

II

(Non-legislative acts)

REGULATIONS

COMMISSION REGULATION (EU) 2017/1347

of 13 July 2017

correcting Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EU) No 582/2011 and Commission Regulation (EU) 2017/1151 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Regulation (EC) No 692/2008

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information ⁽¹⁾, and in particular Article 8 and Article 14(3) thereof,

Having regard to Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive) ⁽²⁾, and in particular Article 39(2) thereof,

Having regard to Regulation (EC) No 595/2009 of the European Parliament and of the Council of 18 June 2009 on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information and amending Regulation (EC) No 715/2007 and Directive 2007/46/EC and repealing Directives 80/1269/EEC, 2005/55/EC and 2005/78/EC ⁽³⁾, and in particular Article 5(4) thereof,

Whereas:

- (1) Directive 2007/46/EC sets out the framework for the type approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles. Several elements in that framework in particular in relation to the manufacturer's information document, test reports, certificate of conformity and the type approval conditions need to be adapted to take account of the new Commission Regulation (EU) 2017/1151 ⁽⁴⁾.
- (2) Regulations (EC) No 715/2007 and (EC) No 595/2009 require, respectively, new light- and heavy-duty vehicles to comply with certain emission limits and lay down additional requirements on access to vehicle repair and maintenance information.

⁽¹⁾ OJ L 171, 29.6.2007, p. 1.

⁽²⁾ OJ L 263, 9.10.2007, p. 1.

⁽³⁾ OJ L 188, 18.7.2009, p. 1.

⁽⁴⁾ Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Regulation (EC) No 692/2008 (OJ L 175, 7.7.2017, p. 1).

- (3) As regards heavy-duty vehicles, certain specific technical provisions necessary to implement Regulation (EC) No 595/2009 were adopted by Commission Regulation (EU) No 582/2011⁽¹⁾. Several technical errors in Annexes I and II to Regulation (EU) No 582/2011 need to be corrected in order to ensure its proper application.
- (4) As regards light-duty vehicles, certain specific technical provisions necessary to implement Regulation (EC) No 715/2007 were adopted by Commission Regulation (EC) No 692/2008⁽²⁾ and Regulation (EU) 2017/1151. By way of an amendment to Regulation (EC) No 692/2008, Commission Regulation (EU) 2017/1221⁽³⁾ introduced a new procedure for evaporative emissions. Regulation (EU) 2017/1151 brought the type-approval procedure in line with the Worldwide Harmonised Light-Duty Vehicles Test Procedures (WLTP) as laid down in Global Technical Regulation (GTR) No 15 of the United Nations Economic Committee for Europe (UNECE).
- (5) As regards the new test procedure for evaporative emissions, the date of application of the amendments introduced by Regulation (EU) 2017/1221 should be clarified. The new test procedure should become mandatory in the Union for all new type approvals and first registration of vehicles as of 1 September 2019.
- (6) As regards the new WLTP procedure, several technical errors in Articles 2 and 15 and in Annexes I, IIIA, V, VII, VIII, XII and XXI to Regulation (EU) 2017/1151 need to be corrected in order to ensure its proper application.
- (7) In addition, the provisions for the road load matrix family of the WLTP test procedure should be clarified.
- (8) The corrections provided for by this Regulation are intrinsically linked since only in their totality they ensure a correct application of the respective type approval measures.
- (9) Consequently, Directive 2007/46/EC, Regulation (EU) No 715/2007, Regulation (EU) No 582/2011, Regulation (EU) 2017/1221 and Regulation (EU) 2017/1151 should be corrected accordingly.
- (10) Given the need to ensure that Regulation (EU) 2017/1221 and Regulation (EU) 2017/1151 are correctly applied, this Regulation should enter into force as a matter of urgency.
- (11) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee — Motor Vehicles,

HAS ADOPTED THIS REGULATION:

Article 1

Correction to Directive 2007/46/EC

Annexes I, VIII, IX and XI to Directive 2007/46/EC are corrected in accordance with Annex I to this Regulation.

Article 2

Correction to Regulation (EU) No 582/2011

Annexes I, II and X to Regulation (EU) No 582/2011 are corrected in accordance with Annex II to this Regulation.

⁽¹⁾ Commission Regulation (EU) No 582/2011 of 25 May 2011 implementing and amending Regulation (EC) No 595/2009 of the European Parliament and of the Council with respect to emissions from heavy duty vehicles (Euro VI) and amending Annexes I and III to Directive 2007/46/EC of the European Parliament and of the Council (OJ L 167, 25.6.2011, p. 1).

⁽²⁾ Commission Regulation (EC) No 692/2008 of 18 July 2008 implementing and amending Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information (OJ L 199, 28.7.2008, p. 1).

⁽³⁾ Commission Regulation (EU) 2017/1221 of 22 June 2017 amending Commission Regulation (EC) No 692/2008 as regards the methodology for the determination of evaporative emissions (Type 4 test) (OJ L 174, 7.7.2017, p. 3).

*Article 3***Correction to Regulation (EU) 2017/1221**

In Article 2 of Regulation (EU) 2017/1221, the following paragraph is added:

‘It shall apply from 1 September 2019.’.

*Article 4***Correction to Regulation (EU) 2017/1151**

Regulation (EU) 2017/1151 is corrected as follows:

(1) Article 2 is amended as follows:

(a) point 3 is replaced by the following:

‘(3) “odometer” means an instrument indicating to the driver the total distance driven by the vehicle since its production;’;

(b) point 33 is deleted;

(c) points 47 and 48 are replaced by the following:

‘(47) “monolayer tank” means a fuel tank constructed with a single layer of material, excluding metal tank, but including fluorinated/sulfonated materials;

(48) “multilayer tank” means a fuel tank constructed with at least two different layered materials, one of which is a hydrocarbon barrier material;’;

(d) the following point 49 is added:

‘(49) “inertia category” means a category of test masses of the vehicle corresponding to an equivalent inertia as laid down in Table A4a/3 of Annex 4a to UN/ECE Regulation No 83 when the test mass is set equal to the reference mass;’

(2) Article 15 is amended as follows:

(a) paragraphs 2 and 3 are replaced by the following:

‘2. With effect from 1 September 2017 in the case of categories M1, M2 and category N1 class I vehicles, and from 1 September 2018 in the case of N1 vehicles of class II and III and category N2 vehicles, national authorities shall refuse, on grounds relating to emissions or fuel consumption, to grant EC type approval or national type approval, in respect to new vehicle types which do not comply with this Regulation.

For new type approvals requested before 1 September 2019 the evaporative emissions test procedure laid down in Annex 7 to UN/ECE Regulation 83 may, at the request of the manufacturer, be applied instead of the procedure laid down in Annex VI to this Regulation for the purposes of determining the evaporative emissions of the vehicle.

3. With effect from 1 September 2018 in the case of categories M1, M2 and category N1 class I vehicles, and from 1 September 2019 in the case of N1 vehicles of class II and III and category N2 vehicles, national authorities shall, on grounds relating to emissions or fuel consumption, in the case of new vehicles which do not comply with this Regulation, consider certificates of conformity to be no longer valid for the purposes of Article 26 of Directive 2007/46/EC and shall prohibit the registration, sale or entry into service of such vehicles.

