

## Appendix 4: Provisions for quality control over mass production of diesel and alternative clean fuel engine vehicles

1. In order to apply for a diesel engine or vehicle Certificate of Conformity based on the engine family, the applicant shall implement quality control measures in accordance with provisions of this Appendix to ensure the emission control systems of mass produced vehicles comply with the applicable Emission Standards during the useful life of the systems.

The quality control plan for diesel vehicle air pollutant emissions shall be implemented based on the following items and requirements:

- 1.1 Self-random test.
  - 1.2 Random inspection ratio.
  - 1.3 Test items.
  - 1.4 Execution organization.
  - 1.5 Instrument and equipment.
  - 1.6 Test results and complete records.
  - 1.7 Deployment data for personnel implementing the quality control plan and cooperating with the personnel engaged in the new vehicle random test and recall and correction investigation.
  - 1.8 Plan implementation flowchart.
  - 1.9 Corrective action programs.
  - 1.10 Other supplementary notes and information about after sales service units (including depots and stations providing maintenance and repair services).
2. Commissioned test requirements:
    - 2.1 For domestically made vehicles, the quality control test should be performed by inspection and testing laboratories accredited by the central competent authority.
    - 2.2 For imported engines or vehicles, the quality control test should be performed by inspection and testing organizations overseas approved by the central competent authority, or performed by local inspection and testing organizations accredited by the central competent authority.
    - 2.3 For overseas quality control tests, if deemed necessary, the central competent authority may designate local inspection and testing organizations to perform comparison testing, and the test fees and freight shall be borne by the applicant.
    - 2.4 For domestic quality control tests, the results from inspection and testing laboratories shall be entered into the online transmission application system designated by the central competent authority.
  3. New vehicle quality control:
    - 3.1 Inspection and Testing items:
      - 3.1.1 Application for Heavy-Duty Engine Certificate of Conformity:

To include at least one engine cycle test and OBD circuitry continuity test.

- 3.1.2 Application for Heavy-Duty Bus or Truck Certificate of Conformity: To include the Smoke Opacity test and OBD circuit continuity test reports.
- 3.1.3 Application for Light-Duty Commercial or Passenger vehicle Certificate of Conformity: To include the driving cycle test, Smoke Opacity test and OBD circuit continuity test reports.
- 3.2 When manufacturing or importing the vehicles, the manufacturer or the manufacturer designated dealer shall complete the quality control testing activities before the sales volume reaches the upper control threshold that is defined in paragraph 3.3: Random inspection ratio of this Appendix. In the meantime, the applicant shall also submit the test report within the specified timeline.
- 3.3 New vehicle quality control random inspection ratio:
  - 3.3.1 If the applicant is the manufacturer or manufacturer designated agent:
    - 3.3.1.1 Application for Heavy-Duty Engine Certificate of Conformity: For each engine family, at least one vehicle shall be selected per 500 vehicles manufactured or imported.
    - 3.3.1.2 Application for Heavy-Duty Bus or Truck Certificate of Conformity: For each vehicle configuration within each engine family, at least one vehicle shall be selected per 500 vehicles manufactured or imported.
    - 3.3.1.3 Application for Light-Duty Commercial or Passenger vehicle Certificate of Conformity: For each engine family, at least one vehicle shall be selected per 200 vehicles manufactured or imported.
  - 3.3.2 If the applicant is an association of importers, in the case of no more than 20 vehicles imported per engine family, at least one vehicle shall be selected per engine family, and; in the case of more than 20 vehicles imported per engine family, at least one additional vehicle shall be selected per 20 vehicles for the random test.
4. In-use vehicle quality control measures:
  - 4.1 For selection of test vehicles, the vehicle configuration enjoying a bigger sales volume or serving as the representational vehicle shall be considered the first priority. The following requirements shall apply during the warranty period of the emission control system.
    - 4.1.1 Application for Heavy-Duty Engine: The vehicle shall have run for at least 25,000 km (inclusive).
    - 4.1.2 Application for light-duty commercial or passenger vehicle:

The vehicle shall have run for at least 15,000 km (inclusive) or already been registered for more than six months (inclusive), whichever is later.

However, this shall not apply where the applicant becomes unable to conduct the test according to said requirements due to special reasons and submits a feasible alternative solution to the central competent authority for approval during the time limit for threshold limits to be attained at various stages.

4.2 Five years after discontinuing the manufacturing of such engine family or OBD Family, the applicant may stop submitting the quality control test result and relevant records being maintained for the in-use vehicles.

4.3 Test items:

4.3.1 Maintenance and Warranty information.

The applicant shall keep customer complaints related to the emission control systems, components, maintenance and warranties, and information on repairs and OBD malfunction services, as records to be filed and preserved for 2 years for future reference. The central competent authority may perform audit inspection sampling to check the implementation status.

