

1 February 2018

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## 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 15: Global technical regulation No. 15

### Global technical regulation on Worldwide harmonized Light vehicles Test Procedures (WLTP)

(Established in the Global Registry on 15 November 2017)

### Amendment 3 - Appendix

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

- Authorization to develop Phase 2 of UN GTR No. 15 concerning Worldwide harmonized Light vehicles Test Procedures (WLTP) (ECE/TRANS/WP.29/AC.3/44)
- Technical report on the development of Amendment 3 to global technical regulation No. 15 concerning Worldwide harmonized Light vehicles Test Procedures (WLTP) (ECE/TRANS/WP.29/2017/141, adopted by AC.3 at its fiftieth session (ECE/TRANS/WP.29/1135, para. 116)



UNITED NATIONS

GE.18-01484(E)



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## **Authorization to develop Phase 2 of 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 CO<sub>2</sub> 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.

## **Technical report on the development of Amendment 3 to UN GTR No. 15 on Worldwide harmonized Light vehicles Test Procedures (WLTP)**

### **A. Mandate**

1. Amendment 3 to UN 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 UN GTR No. 15. The Executive Committee of the 1998 Agreement (AC.3) adopted the authorization to develop Phase 2 of UN GTR No. 15 at its June 2016 session (ECE/TRANS/WP.29/AC.3/44).

### **B. Objectives**

2. To clarify phase, cycle and vehicle class terminology. This enabled permitting interpolation between different levels of downscaling, cycle classes and speed caps, all of which had been agreed as technically justifiable. All figures in the UN GTR showing WLTC cycle phases and the corresponding time/speed tables were modified accordingly.

3. To introduce improvements to the gear shifting procedures. This was achieved by including changes to gear selection and shift point determination for vehicles equipped with manual transmissions. In detail, this involved calculating gearshift points within an interpolation family, defining the  $v_{\max}$  to be used for classification and gear use determination, clarification of the use of  $v_{\max}$  using the downscaled cycle as a base cycle, calculating the minimum engine speed to drive, clarifying the conditions the gear in which maximum speed is reached, and providing an additional safety margin for the full load power curve.

4. To define the possible and permissible combinations of test vehicle selection and family requirements. This was done by introducing a table and eliminating the repetition of text.

5. To define the calculation of the average test mass during road load determination.

6. To define single and double roller dynamometers.

7. To correct minor spelling mistakes and/or punctuation, and restructuring some paragraphs. To bring writing and formatting consistency to the UN GTR.

### **C. Meetings held by Task Forces**

8. The proposed changes in Amendment 3 to UN GTR No. 15 listed in section II above were discussed at length and agreed upon by all participants during the following Task Force face-to-face or audio/web meetings:

- (a) Drafting Sub-group on 2 March 2017;
- (b) The seventeenth IWG meeting in January 2017 in Geneva;
- (c) Gearshift Task Force meetings held on 26 September and 16 December 2016.