For new vehicles registered before 1 September 2019 the evaporative emissions test procedure laid down in Annex 7 to UN/ECE Regulation 83 may, at the request of the manufacturer, be applied instead of the procedure laid down in Annex VI to this Regulation for the purposes of determining the evaporative emissions of the vehicle.’;

(b) paragraph 5(a) is replaced by the following:

‘(a) type 1/I tests performed in accordance with Annex III to Regulation (EC) No 692/2008 until 3 years after the dates specified in Article 10(4) of Regulation (EC) No 715/2007 shall be recognised by the approval authority for the purposes of producing deteriorated or defective components to simulate failures for assessing the requirements of Annex XI to this Regulation;’;

(c) the following paragraph 5(c) is added:

‘(c) durability demonstrations where the first type 1/I test was performed and completed in accordance with Annex VII to Regulation (EC) No 692/2008 until 3 years after the dates specified in Article 10(4) of Regulation (EC) No 715/2007 shall be recognised by the approval authorities as equivalent for the purposes of fulfilling the requirements of Annex VII to this Regulation;’;

(3) Annexes I, IIIA, V, VI, VII, VIII, XII and XXI are corrected in accordance with Annex III to this Regulation.

Article 5

Entry into force

This Regulation shall enter into force on the third day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 13 July 2017.

For the Commission
The President
Jean-Claude JUNCKER

ANNEX I

Directive 2007/46/EC is corrected as follows:

(1) Annex I is corrected as follows:

(a) point 3.2.12.2.1.3 is replaced by the following:

‘3.2.12.2.1.3. Type of catalytic action: ... (oxidising, three-way, lean NOx trap, SCR, lean NOx catalyst or other);’

(b) the number of point ‘3.2.12.7.6.3.’ shall be changed in ‘3.2.12.2.7.6.3.’;

(c) the following points are inserted:

- ‘3.5.7.2.1.1.0. Vehicle High (NEDC): g/km’
- ‘3.5.7.2.1.2.0. Vehicle low (if applicable) (NEDC): g/km’
- ‘3.5.7.2.2.1.0. Vehicle high (NEDC): g/km’
- ‘3.5.7.2.2.2.0. Vehicle low (if applicable) (NEDC): g/km’
- ‘3.5.7.2.2.3.0. Vehicle M (if applicable) (NEDC): g/km’
- ‘3.5.7.2.3.1.0. Vehicle high (NEDC): g/km’
- ‘3.5.7.2.3.2.0. Vehicle low (if applicable) (NEDC): g/km’
- ‘3.5.7.2.3.3.0. Vehicle M (if applicable) (NEDC): g/km’.

(2) Annex VIII is corrected as follows:

- (a) in the table ‘Ambient Temperature Correction Test (ATCT)’ in point 2.1.1 the column ‘Road load matrix family’ is deleted;
- (b) the third table in point 3.1 with the columns ‘Road Load Matrix family identifier’ and ‘Variant/versions’ is deleted;
- (c) the column ‘Road Load Matrix family identifier’ in the fourth table ‘Results’ in point 3.1 is deleted;
- (d) at the bottom of the table ‘Results’ in point 3.1 the following row is added:

| | | | |
|--|--|--|--|
| ‘Frontal area (m ²) (for road load matrix family vehicles only)’ | | | |
|--|--|--|--|

- (e) the footnote 23 in point 3.1 is deleted;
- (f) the last line in point 3.1 under the table ‘Results’ is replaced by the following:
‘Repeat for each interpolation family.’;
- (g) the third table in point 3.2, with the columns ‘Road Load Matrix family identifier’ and ‘Variant/versions’ is deleted;
- (h) the column ‘Road Load Matrix family identifier’ in the fourth table ‘Results’ in point 3.2 is deleted;
- (i) the last row of the table ‘Results’ in point 3.2 is replaced by the following:

| | | | |
|--|--|--|--|
| ‘Frontal area (m ²) (for road load matrix family vehicles only)’ | | | |
|--|--|--|--|

- (j) the third table in point 3.3, with the columns ‘Road Load Matrix family identifier’ and ‘Variant/versions’ is deleted;
- (k) the column ‘Matrix family identifier’ in the fourth table ‘Results’ in point 3.3 is deleted;

- (l) the last row of the table 'Results' in point 3.3 is replaced by the following:

| | | | |
|--|--|--|--|
| 'Frontal area (m ²) (for road load matrix family vehicles only)' | | | |
|--|--|--|--|

- (m) point 3.5 is replaced by the following:

3.5. Output report(s) from the correlation tool in accordance with Implementing Regulation (EU) 2017/1151

Repeat for each interpolation family:

Interpolation family identifier [Footnote: "Type Approval Number + Interpolation Family Sequence number"]: ...

VH report: ...

VL report (if applicable): ...

3.5.1. Deviation factor (if applicable)

Repeat for each interpolation family:

Interpolation family identifier [Footnote: "Type Approval Number + Interpolation Family Sequence number"]: ...

3.5.2. Verification factor (if applicable)

Repeat for each interpolation family:

Interpolation family identifier [Footnote: "Type Approval Number + Interpolation Family Sequence number"]: ...

- (3) Annex IX is corrected as follows:

- (a) in Part II, *Incomplete Vehicles*, Side 2, 'Vehicle category M1', 'Vehicle category N1', 'Vehicle category M2' and 'Vehicle category N2', point 49 is replaced by the following:

49. CO₂ emissions/fuel consumption/electric energy consumption ^(m) ^(t):

1. All power trains, except pure electric vehicles (if applicable)

| NEDC values | CO ₂ emissions | Fuel consumption |
|---|---------------------------|--|
| Urban conditions ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Extra-urban conditions ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Combined ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Weighted ⁽¹⁾ , combined | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km |
| Deviation factor (if applicable) | | |
| Verification factor (if applicable) | "1" or "0" | |

2. Pure electric vehicles and OVC hybrid electric vehicles (if applicable)

| | | |
|--|--|-----------|
| Electric energy consumption (weighted, combined ⁽¹⁾) | | ... Wh/km |
| Electric range | | ... km |

3. Vehicle fitted with eco-innovation(s): yes/no ⁽¹⁾
 - 3.1. General code of the eco-innovation(s) ^(p1): ...
 - 3.2. Total CO₂ emissions savings due to the eco-innovation(s) ^(p2) (repeat for each reference fuel tested):
 - 3.2.1. NEDC savings: ...g/km (if applicable)
 - 3.2.2. WLTP savings: ...g/km (if applicable)
4. All power trains, except pure electric vehicle, under Regulation (EU) 2017/1151 (if applicable)

| WLTP values | CO ₂ emissions | Fuel consumption |
|-----------------------------------|---------------------------|--|
| Low ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Medium ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| High ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Extra High ⁽¹⁾ : | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Combined: | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |
| Weighted, combined ⁽¹⁾ | ... g/km | ... l/100 km or m ³ /100 km or kg/100 km ⁽¹⁾ |

