WLTP UNR Development (WLTP-28-09e)

Proposals in discussion within WLTP Sub Group EV

Drafting issue, no content change

Proposals in discussion within WLTP Sub Group EV

Proposals for amendment

Amendment of Annex 8, Paragraph 4.4.4.2. (Determination of phase-specific EAER)

- Intention of the proposal:
  - In paragraph 4.4.4.2., the text box at the very end is a bit misleading as it writes "(...) considered phase values" and then talks about phase and cycle in the second part of the sentence
  - Proposal removes "values" at the beginning and just says: the considered phase shall be the low phase, medium phase, high phase, extra-high phase and the city driving cycle
- Feedback:
  - JPN supports the proposal
  - Not discussed with EC yet, EC need to discuss internally and will come back with a feedback
- Conclusion in IWG WLTP in Bern:
  - Including into UNR WLTP

Latest version: 190927_Amendment 5_EAER_city_improvement.docx

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Amending of text, content change

Proposals in discussion within WLTP Sub Group EV

Proposals for amendment

Update/amendment to include extrapolation for OVC-HEVs

Intention of the proposal:

- Extrapolation is defined for OVC-HEVs but to avoid mistakes in the extrapolation two additional aspects need to be considered, to ensure that the extrapolation is right and correct
  - By extrapolation below VL, the amount of CD-cycles need to be identical between VL and the extrapolated vehicle below VL; if VL was not able to drive CD in pure electric operation, also no pure electric operation for the extrapolated vehicle below VL allowed
  - By extrapolation above VH, the amount of CD-cycles need to be identical between VH and the extrapolated vehicle above VH; if VH was able to drive CD in pure electric operation until SoC_{min}, also pure electric operation for the extrapolated vehicle above VH required

Feedback:

- JPN is currently not able to support this proposal
- EC needs to check and will comeback with feedback

Latest version: 190930_WLTP-GTR-Proposals_EV_extrapolation_OVC-HEVs.pdf

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Update/amendment to include extrapolation for PEVs

Intention of the proposal:

- No extrapolation defined for PEVs
- Proposals adds this option and defines a value up to which an extrapolation shall be allowed

Feedback:

- JPN supports the proposed concept but is not able to support the “3Wh/km” because of lack of evidence
- Identical feedback from EC

Possible further proceeding:

- If agreement on concept but not on value of 3Wh/km, concept could be inserted in working document of UNR WLTP but this additional paragraph in [square brackets]
- If enough evidence for a value, remove square brackets and add value; if not: remove paragraph

Latest version: 190930_WLTP-GTR-Proposals_EV_extrapolation_PEVs.pdf

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Update/amendment of OVC-HEV and PEV family (on charge electric energy converter)

Intention of the proposal:

- The interpolation family criteria are including the electric energy converter between recharge-plug-in and REESS
- A vehicle, which is identical in all interpolation family criteria except of the onboard-charger, would need to be split into two separate families which means to separate measurements
- These two separate measurements are caused by a component which has only influence on the recharged energy E_{AC} (DC energy consumption, fuel consumption, CO_2 are identical), so you are doing the same measurement procedure twice just to measure the recharged energy with a different device
- Proposal describes that the measurements with the less efficient charger can cover the measurements with the more efficient charger(s) as less efficient charger is the "worst case" in case of the recharged energy E_{AC}

Feedback:

- JPN is currently not able to support this proposal, EC is still in scrutiny

Latest version: 190930_WLTP-GTR-Proposals_EV_family criteria vehicle charger.pdf

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

☐	Supported and shall go into UNR WLTP first edition
X	Further discussion in web-audio before October 21st, discussion of further proceeding
☐	Not supported

Proposals for amendment

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
- For low voltage REESS, nominal voltage application should be allowed in any case as these REESS are small and the voltage decrease over SoC is small

Feedback:

- JPN was not able to support this proposal without explanations; with explanations above: additional scrutiny
- EC need to discuss internally and will come back with a feedback

Latest version: 190903_ACEA TF EV proposal nominal voltage_with_comment_and_changes.docx

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Update/amendment of calculation formula of $M_{CO2,weighted}$, $FC_{weighted}$, $EC_{AC,weighted}$, EAER

Intention of the proposal:

