: E_{AC} measurement can continue and vehicle can remain connected to the grid



$E_{DC,-7^{\circ}C}$, UBE, etc.



Family concept PEV

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Overview family concept for PEV

Selection of PEVs for Type 6 testing

- At least one vehicle for measuring UBE ratio shall be selected from all vehicle high (VH) of the covered interpolation families in a Type 6 family
In order to belong to the same family → variation in battery capacity shall not exceed 55 per cent of the test vehicle configuration

→ Measurement of complete procedure required (3 cycles + constant speed segment)

- At least one vehicle which preferably produced worst case ratio for PER and EC shall be selected from vehicle high (VH) and vehicle low (VL) of the interpolation family in a Type 6 family
 - The measured values of a tested vehicle may be extended without further testing to all family members which fulfil the family criteria defined in paragraph 5.14.2. of this GTR
 - If vehicles within the family include other features which may have a non-negligible influence on the PER and/or EC ratio, these features shall also be identified and considered in the selection of the test vehicle
 - If the responsible authority determines that the selected vehicle does not fully represent the family, an alternative and/or additional vehicle from other vehicle high (VH) and/or vehicle low (VL) of the interpolation families shall be selected and tested

→ Measurement of reduced procedure required (3 cycles only w/o constant speed segment)

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Non low Temperature Test related topics

Item	Status	Remark
Update in context of nominal voltage application (detailed information slide 9)	Closed	
Generic approach for CO ₂ correction factor application (detailed information slide 10)	Closed*	*need to be revisited before transposition into UNR WLTP
CO ₂ correction factor family approach (detailed information slide 11)	Closed*	*only for 4 phase WLTP test
Expected number of cycles during CD test (detailed information slide 12)	Postponed	
Amendments in calculations of Annex 8 Chapter 4 → Clarification (detailed information slide 13)	Postponed	

Agreed content: See informal document amending working document for GTR#15 Amendment#6

<https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>



Square bracket topic in WD of WLTP GTR#15 Amend#6

Update/amendment of the wording of nominal voltage

Intention of proposal:

- Nominal voltage is a fixed voltage value which is not taking care of the voltage decrease of a REESS
- For PEV test procedures, nominal voltage is not allowed at all; but still for the CD-test of an OVC-HEV
- Proposal limits the application of nominal voltage to the CS-conditions of an OVC-HEV and to the low voltage REESSs of PEVs and OVC-HEVs under CD conditions; high voltage REESS under CD condition are not allowed to use nominal voltage

Final status:

- It was agreed by SG EV during the meeting on April 8th to follow JPN proposal (with 60V threshold)
- Only remark: Last line in Table A8.App3/1 („break-off criteria judgment...”) shall be deleted from the proposal

Final text:

See in <https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>

Conclusion within WLTP SG EV:

- ☒ Shall go into GTR#15 Amd#6
- ☐ Shall not go into GTR#15 Amd#6, topic shall be further postponed



Square bracket topic in WD of WLTP GTR#15 Amend#6

Generic approach in the context of the CO₂ correction factor application of (N)OVC-HEVs

Intention of the proposal:

- Proposal is to give the manufacturer the option to use a worst case approach based on the generic approach from pure ICE vehicles
- These proposals will reduce unnecessary testing without any additional value

Final status:

- JPN and EC support the proposal → support for 4 phase WLTP test and 3 phase WLTP test
- Proposal as under the link below will go into GTR#15 Amend#6
- Proposal need to be revisited before going into UNR WLTP

Final text:

See in <https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>

Conclusion within WLTP SG EV:

- ☒ Shall go into GTR#15 Amd#6(but further scrutiny before going into UNR)
- ☐ Shall not go into GTR#15 Amd#6, topic shall be further postponed



Square bracket topic in WD of WLTP GTR#15 Amend#6

K_{CO_2} correction factor family – applicable for OVC-HEVs and NOVC-HEVs

Intention of the proposal:

- Manufacturer should be able to group several interpolation families into one K_{CO_2} family
- This proposals will reduce unnecessary testing without any additional value

Final status:

- JPN cannot support the proposal but can accept to apply it to 4 phase WLTP test
- EC supports the concept of having the same family criteria as the CoP family
- Proposal will be applied to 4 phase WLTP test only (need to be considered during drafting)
- During drafting, it need to be discussed which proposed text to follow (ACEA TF EV proposal or Nick-san proposed amendments)

Final text:

See in <https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>

→ For 4 phase WLTP test only

Conclusion within WLTP SG EV:

- ☒ Shall go into GTR#15 Amd#6(but for 4 phase WLTP test only)
- ☐ Shall not go into GTR#15 Amd#6, topic shall be further postponed



Square bracket topic in WD of WLTP GTR#15 Amend#6

Expected number of cycles in CD mode for OVC-HEV

Intention of the proposal:

- It is not clear what need to be done in the case of a borderline OVC-HEV which reaches in one test the expected numbers of CD cycles but in another test one cycle more or one cycle less than the expected number of CD cycles
- Proposal is providing a solution how to deal with this situation

Final status:

- Necessity seen to take action but no urgent need; at the current stage, this issue can be negotiated with technical service
- EC and JPN agreed to delete the text within the square brackets and to remain with the UNR WLTP text
- Topics can be revisited at a later stage, e.g. in the preparation of the UNR WLTP revision

Final text:

See in <https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>

→ Proposal contains the deletion of the square bracket text

Conclusion within WLTP SG EV:

- ☐ Shall go into GTR#15 Amd#6
- ☒ Shall not go into GTR#15 Amd#6, topic shall be further postponed(text in square brackets to be deleted)



Drafting topics to be addressed in WD of WLTP GTR#15 Amend#6

Amendments in calculations of Annex 8 Chapter 4

Background of the proposal:

- Clarification: Add wording "arithmetic" in context of 'average' to make clear that the arithmetic average is meant
- Clarification: Adding "and charge-depleting fuel efficiency" in §4.2.2. headline; adding "for OVC-HEVs" in first sentence of §4.2.3.
- Guidance in equation where a division by "zero" is possible: Add wording in case of OVC-HEV equations where a division by "zero" would be possible in case of a pure electric driven CD test or at least one cycle in the CD test (FE_{CD} , $FC_{weighted}$, $EAER$, $EAER_p$)

Final status:

- As the intention of the proposal is to clarify some points but no urgency behind
- EC and JPN stated that these changes can be introduced at a later stage (e.g. when discussing the UNR WLTP revision)

Latest text proposal (will not be considered during drafting):

[200514 Amendments in calculation GTR15 Annex 8 Chapter 4 \(rev1\).docx](#)

Conclusion within WLTP SG EV:

- ☐ Shall go into GTR#15 Amd#6
- ☒ Shall not go into GTR#15 Amd#6, topic shall be further postponed