5. Pure electric vehicles and OVC hybrid electric vehicles, under Regulation (EU) 2017/1151 (if applicable)
 - 5.1. Pure electric vehicles

| | | |
|-----------------------------|--|-----------|
| Electric energy consumption | | ... Wh/km |
| Electric range | | ... km |
| Electric range city | | ... km |

- 5.2. OVC hybrid electric vehicles

| | | |
|--|--|-----------|
| Electric energy consumption (EC _{AC,weighted}) | | ... Wh/km |
| Electric range (EAER) | | ... km |
| Electric range city (EAER city) | | ... km'; |

- (b) in Part I, *Complete and Completed Vehicles, Side 2*, 'Vehicle category M3' and 'Vehicle category N3', and in Part II, *Incomplete Vehicles, Side 2*, 'Vehicle category M3' and 'Vehicle category N3', point 47.1 is deleted.
- (c) in Part I, *Complete and Completed Vehicles, Side 2*, 'Vehicle category M2' and 'Vehicle category N2', and in Part II, *Incomplete Vehicles, Side 2*, 'Vehicle category M2' and 'Vehicle category N2', a reference to explanatory note '(t)' is added to point 47.1.

Regulation (EU) No 582/2011 is corrected as follows:

(1) in Annex I, Appendix 9 is replaced by the following:

Appendix 9

EC Type-Approval Certification Numbering System

Section 3 of the EC type-approval number issued according to Articles 6(1), 8(1) and 10(1) shall be composed by the number of the implementing regulatory act or the latest amending regulatory act applicable to the EC type-approval. The number shall be followed by an alphabetical character reflecting the requirements of OBD and SCR systems in accordance with Table 1.

Table 1

| Character | NO _x OTL ⁽¹⁾ | PM OTL ⁽²⁾ | CO OTL ⁽⁶⁾ | IUPR ⁽¹³⁾ | Reagent quality | Additional OBD monitors ⁽¹²⁾ | Power threshold requirements ⁽¹⁴⁾ | Implementation dates: new types | Implementation dates: all vehicles | Last date of registration |
|---|--|---------------------------------------|---------------------------------------|-------------------------|-------------------------|---|--|---------------------------------|------------------------------------|--|
| A ⁽⁹⁾ ⁽¹⁰⁾ B ⁽¹⁰⁾ | Row “phase-in period” of Table 1 or Table 2 | Performance Monitoring ⁽³⁾ | N/A | Phase-in ⁽⁷⁾ | Phase-in ⁽⁴⁾ | N/A | 20 % | 31.12.2012 | 31.12.2013 | 31.8.2015 ⁽⁹⁾ 30.12.2016 ⁽¹⁰⁾ |
| B ⁽¹¹⁾ | Row “phase-in period” of Tables 1 and 2 | N/A | Row “phase-in period” of Table 2 | N/A | Phase-in ⁽⁴⁾ | N/A | 20 % | 1.9.2014 | 1.9.2015 | 30.12.2016 |
| C | Row “general requirements” of Table 1 or Table 2 | Row “general requirements” of Table 1 | Row “general requirements” of Table 2 | General ⁽⁸⁾ | General ⁽⁵⁾ | Yes | 20 % | 31.12.2015 | 31.12.2016 | 31.8.2019 |
| D | Row “general requirements” of Table 1 or Table 2 | Row “general requirements” of Table 1 | Row “general requirements” of Table 2 | General ⁽⁸⁾ | General ⁽⁵⁾ | Yes | 10 % | 1.9.2018 | 1.9.2019 | |

Key:

⁽¹⁾ “NO_x OTL” monitoring requirements as set out in Table 1 of Annex X for compression ignition and dual-fuel engines and vehicles and Table 2 of Annex X for positive ignition engines and vehicles.

⁽²⁾ “PM OTL” monitoring requirements as set out in Table 1 of Annex X for compression ignition and dual-fuel engines and vehicles.

⁽³⁾ “Performance monitoring” requirements as set out in point 2.1.1 of Annex X.

⁽⁴⁾ Reagent quality “phase-in” requirements as set out in point 7.1 of Annex XIII.

⁽⁵⁾ Reagent quality “general” requirements as set out in point 7.1.1 of Annex XIII.

⁽⁶⁾ “CO OTL” monitoring requirements as set out in Table 2 of Annex X for positive ignition engines and vehicles.

⁽⁷⁾ IUPR “Phase-in” requirements as set out in Section 6 of Annex X.

⁽⁸⁾ IUPR “General” requirements as set out in Section 6 of Annex X.

⁽⁹⁾ For positive-ignition engines and vehicles equipped with such engines.

⁽¹⁰⁾ For compression-ignition and dual-fuel engines and vehicles equipped with such engines.

⁽¹¹⁾ Only applicable to positive-ignition engines and vehicles equipped with such engines.

⁽¹²⁾ Additional provisions concerning monitoring requirements as set out in paragraph 2.3.1.2 of Annex 9A to UNECE Regulation No 49.

⁽¹³⁾ IUPR specifications are set out in Annex X. Positive Ignition engines and vehicles equipped with such engines are not subjected to IUPR.

⁽¹⁴⁾ ISC requirement set out in Appendix 1 to Annex II.

N/A Not applicable.

(2) in Annex II, in Appendix 1, point 1 is replaced by the following:

1. INTRODUCTION

This Appendix describes the procedure to determine gaseous emissions from on-vehicle on-road measurements using Portable Emissions Measurement Systems (hereinafter "PEMS"). The pollutant emissions to be measured from the exhaust of the engine include the following components: carbon monoxide, total hydrocarbons and nitrogen oxides for compression ignition engines and carbon monoxide, non-methane hydrocarbons, methane and nitrogen oxides for positive ignition engines. Additionally, carbon dioxide shall be measured to enable the calculation procedures described in Section 4.

For engines fuelled with natural gas, the manufacturer, technical service or approval authority may choose to measure the total hydrocarbon (THC) emissions only instead of measuring the methane and non-methane hydrocarbon emissions. In that case, the emission limit for the total hydrocarbon emissions is the same as the one specified in Annex I to Regulation (EC) No 595/2009 for methane emissions. For the purposes of the calculation of the conformity factors pursuant to points 4.2.3 and 4.3.2 of this Appendix, the applicable limit shall be the methane emission limit only.

For engines fuelled with gases other than natural gas, the manufacturer, technical service or approval authority may choose to measure the total hydrocarbon (THC) emissions instead of measuring the non-methane hydrocarbon emissions. In that case, the emission limit for the total hydrocarbon emissions is the same as the one specified in Annex I to Regulation (EC) No 595/2009 for non-methane hydrocarbon emissions. For the purposes of the calculation of the Conformity Factors pursuant to points 4.2.3 and 4.3.2 of this Appendix, the applicable limit shall be the non-methane emission limit.'

(3) In Annex X, point 2.4.1.3 is replaced by the following:

'2.4.1.3. The OBD standard Euro 6-2 in Table 1 of Appendix 6 of Annex I to Regulation (EC) No 692/2008 shall be considered equivalent to the characters C and D of Table 1 of Appendix 9 of Annex I to this Regulation.'