- Weighted CO_2 mass emission is currently based on declared CS CO_2 and measured CD CO_2 mass emission
- In case of a "golden" measurement of the CD-test during type approval, the manufacturer runs into the risk that a vehicle measured by a third party is not matching the "golden" measurement
- Solution is to use in case of the weighted CO_2 mass emission also the declared value of the CD CO_2 mass emission
- Following equations need to be adjusted in addition: $FC_{weighted}$, $EC_{AC,weighted}$, EAER

Feedback:

- JPN supports the proposal (but has JPN been aware of the additional changes as not clear from the file name?)
- EC need to discuss internally and will come back with a feedback

Latest version: 190903_M_Co2_weighted_Annex_6_7_8_for_declared value implementation.docx

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Adding a paragraph 4.5.8. in Annex 8 (allowing to voluntarily decrease individual $EAER_{(p)}$)

Intention of the proposal:

- EAER is no declared value but of high importance as in the CoC of European Type Approvals
- As EAER calculation is based on measured values (including the proposed amendment before), manufacturer needs to provide a EAER value for CoC based on measured data
- In case of a "golden" vehicle during Type Approval, the manufacturer runs into the risk that a vehicle measured by a third party is not matching the "golden" measurement
- Solution to write a voluntarily lowered EAER value into the CoC

Feedback:

- JPN supports the proposal
- EC need to discuss internally and will come back with a feedback

Latest version: topic described in 190926_Drafting Input for SG EV_1443 (but also see next slide)

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Adding a paragraph 4.5.8. in Annex 8 (allowing to voluntarily decrease individual $EAER_{(p)}$)

Annex 8, Adding a paragraph 4.5.7.4. (to allow to decrease EAER as it is no declared value)	
Situation: Currently, manufacturer is not allowed to write a lower EAER range value in the test report and CoC then the measured one. Maybe, Annex 7, paragraph 3.2.3.2.6. can be a solution, just amended in the direction of EAER 3.2.3.2.6. The individual CO_2 value determined in paragraph 3.2.3.2.4. of this annex may be increased by the original equipment manufacturer (OEM). In such cases: (a) The CO_2 phase values shall be increased by the ratio of the increased CO_2 value divided by the calculated CO_2 value; (b) The fuel consumption values shall be increased by the ratio of the increased CO_2 value divided by the calculated CO_2 value. This shall not compensate for technical elements that would effectively require a vehicle to be excluded from the interpolation family.	Proposal to add a new paragraph in Annex 8, chapter 4: 4.5.8. Adjustment of values The individual EAER value determined in accordance with paragraph 4.5.7.3. of this Annex may be decreased by the OEM. In such cases: The EAER phase values shall be decreased by the ratio of the decreased EAER value divided by the calculated EAER value. This shall not compensate for technical elements that would effectively require a vehicle to be excluded from the interpolation family.

In case of adoption of slide 9 → this amendment not needed

Proposals for amendment

Update/amendment of Annex 8, Table A8/9 (adjustment of input parameter for EAER cal.)

Intention of the proposal:

- The calculation of EAER is based on the declared CS CO_2 mass emission and the measured CD CO_2 mass emission
- Proposal adjust the input coming from CS and bases the calculation of EAER on measured values only (CD and CS)

Feedback:

- JPN supports the proposal
- EC need to discuss internally and will come back with a feedback

Latest version: topic described in 190926_Drafting Input for SG EV_1443 (but also see next slide)

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

In case of adoption of slide 9 → this amendment not needed

Proposals for amendment

Update/amendment of Annex 8, Table A8/9 (adjustment of input parameter for EAER cal.)

Annex 8, Table A8/9: Input for EAER calculation	
Current text in GTR #15 Amendment #5: GTR text sais with the text in the post processing tables that the input for the calculation of EAER is - the declared M_CO2_CS_C cycle value - the measured M_CO2_CD_p phase specific values - the charge-depleting cycle range The inputs for the calculation of EAER are defined in Step No. 1 of Table A8/9: → $M_{CO2,CS,c}$: output Step 7 of Table A8/5 → $M_{CO2,CD,j}$: output Step 1 of Table A8/8 → R_{CDC}: output Step 3 of Table A8/8	Proposal: Input for the calculation should be adjusted as follows: - Inputs M_CO2_CD_j and charge-depleting cycle range remain unchanged - Regarding M_CO2_CS value: not the declared but the measured value should be the input. This means to adjust as described now: OLD: Mco2,cs,c: output Step 7 of Table A8/5 NEW: Mco2,cs,c: output Step 6 of Table A8/5 The inputs for the calculation of EAER are defined in Step No. 1 of Table A8/9: → $M_{CO2,CS,c}$: output Step 6 of Table A8/5 → $M_{CO2,CD,j}$: output Step 1 of Table A8/8 → R_{CDC}: output Step 3 of Table A8/8

