

20 September 2018

Global Registry

Created on 18 November 2004, pursuant to Article 6 of the Agreement concerning the establishing of global technical regulations for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles (ECE/TRANS/132 and Corr.1) done at Geneva on 25 June 1998

Addendum 1: United Nations Global Technical Regulation No. 15

Worldwide harmonized Light vehicles Test Procedures (WLTP)

(Established in the Global Registry on 20 June 2018)

Amendment 4 – Appendix

Proposal and report pursuant to Article 6, paragraph 6.2.7. of the Agreement

- Authorization to develop Amendment 4 to UN GTR No. 15 (Worldwide harmonized Light vehicles Test Procedures (WLTP)) (ECE/TRANS/WP.29/AC.3/44).
- Technical report on the development of Amendment 4 to UN GTR No. 15 (Worldwide harmonized Light vehicles Test Procedures (WLTP)) (ECE/TRANS/WP.29/2018/72), adopted by AC.3 at its fifty-third session (ECE/TRANS/WP.29/1139, paras. 122-123).



UNITED NATIONS

Authorization to develop Amendment 4 to UN GTR No.15 (Worldwide harmonized Light vehicles Test Procedures (WLTP))

A. Background

1. The Informal Working Group (IWG) on Worldwide harmonized Light vehicles Test Procedures (WLTP) was set up in 2009. The original schedule and scope were described in ECE/TRANS/WP.29/AC.3/26 and Add.1. These documents outline WLTP activities and timeframe of each activity is divided into three phases (Phase 1 to Phase 3). The IWG submitted the UN Global Technical Regulation (UN GTR) on WLTP and it was adopted by the Working Party on Pollution and Energy (GRPE) as well as established by the World Forum for Harmonization of Vehicle Regulations (WP.29) and the Executive Committee of the 1998 Agreement (AC.3) in March 2014.
2. After the establishment in the Global Registry as UN GTR No. 15 in March 2014, ECE/TRANS/WP.29/AC.3/39 on the authorization to further develop the work on Phase 1b was adopted to solve the remaining issues of WLTP Phase 1a.
3. WLTP Phase 1b activities were completed and amendments to UN GTR No. 15 were submitted in October 2015 to be considered at the GRPE January 2016 session.
4. At the same time there is a need to transpose UN GTR No. 15 on WLTP into new Regulations annexed to the 1958 Agreement. The intended way forward for this task has been discussed several times at GRPE and it is described e.g. in informal document GRPE-72-18.

B. Proposal

5. An extension of the mandate for the IWG on WLTP, sponsored by the European Union and Japan, shall tackle the development of the remaining issues. Phase 2 activities should be started immediately after the endorsement of this authorization by WP.29 and AC.3 at their November 2015 sessions.
6. Scope of work in Phase 2 should cover:
 - (a) Original items described in ECE/TRANS/WP.29/AC.3/26 and Add. 1 shall be kept;
 - (b) The remaining issues from WLTP Phase 1b;
 - (c) Durability for internal combustion engine vehicles and electric vehicles;
 - (d) Evaporative emissions;
 - (e) Low ambient temperature emissions;
 - (f) Test procedure for the determination of additional CO₂ emissions and fuel consumption from mobile air conditioning systems;
 - (g) On-board diagnostics requirements;
 - (h) Development of criteria for ex-post assessing of road load parameters (see WLTP-12-29-rev1e);
 - (i) Other items.

7. In addition, the IWG on WLTP shall work for the transposition of UN GTR No. 15 on WLTP into new Regulations annexed to the 1958 Agreement.

C. Timeline

8. The work of the IWG on WLTP Phase 2 should be completed by 2019. Phase 2 will be divided into Phases 2a (until June 2017) and 2b (until the end of 2019). The transposition of UN GTR No. 15 on WLTP into new Regulations annexed to the 1958 Agreement should ideally be finalized by the end of 2017 but the work may continue until the end of 2019 without a formal modification of this mandate, if needed due to circumstances.

9. A prolongation and extension of the mandate of the IWG on WLTP should be considered by GRPE in due time.

Final report on the development of Amendment 4 to global technical regulation No. 15 (Worldwide harmonized light vehicles test procedures (WLTP))

A. Mandate

1. Amendment 4 to UN global technical regulation (GTR) No. 15 was developed by the Informal Working Group (IWG) on Worldwide harmonized Light vehicles Test Procedures (WLTP) in the framework of Phase 2 of the development of GTR No. 15. The Executive Committee (AC.3) of the 1998 Agreement adopted the authorisation to develop Phase 2 of GTR No. 15 at its June 2016 session (ECE/TRANS/WP.29/AC.3/44).

B. Objectives

2. To introduce definitions of response time, delay time and rise time harmonized with those in UN GTR Nos. 4 (heavy-duty engine emissions) and 11 (non-road compression ignition engine emissions).

3. To introduce improvements to the gear shifting procedures. n_{rated} is now defined as the rated engine speed declared by the manufacturer as the engine speed at which the engine develops its maximum power. Experts approved to limit $n_{\text{min_drive_up/down}}$ to twice $n_{\text{min_drive_set}}$ whereas the current regulation allows the manufacturer to use higher $n_{\text{min_drive}}$ values without any limitation. Furthermore, since the duration of the cold start phase is engine and vehicle design dependent, it was agreed that a manufacturer should have the possibility to specify the time span and the $n_{\text{min_drive}}$ value individually within the low phase of the cycle. However, the time span should be specified such that it ends in a stop phase so that there is no change of $n_{\text{min_drive}}$ within a short trip.

4. To introduce consistency in the use of the terms accuracy, precision, resolution, tolerance, repeatability and deviation.

5. To introduce bi-fuel and bi-fuel gas vehicles keeping in line with UN Regulation No. 83. Definitions and a new Appendix (Annex 6, Appendix 3, Calculation of gas energy ratio for gaseous fuels (Liquefied Petroleum Gas and Natural Gas/biomethane)) were incorporated into the GTR.

6. To introduce the appropriate positioning of payload mass (25 kg plus the mass of vehicle load) has until now not been clearly defined. Additional masses for setting the test mass shall be applied such that the weight distribution of that vehicle is approximately the same as that of the vehicle with its mass in running order. In case of category 2 vehicles or passenger vehicles derived from category 2 vehicles, the additional masses should be located in a representative manner and shall be justified to the responsible authority upon their request. The weight distribution of the vehicle shall be recorded and shall be used for any subsequent road load determination testing.

7. To correct terminology such as "classes of rolling resistance coefficients". Tables relating to energy efficiency classes according to rolling resistance coefficients for tyres have been modified accordingly.

8. To correct minor spelling and/or punctuation mistakes, and restructuring some paragraphs. To keep writing and formatting consistently within the GTR.

9. To correct some equations and to make them all consistent with Microsoft Word's use of mathematical symbols.

10. To exclude all Rechargeable Electric Energy Storage Systems (REESSs) that do not contribute to vehicle propulsion from monitoring.
11. To better define the purity of certain gases such as nitrogen and synthetic air.
12. To define more specifically the difference in mass of CO₂ during charge sustaining between the test with the highest and lowest positive and negative electric energy charge.

C. Meetings held by Task Forces

13. The proposed changes in Amendment 4 to GTR No. 15 listed in section II above were discussed at length and agreed upon by all participants during the following Task Force (TF) face-to-face or audio/web meetings:
 - (a) The nineteenth IWG meeting in June 2017 in Geneva;
 - (b) Dynamometer TF (once), New Issues TF (once), EV TF (3 times). Two audio/webs on Movable Aerodynamic Body Parts (MABPs) were held but there is not yet a finalized text.
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