Regulation (EU) 2017/1151 is corrected as follows:

(1) Annex I is corrected as follows:

(a) in point 2.4 Figure I.2.4 is replaced by the following:

Figure I.2.4

Application of test requirements for type-approval and extensions

| Vehicle category | Vehicles with positive ignition engines including hybrids ⁽¹⁾ | | | | | | | | Vehicles with compression ignition engines including hybrids | Pure electric vehicles | Hydrogen fuel cell vehicles |
|--|--|-----|---------------|--------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|--|------------------------|-----------------------------|
| | Mono fuel | | | | Bi-fuel ⁽²⁾ | | | Flex-fuel ⁽³⁾ | | | |
| Reference fuel | Petrol (E10) | LPG | NG/Biomethane | Hydrogen (ICE) | Petrol (E10) | Petrol (E10) | Petrol (E10) | Petrol (E10) | Diesel (B7) ⁽⁵⁾ | — | Hydrogen (Fuel Cell) |
| | | | | | LPG | NG/Biomethane | Hydrogen (ICE) ⁽⁴⁾ | Ethanol (E85) | | | |
| Gaseous pollutants (Type 1 test) | Yes | Yes | Yes | Yes ⁽⁴⁾ | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes | — | — |
| PM (Type 1 test) | Yes ⁽²⁾ | — | — | — | Yes ⁽²⁾ (petrol only) | Yes ⁽²⁾ (petrol only) | Yes ⁽²⁾ (petrol only) | Yes ⁽²⁾ (both fuels) | Yes | — | — |
| PN | Yes ⁽²⁾ | — | — | — | Yes ⁽²⁾ (petrol only) | Yes ⁽²⁾ (petrol only) | Yes ⁽²⁾ (petrol only) | Yes ⁽²⁾ (both fuels) | Yes | — | — |
| Gaseous pollutants, RDE (Type 1A test) | Yes | Yes | Yes | Yes ⁽⁴⁾ | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes | — | — |
| PN, RDE (Type 1A test) | Yes ⁽²⁾ | — | — | — | Yes (both fuels) ⁽²⁾ | Yes (both fuels) ⁽²⁾ | Yes (both fuels) ⁽²⁾ | Yes (both fuels) ⁽²⁾ | Yes | — | — |
| Idle emissions (Type 2 test) | Yes | Yes | Yes | — | Yes (both fuels) | Yes (both fuels) | Yes (petrol only) | Yes (both fuels) | — | — | — |

| Vehicle category | Vehicles with positive ignition engines including hybrids ⁽¹⁾ | | | | | | | | Vehicles with compression ignition engines including hybrids | Pure electric vehicles | Hydrogen fuel cell vehicles |
|---|--|-----|-----|-----|------------------------|-------------------|-------------------|--------------------------|--|------------------------|-----------------------------|
| | Mono fuel | | | | Bi-fuel ⁽²⁾ | | | Flex-fuel ⁽³⁾ | | | |
| Crankcase emissions (Type 3 test) | Yes | Yes | Yes | — | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | — | — | — |
| Evaporative emissions (Type 4 test) | Yes | — | — | — | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | — | — | — |
| Durability (Type 5 test) | Yes | Yes | Yes | Yes | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | Yes | — | — |
| Low temperature emissions (Type 6 test) | Yes | — | — | — | Yes (petrol only) | Yes (petrol only) | Yes (petrol only) | Yes (both fuels) | — | — | — |
| In-service conformity | Yes | Yes | Yes | Yes | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes | — | — |
| On-board diagnostics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | — | — |
| CO ₂ emissions, fuel consumption, electric energy consumption and electric range | Yes | Yes | Yes | Yes | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes (both fuels) | Yes | Yes | Yes |
| Smoke opacity | — | — | — | — | — | — | — | — | Yes | — | — |
| Engine power | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

⁽¹⁾ Specific test procedures for hydrogen and flex fuel biodiesel vehicles will be defined at a later stage.

⁽²⁾ Particulate mass and particle number limits and respective measurement procedures shall apply only to vehicles with direct injection engines

⁽³⁾ When a bi-fuel vehicle is combined with a flex fuel vehicle, both test requirements are applicable.

⁽⁴⁾ Only NO_x emissions shall be determined when the vehicle is running on hydrogen.

⁽⁵⁾ Further requirements for biodiesel will be defined later.'

(b) Appendix 3 is corrected as follows:

(i) the following points are inserted:

- '3.5.7.2.1.1.0. Vehicle high (NEDC): g/km'
- '3.5.7.2.1.2.0. Vehicle low (if applicable) (NEDC): g/km'
- '3.5.7.2.2.1.0. Vehicle high (NEDC): g/km'
- '3.5.7.2.2.2.0. Vehicle low (if applicable) (NEDC): g/km'
- '3.5.7.2.2.3.0. Vehicle M (if applicable) (NEDC): g/km'
- '3.5.7.2.3.1.0. Vehicle high (NEDC): g/km'
- '3.5.7.2.3.2.0. Vehicle low (if applicable) (NEDC): g/km'
- '3.5.7.2.3.3.0. Vehicle M (if applicable) (NEDC): g/km';

(ii) in point 3.5.8.3 the explanatory notes corresponding to the letters (w) to (w⁵) are deleted

(iii) after the table in the model information document the following text is inserted:

Explanatory notes

- (1) Delete where not applicable (there are cases where nothing needs to be deleted when more than one entry is applicable).
- (2) Specify the tolerance.
- (3) Please fill in here the upper and lower values for each variant.
- (6) Vehicles can be fuelled with both petrol and a gaseous fuel but, where the petrol system is fitted for emergency purposes or starting only and of which the petrol tank cannot contain more than 15 litres of petrol, will be regarded for the test as vehicles which can only run a gaseous fuel.
- (7) Optional equipment that affects the dimensions of the vehicle shall be specified.
- (e) Classified according to the definitions set out in Part A of Annex II.
- (f) Where there is one version with a normal cab and another with a sleeper cab, both sets of masses and dimensions are to be stated.
- (g) Standard ISO 612: 1978 — Road vehicles — Dimensions of motor vehicles and towed vehicles — terms and definitions.
- (h) The mass of the driver is assessed at 75 kg.

The liquid containing systems (except those for used water that must remain empty) are filled to 100 % of the capacity specified by the manufacturer.

The information referred to in points 2.6(b) and 2.6.1(b) do not need to be provided for vehicle categories N 2, N 3, M 2, M 3, O 3, and O 4.

- (i) For trailers or semi-trailers, and for vehicles coupled with a trailer or a semi-trailer, which exert a significant vertical load on the coupling device or the fifth wheel, this load, divided by standard acceleration of gravity, is included in the maximum technically permissible mass.
- (k) In the case of a vehicle that can run either on petrol, diesel, etc., or also in combination with another fuel, items shall be repeated.

In the case of non-conventional engines and systems, particulars equivalent to those referred to here shall be supplied by the manufacturer.

- (l) This figure shall be rounded off to the nearest tenth of a millimetre.