Proposals for amendment

Update/amendment of adjustment of phase specific range values of PEVs

Intention of the proposal:

- In case of PEVs, there is currently no alignment of the phase specific PER values based on the ratio between declared total cycle value and measured total cycle value
- Proposal is adding this with the intention that the phase specific values fit to the total cycle values (see table A8/10 and A8/11)

Feedback:

- Has JPN been aware of this amendment as not clear from the file name?
- EC need to discuss internally and will come back with a feedback

Latest version: 190903_M_Co2_weighted_Annex_6_7_8_for_declared value implementation.docx

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

	Supported and shall go into UNR WLTP first edition
X	Further discussion in web-audio before October 21st, discussion of further proceeding
	Not supported

Proposals for amendment

Update/amendment of table A6/2 (adding $EC_{AC,CD}$ as new criterion)

Intention of proposal:

- All declared values are covered by the tables A6/2, except of $EC_{AC,CD}$ from OVC-HEVs
- Proposal is adding this value to the OVC-HEV table of tables A6/2
- $EC_{AC,CD}$ might not be considered because during CD-test $M_{CO2,CD}$ is already taken into account

Feedback:

- JPN not able to support the proposal (IWG already discussed and agreed on Annex 6, paragraph 1.2.3.3.)
- EC need to discuss internally and will come back with a feedback

Latest version: topic described in 190926_Drafting Input for SG EV_1443 (but also see next slide)

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Update/amendment of table A6/2 (adding $EC_{AC,CD}$ as new criterion)

	Test	Judgement parameter	Criteria emissions	$M_{CO2,CD}$	$EC_{AC,CD}$	AER
Row 1	First test	First test results	≤ Regulation limit × 0,9 (1)	≤ Declared value × $dCO2_1$	≤ Declared value × 1,0	≥ Declared value × 1,0
Row 2	Second test	Arithmetic average of the first and second test results	≤ Regulation limit × 1,0 (2)	≤ Declared value × $dCO2_2$	≤ Declared value × 1,0	≥ Declared value × 1,0
Row 3	Third test	Arithmetic average of three test results	≤ Regulation limit × 1,0 (2)	≤ Declared value × $dCO2_3$	≤ Declared value × 1,0	≥ Declared value × 1,0

For OVC-HEVs charge-depleting Type 1 test.

(1) '0,9' shall be replaced by '1,0' for charge-depleting Type 1 test for OVC-HEVs, only if the charge-depleting test contains two or more applicable WLTC cycles.

(2) Each test result shall fulfil the regulation limit.

(3) $dCO2_1$, $dCO2_2$ and $dCO2_3$ shall be determined according to paragraph 1.2.3.8. of this annex.

Proposals for amendment

Update/amendment of Annex 8, Appendix 4, Paragraph 2.2.3. (Charging)

Intention of the proposal:

- The end-of charge-criterion has currently no reference to the soaking time
- Proposal is adding this reference

Feedback:

- JPN supports the concept of the proposal
- EC need to discuss internally and will come back with a feedback

Latest version: topic described in 190926_Drafting Input for SG EV_1443 (but also see next slide)

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

[ ]	Supported and shall go into UNR WLTP first edition
[X]	Further discussion in web-audio before October 21st, discussion of further proceeding
[ ]	Not supported

Proposals for amendment

Update/amendment of Annex 8, Appendix 4, Paragraph 2.2.3. (Charging)