4.3.2 OBD In-Use Performance Ratio (IUPR).

If the sales of the OBD family vehicles manufactured or imported have already accumulated over 200 units, the applicant shall conduct the OBD IUPR inspection on the vehicles sold domestically and produce the inspection report to be retained for two years for future reference, pursuant to the provisions of EU Regulation (EC) No. 595/2009 or (EC) No. 715/2007 and the subsequent related directives. The central competent authority may also perform a random test to check the implementation status.

4.3.3 Driving cycle test random inspection ratio

4.3.3.1 The applicant shall select test vehicles pursuant to the random inspection ratio and test time limit requirements under paragraph 4.4.2 of this Appendix, and complete the test according to the In-use Vehicle RDE on-road requirements under the Regulation (EU) No. 595/2009 or EU Regulation (EC) No. 715/2007 and related derivatives.

4.3.3.2 Determination of testing results: For driving cycle tests, the results shall comply with Article 5 of the Emission Standards. The vehicle RDE on-road test results shall comply with the following In-Service Conformity factor.

(1) Application for Heavy-Duty Engine: For the vehicle RDE on-road test, 90% of the pollutant emissions

within the Windows shall not exceed the threshold limits under WHTC cycle referred to in Article 5 of the Emission Standards multiplied by the In-Service Conformity factors listed in the following Table:

Pollutant	In-Service Conformity factor
CO	1.50
THC	1.50
NO <sub>x</sub>	1.50
PN	—

(2) Application for Light-Duty Commercial or Passenger vehicle: The pollutant emissions from urban driving and the entire RDE trip shall not exceed the threshold limits under NEDC or WLTC driving cycle test referred to in Article 5 of the Emission Standards multiplied by the In-Service Conformity factors listed in the following Table:

Pollutant	In-Service Conformity factor
NO <sub>x</sub>	2.1
PN	1.5
Test command	Regulation (EU) 2017/1154 and related amended derivatives

As of January 1, 2028, the emission test result shall meet the arithmetic product of the In-Service Conformity factors listed in the following Table:

Pollutant	In-Service Conformity factor
NO <sub>x</sub>	1.1
PN	1.34
Test command	Regulation (EU) 2023/443 and related amended derivatives
Remarks	Whether the Table may be applied shall be determined subject to the date when application is made for the Certificate of Conformity for a new engine family.

#### 4.4 Random inspection ratio and the deadline for completing the testing

##### 4.4.1 OBD In-Use Performance Ratio:

4.4.1.1 Except for the first test which shall be completed within 18~24 months as of the date when the sales of new vehicle configurations start, all other tests shall be executed on a yearly basis.

4.4.1.2 For OBD family vehicles for which accumulated sales have already reached 200 to 1,000 units, it is necessary to complete the tests and records for at least six vehicles. In

the case of accumulated sales over 1,000 units, it is necessary to complete the tests and records for at least six vehicles on a yearly basis.

#### 4.4.2 Emissions test:

4.4.2.1 The same applicant shall have tests conducted according to the regulations defined in the table below, as soon as the accumulated sales volume of the respective PEMS test family or engine family reaches the lower threshold established for each stage:

Applicant	Group & unit	Test method	Reporting ratio			Time limit for completion
			Stage	Accumulated sales (unit)	Test number (unit)	
Light-Duty Commercial or Passenger vehicle	PEMS test family	On-road test with PEMS or WLTC	1	200~499 units	1 unit	Within 24 months
			2	500~1,999 units	1 unit	Within 18 months
			3	Per additional 2,000 units	1 unit	Within 18 months
Heavy-duty engine	Engine family	On-road test with PEMS	1	21~199 units	1 unit	Within 24 months
			2	More than 200 units (inclusive)	Additional one unit per two years	Within 18 months
Remarks	In the case of heavy-duty diesel engines, except for the first report which shall be completed within 18 months at the 2nd stage, the emission test results for the previous year shall be reported by March 31 of each year afterward.					

4.4.2.2 In the event a designated PEMS test family or engine family fails to achieve the required threshold, before precluding the said PEMS test family or engine family, the applicant shall conduct tests according to the regulations defined in the above table, if the sum of the sales for the rest of the vehicles is 200 or more units.

#### 5. Test result and data reporting schedule

5.1 The applicant shall report and enter the test results and required data in the format defined by the network transmission system as designated by the central competent authority and then report the same to the central competent authority for future reference.

5.2 New vehicle quality control: Before the 20th day of each month, the applicant shall report the production quantity of new vehicles, quantity

of imported vehicles, and new vehicle quality control test results of the previous month.

- 5.3 In-use vehicle quality control: Before the 31st day of March each year, the applicant shall report the emission test result of the previous year.
- 5.4 After completing the quality control test, the applicant shall not arbitrarily change the test purpose of any vehicles failing the test.