- (^m) This value shall be calculated ($\pi = 3,1416$) and rounded off to the nearest cm³.
- (ⁿ) Determined in accordance with the requirements of Regulation (EC) No 715/2007 or Regulation (EC) No 595/2009 as applicable.
- (^o) Determined in accordance with the requirements of Council Directive 80/1268/EEC (OJ L 375, 31.12.1980, p. 36).
- (^p) The specified particulars are to be given for any proposed variants.
- (^q) With respect to trailers, maximum speed permitted by the manufacturer.
- (^w) Eco-innovations.
- (^{w1}) Expand the table if necessary, using one extra row per eco-innovation.
- (^{w2}) Number of the Commission Decision approving the eco-innovation.
- (^{w3}) Assigned in the Commission Decision approving the eco-innovation.
- (^{w4}) Under agreement of the type-approval authority, if a modelling methodology is applied instead of the type 1 test cycle, this value shall be the one provided by the modelling methodology.
- (^{w5}) Sum of the CO₂ emissions savings of each individual eco-innovation.'

(iv) in the Appendix to information document, the table is replaced by the following:

| 'VL (if existing) | VH | V representative (only for road load matrix family) |
|---|---|--|
| 2.2. Vehicle bodywork type (variant/version) | 2.2. Vehicle bodywork type (variant/version) | 2.2. Vehicle bodywork type (variant/version) |
| 2.3. Road load method used (measurement or calculation by road load family) | 2.3. Road load method used (measurement or calculation by road load family) | 2.3. Road load method used (measurement or calculation by road load matrix family) |
| 2.4. Road load information from the test | 2.4. Road load information from the test | 2.4. Road load information from the test |
| 2.4.1. Tyres make and type: | 2.4.1. Tyres make and type: | 2.4.1. Tyres make and type: |
| 2.4.2. Tyre dimensions (front/rear): | 2.4.2. Tyre dimensions (front/rear): | 2.4.2. Tyre dimensions (front/rear): |
| 2.4.4. Tyre pressure (front/rear) (kPa): | 2.4.4. Tyre pressure (front/rear) (kPa): | 2.4.4. Tyre pressure (front/rear) (kPa): |
| 2.4.5. Tyre rolling resistance (front/rear) (kg/t): | 2.4.5. Tyre rolling resistance (front/rear) (kg/t): | 2.4.5. Tyre rolling resistance (front/rear) (kg/t) and RR class (A-G): |
| 2.4.6. Vehicle test mass (kg): | 2.4.6. Vehicle test mass (kg): | 2.4.6. Vehicle test mass (kg): |
| 2.4.7. Delta Cd.A compared to VH (m ²) | | |
| 2.4.8. Road load coefficient f ₀ , f ₁ , f ₂ | 2.4.8. Road load coefficient f ₀ , f ₁ , f ₂ | 2.4.8. Road load coefficient f ₀ , f ₁ , f ₂ |
| | | 2.4.9. Frontal area m ² (0,0000 m ²) |
| | | 2.4.10. Calculation tool information to calculate VH and VL road loads' |

(c) in Appendix 4, the 'Addendum to EC type-approval certificate No ...' is corrected as follows:

(i) in point 2.1, the following table is inserted after the table entitled 'ATCT test':

| 'ATCT test Result | CO (mg/km) | THC (mg/km) | NMHC (mg/km) | NO _x (mg/km) | THC+NO _x (mg/km) | PM (mg/km) | PN (#.10 ¹¹ /km) |
|--|---------------|----------------|-----------------|----------------------------|--------------------------------|---------------|--------------------------------|
| Measured ⁽¹⁾ ⁽²⁾ | | | | | | | |

⁽¹⁾ Where applicable.

⁽²⁾ Round to two decimal numbers.;

(ii) in point 2.1, the words 'Type 4: ... g/test' are replaced by the words 'Type 4: ... g/test; test procedure in accordance with Annex VI to Regulation (EC) No 692/2008: Yes/No';

(iii) in the Appendix to the Addendum to the Type Approval Certificate, point 3 is replaced by the following:

'3. Deviation and verification factors (determined in accordance with point 3.2.8 of Annex I to Implementing Regulations (EU) 2017/1152 and (EU) 2017/1153):

| | |
|--|------------|
| Deviation factor (if applicable) | |
| Verification factor (if applicable) | "1" or "0" |
| Hash identifier code of the correlation tool output report | |

(d) in Appendix 6, Table 1 is replaced by the following:

Table 1

| 'Character | Emission standard | OBD standard | Vehicle category and class | Engine | Implementation date: new types | Implementation date: new vehicles | Last date of registration |
|------------|-------------------|--------------|----------------------------|--------|--------------------------------|-----------------------------------|---------------------------|
| AA | Euro 6c | Euro 6-1 | M, N1 class I | PI, CI | | | 31.8.2018 |
| BA | Euro 6b | Euro 6-1 | M, N1 class I | PI, CI | | | 31.8.2018 |
| AB | Euro 6c | Euro 6-1 | N1 class II | PI, CI | | | 31.8.2019 |
| BB | Euro 6b | Euro 6-1 | N1 class II | PI, CI | | | 31.8.2019 |
| AC | Euro 6c | Euro 6-1 | N1 class III, N2 | PI, CI | | | 31.8.2019 |
| BC | Euro 6b | Euro 6-1 | N1 class III, N2 | PI, CI | | | 31.8.2019 |
| AD | Euro 6c | Euro 6-2 | M, N1 class I | PI, CI | | 1.9.2018 | 31.8.2019 |
| AE | Euro 6c-EVAP | Euro 6-2 | N1 class II | PI, CI | | 1.9.2019 | 31.8.2020 |
| AF | Euro 6c-EVAP | Euro 6-2 | N1 class III, N2 | PI, CI | | 1.9.2019 | 31.8.2020 |
| AG | Euro 6d-TEMP | Euro 6-2 | M, N1 class I | PI, CI | 1.9.2017 (*) | | 31.8.2019 |

| 'Character | Emission standard | OBD standard | Vehicle category and class | Engine | Implementation date: new types | Implementation date: new vehicles | Last date of registration |
|------------|-------------------|--------------|---|-----------------------|--------------------------------|-----------------------------------|---------------------------|
| BG | Euro 6d-TEMP-EVAP | Euro 6-2 | M, N1 class I | PI, CI | 1.9.2019 | 1.9.2019 | 31.12.2020 |
| AH | Euro 6d-TEMP | Euro 6-2 | N1 class II | PI, CI | 1.9.2018 (*) | | 31.8.2019 |
| BH | Euro 6d-TEMP-EVAP | Euro 6-2 | N1 class II | PI, CI | 1.9.2019 | 1.9.2020 | 31.12.2021 |
| AI | Euro 6d-TEMP | Euro 6-2 | N1 class III, N2 | PI, CI | 1.9.2018 (*) | | 31.8.2019 |
| BI | Euro 6d-TEMP-EVAP | Euro 6-2 | N1 class III, N2 | PI, CI | 1.9.2019 | 1.9.2020 | 31.12.2021 |
| AJ | Euro 6d | Euro 6-2 | M, N1 class I | PI, CI | 1.1.2020 | 1.1.2021 | |
| AK | Euro 6d | Euro 6-2 | N1 class II | PI, CI | 1.1.2021 | 1.1.2022 | |
| AL | Euro 6d | Euro 6-2 | N1 class III, N2 | PI, CI | 1.1.2021 | 1.1.2022 | |
| AX | n.a. | n.a. | All vehicles | Battery full electric | | | |
| AY | n.a. | n.a. | All vehicles | Fuel cell | | | |
| AZ | n.a. | n.a. | All vehicles using certificates according to point 2.1.1 of Annex I | PI, CI | | | |

(*) This limitation does not apply if a vehicle was type-approved in accordance with the requirements of Regulation (EC) No 715/2007 and its implementing legislation prior to 1 September 2017 in the case of category M and N1 class I vehicles, or prior to 1 September 2018 in the case of category N1 class II and III and category N2 vehicles, according to the last subparagraph of Article 15(4).