Annex 8, Appendix 4 (Charging)	
Current text:	Proposal:
2.2.3. Application of a normal charge Normal charging is the transfer of electricity to an electrified vehicle with a power of less than or equal to 22 kW. Where there are several possible methods to perform a normal AC charge (e.g. cable, induction, etc.), the charging procedure via cable shall be used. Where there are several AC charging power levels available, the highest normal charging power shall be used. An AC charging power lower than the highest normal AC charging power may be selected if recommended by the manufacturer.	2.2.3. Application of a normal charge Normal charging is the transfer of electricity to an electrified vehicle with a power of less than or equal to 22 kW. Where there are several possible methods to perform a normal AC charge (e.g. cable, induction, etc.), the charging procedure via cable shall be used. Where there are several AC charging power levels available, the highest normal charging power shall be used. An AC charging power lower than the highest normal AC charging power may be selected if recommended by the manufacturer and by approval of the responsible authority.
2.2.3.1. The REESS shall be charged at an ambient temperature as specified in paragraph 2.2.2.2. of Annex 6 either with the on-board charger if fitted. In the following cases, a charger recommended by the manufacturer and using the charging pattern prescribed for normal charging shall be used if: (a) No on-board charger is fitted, or (b) The charging time exceeds the soaking time defined in paragraph 2.7. of Annex 6. The procedures in this paragraph exclude all types of special charges that could be automatically or manually initiated, e.g. equalization charges or servicing charges. The manufacturer shall declare that, during the test, a special charge procedure has not occurred.	2.2.3.1. The REESS shall be charged at an ambient temperature as specified in paragraph 2.2.2.2. of Annex 6 either with the on-board charger if fitted. In the following cases, a charger recommended by the manufacturer and using the charging pattern prescribed for normal charging shall be used if: (a) No on-board charger is fitted, or (b) The charging time exceeds the soaking time defined in paragraph 2.7. of Annex 6. The procedures in this paragraph exclude all types of special charges that could be automatically or manually initiated, e.g. equalization charges or servicing charges. The manufacturer shall declare that, during the test, a special charge procedure has not occurred.
2.2.3.2. End-of-charge criterion The end-of-charge criterion is reached when the on-board or external instruments indicate that the REESS is fully charged.	2.2.3.2. End-of-charge criterion ~~The end-of-charge criterion is reached when the on-board or external instruments indicate that the REESS is fully charged.~~ The end of charge criteria corresponds to a charging time of 6 hours except if a clear indication is given to the driver by the on-board or external instruments that the battery is not yet fully charged. The charging time shall not exceed the soaking time defined in paragraph 2.7. of Annex 6.

Proposals for amendment

Adding a procedure for OVC-FCHVs

Intention of the proposal:

- No procedure in GTR which describes how to test an OVC-FCHV
- Proposal is adding the text portions which are describing this procedure
- OVC-FCHV procedure is based on the procedure for OVC-HEVs, replacing CO_2 by H_2

Feedback:

- JPN supports the proposal but asks ACEA EV for further evidence; at the moment, JPN sees it to premature to incorporate OVC-FCHVs into UN R first edition, especially concerns raised in the context of the H_2 measurement
- EC supports the proposal but further/additional discussion required in SG EV before October 21st
- Manufacturers stated that significant improvement of the accuracy of H_2 measurement methods in the last years, so flow meter method equivalent procedure to gravimetric method; manufacturers will prepare a proposal for necessary amendments (not available yet)

Latest version: 190611 Proposal OVC FCHVs first draft.docx; 190611 Test procedure for OVC-FCHV´s explanation slides.pdf

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

☐	Supported and shall go into UNR WLTP first edition
X	Further discussion in web-audio before October 21st, discussion of further proceeding
☐	Not supported

Proposals for amendment

Adding a definition for NOVC-FCHVs and OVC-FCHVs

Intention of proposal:

- No definition in GTR for NOVC-FCHVs and OVC-FCHVs
- Proposal is adding these definitions which are at least required for NOVC-FCHVs which are already in the GTR
- Definition for OVC-FCHVs only required if procedure for these vehicles is going into the GTR

Feedback:

- JPN supports the proposal to add the definition(s)
- EC supports the proposal to add the definition(s)

Latest version: 190611 Proposal OVC FCHVs first draft.docx; 190611 Test procedure for OVC-FCHV´s explanation slides.pdf

Decision of SG EV and IWG WLTP (28th WLTP-meeting, Bern, September 2019):

- ☐ Supported and shall go into UNR WLTP first edition
- ☐ Further discussion in web-audio before October 21st, discussion of further proceeding
- ☐ Not supported