Key:

"Euro 6-1" OBD standard = Full Euro 6 OBD requirements but with preliminary OBD threshold limits as defined in point 2.3.4 of Annex XI and partially relaxed IUPR;

"Euro 6-2" OBD standard = Full Euro 6 OBD requirements but with final OBD threshold limits as defined in point 2.3.3 of Annex XI;

"Euro 6b" emissions standard = Euro 6 emission requirements including revised measurement procedure for particulate matter, particle number standards (preliminary values for PI direct injection);

"Euro 6c" emissions standard = RDE NOx testing for monitoring only (no NTE emission limits applied), otherwise full Euro 6 tailpipe emission requirements (including PN RDE);

"Euro 6c-EVAP" emissions standard = RDE NOx testing for monitoring only (no NTE emission limits applied), otherwise full Euro 6 tailpipe emission requirements (including PN RDE), revised evaporative emissions test procedure;

"Euro 6d-TEMP" emissions standard = RDE NOx testing against temporary conformity factors, otherwise full Euro 6 tailpipe emission requirements (including PN RDE);

"Euro 6d-TEMP-EVAP" emissions standard = RDE NOx testing against temporary conformity factors, otherwise full Euro 6 tailpipe emission requirements (including PN RDE), revised evaporative emissions test procedure;

"Euro 6d" emissions standard = RDE testing against final conformity factors, otherwise full Euro 6 tailpipe emission requirements, revised evaporative emissions test procedure.;

(e) Appendix 8b is corrected as follows:

(i) in point 2.1.3, the following text is inserted before the table:

'The manufacturer and the type approval authority shall agree which vehicle test model is representative.

The vehicle parameters test mass, tyre rolling resistance and frontal area of both a vehicle H_M and L_M shall be determined in such a way that vehicle H_M produces the highest cycle energy demand and vehicle L_M the lowest cycle energy demand from the road load matrix family. The manufacturer and the type approval authority shall agree on the vehicle parameters for vehicle H_M and L_M .

The road load of vehicles H_M and L_M of the road load matrix family shall be calculated according to paragraph 5.1 of Sub-Annex 4 of Annex XXI.;

(ii) in point 2.4.3, the words 'Repeat §2.4.1. with the representative vehicle data if applicable' are deleted;

(iii) in point 2.6.1, the last row of the table 'ROAD LOAD MATRIX (Annex XXI, Sub Annex 4, §5)' is replaced by the following:

| | |
|----------------|--|
| 'Final results | Torque method: $c_{0r} =$ $c_{1r} =$ $c_{2r} =$ and f_{0r} (calculated for vehicle H_M) = f_{2r} (calculated for vehicle H_M) = f_{0r} (calculated for vehicle L_M) = f_{2r} (calculated for vehicle L_M) = Coastdown method: f_{0r} (calculated for vehicle H_M) = f_{2r} (calculated for vehicle H_M) = f_{0r} (calculated for vehicle L_M) = f_{2r} (calculated for vehicle L_M) ='. |
|----------------|--|

(f) in the table in Appendix 8c the first 4 rows are replaced by the following:

| | | |
|---|---|---------------------------------------|
| 'Adjustable wheel alignment parameters Annex XXI, Sub-Annex 4, §4.2.1.8.3. | : | |
| The coefficients, c_0 , c_1 and c_2 , | : | $c_0 =$ $c_1 =$ $c_2 =$ |

| <p>The coastdown times measured on the chassis dynamometer Annex XXI, Sub-Annex 4, §4.4.4.</p> | : | <table border="1"> <thead> <tr> <th data-bbox="730 219 1070 271">Reference speed (km/h)</th> <th data-bbox="1078 219 1396 271">Coastdown time (s)</th> </tr> </thead> <tbody> <tr><td data-bbox="730 282 1070 333">130</td><td data-bbox="1078 282 1396 333"></td></tr> <tr><td data-bbox="730 344 1070 396">120</td><td data-bbox="1078 344 1396 396"></td></tr> <tr><td data-bbox="730 407 1070 459">110</td><td data-bbox="1078 407 1396 459"></td></tr> <tr><td data-bbox="730 470 1070 521">100</td><td data-bbox="1078 470 1396 521"></td></tr> <tr><td data-bbox="730 533 1070 584">90</td><td data-bbox="1078 533 1396 584"></td></tr> <tr><td data-bbox="730 595 1070 647">80</td><td data-bbox="1078 595 1396 647"></td></tr> <tr><td data-bbox="730 658 1070 710">70</td><td data-bbox="1078 658 1396 710"></td></tr> <tr><td data-bbox="730 721 1070 772">60</td><td data-bbox="1078 721 1396 772"></td></tr> <tr><td data-bbox="730 784 1070 835">50</td><td data-bbox="1078 784 1396 835"></td></tr> <tr><td data-bbox="730 846 1070 898">40</td><td data-bbox="1078 846 1396 898"></td></tr> <tr><td data-bbox="730 909 1070 960">30</td><td data-bbox="1078 909 1396 960"></td></tr> <tr><td data-bbox="730 972 1070 1023">20</td><td data-bbox="1078 972 1396 1023"></td></tr> </tbody> </table> | Reference speed (km/h) | Coastdown time (s) | 130 | | 120 | | 110 | | 100 | | 90 | | 80 | | 70 | | 60 | | 50 | | 40 | | 30 | | 20 | |
|--|--------------------|---|------------------------|--------------------|-----|--|-----|--|-----|--|-----|--|----|--|----|--|----|--|----|--|----|--|----|--|----|--|----|--|
| Reference speed (km/h) | Coastdown time (s) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Additional weight may be placed on or in the vehicle to eliminate tyre slippage Annex XXI, Sub-Annex 4, §7.1.1.1.1.</p> | : | <p>weight (kg) on/in the vehicle</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>The coastdown times after performing the vehicle coast down procedure according paragraph 4.3.1.3 of Annex XXI, Sub-Annex 4 Annex XXI, Sub-Annex 4, §8.2.4.2.</p> | : | <table border="1"> <thead> <tr> <th data-bbox="730 1361 1070 1413">Reference speed (km/h)</th> <th data-bbox="1078 1361 1396 1413">Coastdown time (s)</th> </tr> </thead> <tbody> <tr><td data-bbox="730 1424 1070 1476">130</td><td data-bbox="1078 1424 1396 1476"></td></tr> <tr><td data-bbox="730 1487 1070 1538">120</td><td data-bbox="1078 1487 1396 1538"></td></tr> <tr><td data-bbox="730 1550 1070 1601">110</td><td data-bbox="1078 1550 1396 1601"></td></tr> <tr><td data-bbox="730 1612 1070 1664">100</td><td data-bbox="1078 1612 1396 1664"></td></tr> <tr><td data-bbox="730 1675 1070 1727">90</td><td data-bbox="1078 1675 1396 1727"></td></tr> <tr><td data-bbox="730 1738 1070 1789">80</td><td data-bbox="1078 1738 1396 1789"></td></tr> <tr><td data-bbox="730 1800 1070 1852">70</td><td data-bbox="1078 1800 1396 1852"></td></tr> <tr><td data-bbox="730 1863 1070 1915">60</td><td data-bbox="1078 1863 1396 1915"></td></tr> <tr><td data-bbox="730 1926 1070 1977">50</td><td data-bbox="1078 1926 1396 1977"></td></tr> <tr><td data-bbox="730 1989 1070 2040">40</td><td data-bbox="1078 1989 1396 2040"></td></tr> <tr><td data-bbox="730 2051 1070 2103">30</td><td data-bbox="1078 2051 1396 2103"></td></tr> <tr><td data-bbox="730 2114 1070 2166">20</td><td data-bbox="1078 2114 1396 2166"></td></tr> </tbody> </table> | Reference speed (km/h) | Coastdown time (s) | 130 | | 120 | | 110 | | 100 | | 90 | | 80 | | 70 | | 60 | | 50 | | 40 | | 30 | | 20 | |
| Reference speed (km/h) | Coastdown time (s) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

(2) Annex IIIA is corrected as follows:

(a) point 3.1 is replaced by the following:

‘3.1. The following requirements apply to PEMS tests referred to in Article 3(11), second subparagraph.’

(b) Appendix 6 is corrected as follows:

(i) in point 2 the line corresponding to the symbol ‘ a_{ref} ’ is replaced by the following:

‘ a_{ref} Reference acceleration for P_{drive} ’;

(ii) in point 2 the line corresponding to the symbol ‘TM’ is replaced by the following:

‘TM Test mass of the vehicle’;

(iii) in point 2 the line corresponding to the symbol ‘ v_{ref} ’ is replaced by the following:

‘ v_{ref} Reference velocity for P_{drive} ’;

(iv) point 3.4.1 shall be replaced by the following:

‘3.4.1. The power classes and the corresponding time shares of the power classes in normal driving are defined for normalised power values to be representative for any LDV (Table 1-2).

Table 1-2

Normalised standard power frequencies for urban driving and for a weighted average for a total trip consisting of 1/3 urban, 1/3 road, 1/3 motorway mileage

| Power class No | $P_{c,norm,j}$ [-] | | Urban | Total trip |
|-------------------|--------------------|-------|-----------------------|------------|
| | From > | to ≤ | Time share, $t_{c,j}$ | |
| 1 | | – 0,1 | 21,9700 % | 18,5611 % |
| 2 | – 0,1 | 0,1 | 28,7900 % | 21,8580 % |
| 3 | 0,1 | 1 | 44,0000 % | 43,4582 % |
| 4 | 1 | 1,9 | 4,7400 % | 13,2690 % |
| 5 | 1,9 | 2,8 | 0,4500 % | 2,3767 % |
| 6 | 2,8 | 3,7 | 0,0450 % | 0,4232 % |
| 7 | 3,7 | 4,6 | 0,0040 % | 0,0511 % |
| 8 | 4,6 | 5,5 | 0,0004 % | 0,0024 % |
| 9 | 5,5 | | 0,0003 % | 0,0003 % |

The $P_{c,norm}$ columns in Table 1-2 shall be de-normalised by multiplication with P_{drive} , where P_{drive} is the actual wheel power of the tested car in the type approval settings at the chassis dynamometer at v_{ref} and a_{ref} .

$$P_{c,j} \text{ [kW]} = P_{c,norm,j} * P_{drive}$$

$$P_{drive} = \frac{v_{ref}}{3,6} \times (f_0 + f_1 \times v_{ref} + f_2 \times v_{ref}^2 + TM_{WLTP} \times a_{ref}) \times 0,001$$

Where:

- j is the power class index according to Table 1
- $v_{ref} = 66$ km/h
- $a_{ref} = 0,44$ m/s²
- The driving resistance coefficients f_0, f_1, f_2 are the target WLTP road load values for the individual vehicle to be PEMS tested, as defined in point 2.4 of sub-Annex 4 of Annex XXI
- TM_{WLTP} is the WLTP test mass of the individual vehicle to be PEMS tested, as defined in point 3.2.25 of Annex XXI.

(v) point 3.4.2 is replaced by the following:

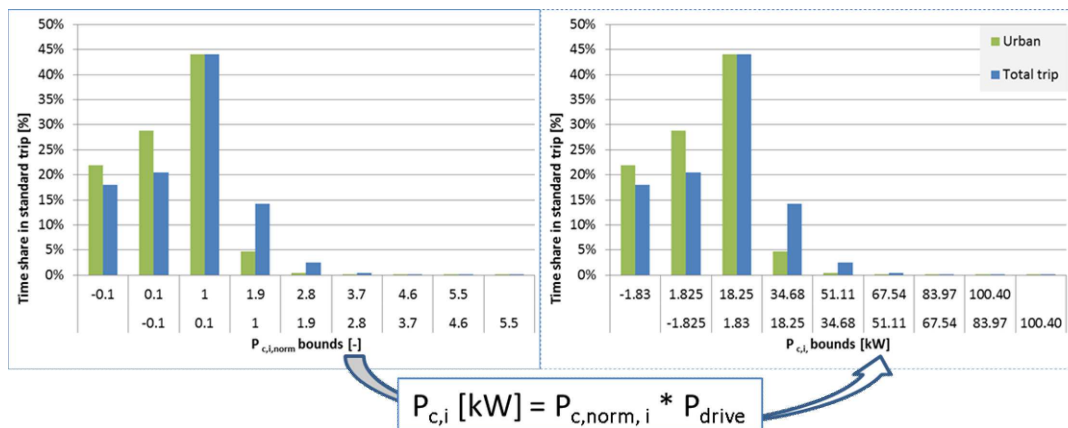
‘3.4.2. Correction of the wheel power classes

The maximum wheel power class to be considered is the highest class in Table 1 which includes ($P_{rated} \times 0,9$). The time shares of all excluded classes shall be added to the highest remaining class.

From each $P_{c,norm,j}$ the corresponding $P_{c,i}$ shall be calculated to define the upper and lower bounds in kW per wheel power class for the tested vehicle as shown in Figure 1.

Figure 1

Schematic picture for converting the normalised standardised power frequency into a vehicle specific power frequency



An example for this de-normalisation is given below.

Example for input data:

| Parameter | Value |
|--------------------------------|-------|
| f_0 [N] | 86 |
| f_1 [N/(km/h)] | 0,8 |
| f_2 [N/(km/h) ²] | 0,036 |
| TM [kg] | 1 590 |

| Parameter | Value |
|-------------------------|-----------------|
| P_{rated} [kW] | 120 (Example 1) |
| P_{rated} [kW] | 75 (Example 2) |

Corresponding results:

$$P_{\text{drive}} = 66[\text{km/h}]/3,6 * (86 + 0,8[\text{N}/(\text{km/h})] * 66[\text{km/h}] + 0,036[\text{N}/(\text{km/h})] * (66[\text{km/h})]^2 + 1\,590[\text{kg}] * 0,44[\text{m}/\text{s}^2]) * 0,001$$

$$P_{\text{drive}} = 18,25 \text{ kW}$$

Table 2

De-normalised standard power frequency values from Table 1 (for Example 1)

| Power class No | P_{c_j} [kW] | | Urban | Total trip |
|----------------|----------------|---------|---------------------------|------------|
| | From > | to ≤ | Time share, t_{c_j} [%] | |
| 1 | | – 1,825 | 21,97 % | 18,5611 % |
| 2 | – 1,825 | 1,825 | 28,79 % | 21,8580 % |
| 3 | 1,825 | 18,246 | 44,00 % | 43,4583 % |
| 4 | 18,246 | 34,667 | 4,74 % | 13,2690 % |
| 5 | 34,667 | 51,088 | 0,45 % | 2,3767 % |
| 6 | 51,088 | 67,509 | 0,045 % | 0,4232 % |
| 7 | 67,509 | 83,930 | 0,004 % | 0,0511 % |
| 8 | 83,930 | 100,351 | 0,0004 % | 0,0024 % |
| 9 | 100,351 | | 0,00025 % | 0,0003 % |

(¹) The highest wheel power class to be considered is the one containing $0,9 \times P_{\text{rated}}$. Here $0,9 \times 120 = 108$.

Table 3

De-normalised standard power frequency values from Table 1 (for Example 2)

| Power class No | P_{c_j} [kW] | | Urban | Total trip |
|----------------|----------------|---------|---------------------------|------------|
| | From > | to ≤ | Time share, t_{c_j} [%] | |
| 1 | All < – 1,825 | – 1,825 | 21,97 % | 18,5611 % |
| 2 | – 1,825 | 1,825 | 28,79 % | 21,8580 % |
| 3 | 1,825 | 18,246 | 44,00 % | 43,4583 % |

| Power class No | P_{c_j} [kW] | | Urban | Total trip |
|-------------------|----------------|---------------|---------------------------|------------|
| | From > | to \leq | Time share, t_{c_j} [%] | |
| 4 | 18,246 | 34,667 | 4,74 % | 13,2690 % |
| 5 | 34,667 | 51,088 | 0,45 % | 2,3767 % |
| 6 ⁽¹⁾ | 51,088 | All > 51,088 | 0,04965 % | 0,4770 % |
| 7 | 67,509 | 83,930 | — | — |
| 8 | 83,930 | 100,351 | — | — |
| 9 | 100,351 | All > 100,375 | — | — |

⁽¹⁾ The highest class wheel power class to be considered is the one containing $0,9 \times P_{\text{rated}}$. Here $0,9 \times 75 = 67,5$;

(3) in Annex V, point 2.3 is replaced by the following:

'2.3. The road load coefficients to be used shall be those for vehicle low (VL). If VL does not exist or the total load of vehicle (VH) at 80 km/h is higher than the total load of VL at 80 km/h + 5 %, then the VH road load shall be used. VL and VH are defined in point 4.2.1.2 of Sub-Annex 4 to Annex XXI. Alternatively the manufacturer may choose to use road loads that have been determined according to the provisions of Appendix 7 of Annex 4a of UN/ECE Regulation No 83 for a vehicle included in the interpolation family.'

(4) in Annex VI point 5.2.8 is replaced by the following:

'5.2.8. As an exception to points 5.2.1 to 5.2.7 above, the Manufacturers using multilayer or metal tanks may choose to use the following assigned permeability factor (APF) instead of the complete measurement procedure mentioned above:

APF multilayer/metal tank = 120 mg/24 h';

(5) in Annex VII, point 3.10 is replaced by the following:

'3.10. The road load coefficients to be used shall be those for vehicle low (VL). If VL low does not exist or the total load of vehicle (VH) at 80 km/h is higher than the total load of VL at 80 km/h + 5 %, then the VH road load shall be used. VL and VH are defined in point 4.2.1.2 of Sub-Annex 4 to Annex XXI.'

(6) in Annex VIII, point 3.3 is replaced by the following:

'3.3. The road load coefficients to be used shall be those for vehicle low (VL). If VL low does not exist or the total load of vehicle (VH) at 80 km/h is higher than the total load of VL at 80 km/h + 5 %, then the VH road load shall be used. VL and VH are defined in point 4.2.1.2 of Sub-Annex 4 to Annex XXI. Alternatively the manufacturer may choose to use road loads that have been determined according to the provisions of Appendix 7 of Annex 4a of UN/ECE Regulation No 83 for a vehicle included in the interpolation family.'

(7) in Annex XII, point 5.4 is replaced by the following:

'5.4. The manufacturer of the base vehicle shall test a vehicle representative of a completed multi-stage vehicle for road load determination. The manufacturer of the base vehicle shall calculate the road load coefficients of vehicle H_M and L_M of a road load matrix family as set in paragraph 5 of Sub-Annex 4 to Annex XXI and shall determine the CO₂ emission and fuel consumption of both vehicles. The manufacturer of the base vehicle shall make available a calculation tool to establish, on the basis of the parameters of completed vehicles, the final fuel consumption and CO₂ values as set in Sub-Annex 7 to Annex XXI.'

(8) Annex XXI is corrected as follows:

(a) point 3.2.19 is replaced by the following:

‘3.2.19. “Target road load” means the road load to be reproduced on the chassis dynamometer.’;

(b) Sub-Annex 4 is amended as follows:

(i) in point 5.1.1.1, the line corresponding to the symbol ‘RR’ is replaced by the following:

‘RR is the tyre rolling resistance class value of the individual vehicle of the road load matrix family, kg/tonne.’;

(ii) in point 5.1.2.1, the line corresponding to the symbol ‘RR’ is replaced by the following:

‘RR is the tyre rolling resistance class value of the individual vehicle of the road load matrix family, kg/tonne.’;

(iii) in point 8.2, in the second paragraph, the last sentence is replaced by the following:

‘The target running resistance values are the values calculated using the method specified in paragraph 5.1 of this Sub-Annex.’;

(c) in Sub-Annex 6a the following point 3.7.3 is inserted:

‘3.7.3. In particular, the tailpipe emissions measured at an ATCT test shall not be above the Euro 6 emission limits applicable to the vehicle tested defined in Table 2 of Annex I to Regulation (EC) No 715/2007.’.
