Appendix 1: Exhaust emission testing and regulations applicable for vehicle model inspection

1. Selecting the vehicles required for conducting the inspection and testing of a Certificate of Conformity

The vehicles being selected for vehicle testing shall be representative of the said engine family; the principles of selecting test vehicles for the engine family and the evaporative family are as follows:

1.1 From the said engine family, the vehicle model expected to have the greatest quantity of emissions shall be selected for the exhaust emissions test. The vehicle with the greatest loaded vehicle weight shall be selected. When different vehicle models have identical load weight, through using the dynamometer setting data, the vehicle model with the greatest road resistance (at 80kph) shall be selected. If the road resistance is identical, the largest size of engine displacement shall be selected for testing. If the size of engine displacement is identical, the vehicle with the greatest total gear ratio numbers (including the overdrive device) shall be selected; the greatest axle ratio shall be considered as the next priority. If the representative vehicle model of the engine family is applicable to different classes of emission standards, the most stringent standards should be complied.

1.2 Within the Evaporative Family, select one vehicle model with the highest expected evaporative emissions. If unable to select vehicle model with the highest expected evaporative emissions, the representative model may be selected according to the fuel system installation conditions and the materials that are being used.

1.3 If the central competent authority considered that the test vehicle being selected according to the previous two paragraphs could not be representative of the said engine family or evaporative family, the central competent authority may assign additional vehicle models in the engine family or evaporative family as test vehicles.

1.4 The selected vehicles for the testing shall be completely assembled and ready for normal driving and stable operation.

1.5 When importing the vehicles that are classified as the same engine family and that are manufactured in or imported from different countries, the vehicles shall be selected respectively for carrying out the test, except for the engine family that has been granted with the Certificate of Conformity being issued in accordance with the regulations enforced in the United States and the regulations of EC or UN/ECE being practiced in EU members and the UK.

2. Vehicle testing items and basic regulations

2.1 Basic regulations

2.1.1 The testing of all new vehicles includes vehicle model inspection and testing, new vehicle quality control testing and new vehicle random inspection. Unless otherwise specified, each of the test results shall be calibrated according to the deterioration coefficients that are quoted and confirmed in this appendix. The vehicle being provided with the cyclic regenerative equipment shall use the regeneration coefficient being

confirmed in item 5 of this appendix. The pollutant emission result being retrieved from each test shall comply with the limited value specified in the Emission Standards and this regulation.

2.1.2 The applicant shall set up the minimum mileage required by the respective engine family to achieve the stabilized emission value when conducting the respective test, including vehicle model inspection and testing, new vehicle quality control test and new vehicle random inspection:

2.1.2.1 When conducting the test according to EU standards, the accumulated on-road mileage shall not exceed 15,000 kilometers.

2.1.2.2 When conducting the test according to U.S. standards, the accumulated on-road mileage shall not exceed 6,400 kilometers.

2.2 Vehicle pollutant emission test for vehicle model inspection:

2.2.1 The test to be conducted for the vehicle model inspection shall comply with the regulations defined in the table below:

Test items	Type of test specifications	
	EU test specification	U.S. test specification
Driving Cycle Test	Execution	Execution
Idling Test	Execution	Execution
Crankcase Pollutant Emission Test	Execution	Execution
Evaporative Pollutant Emission Test	Execution	Execution
Durability Test	Execution	Execution
On-board Diagnosis System Test	Execution	Execution
Real Driving Emission Test	Execution	-
Supplemental federal test procedure	-	Execution

2.2.2 The test shall be conducted according to one of the following specifications:

2.2.2.1 “Gasoline-powered Vehicle Exhaust Emission Test Method and Procedure”, “Gasoline-powered Vehicle Durability Test Method and Procedure” and “Gasoline-powered Vehicle Evaporative Emission Test Method and Procedure.”

2.2.2.2 If selecting the EU testing specification, the test shall be conducted in accordance with EC No. 715/2007 and the subsequent directives.

2.2.2.3 If selecting the U.S. testing specification, the test shall be conducted in accordance with American regulations.

2.2.3 Real Driving Emission Test

2.2.3.1 If the applicant is engaged in vehicle manufacturing or importing and where the EU test specification is selected, then such test shall be conducted for the PEMS test family with the accumulated sales volume exceeding 1,000 units (including).

2.2.3.2 The test result does not have to be calibrated with the deterioration factors.

2.2.3.3 The result of the Real Driving Emission (hereunder briefed as RDE) Test being conducted according to the respective test specification shall be lower than the limit value, which is obtained by multiplying the limit value of Driving Cycle Test of the Emission Standards by the Conformity Factor (briefed as CF). The CF shall meet the requirements defined in the table below:

Type of stage	Vehicle Type verification execution date	New vehicle execution date	Conformity Factor			Test command
			NOx	PN	CO	
1	January 1, 2024	January 1, 2025	-	-	-	(EU)2016/427
2	-	January 1, 2027	2.1	1.5	-	(EU)2017/1154
3	January 1, 2027	-	1.43	1.5	-	(EU)2018/1832
4	January 1, 2028	-	1.1	1.34	-	(EU)2023/443
Remarks	1. If the execution date is not defined for the type of stage, then the applicant shall disclose a complete set of information. 2. The regulations defining the execution date of each stage are indicated in this table. The vehicle model inspection shall be verified according to the date at which, the Certificate of Conformity is issued for the new engine family. The new vehicle shall be verified according to the shipping date of the imported vehicles or the delivery date of the domestic vehicles. 3. Before December 31, 2026, the applicant shall conduct the RDE Test only and then report the test result through the internet. 4. If the applicant has applied for or obtained the Certificate of Conformity required for the vehicle model inspection before June 30, 2024, then the applicant shall report the RDE test result through the internet by January 1, 2025.					

2.2.4 Supplemental Federal Test Procedure

2.2.4.1 If the vehicle manufactured or imported by the applicant is tested according to U.S test specifications, then such test shall be conducted for the engine family with the accumulated sales volume exceeding 1,000 units (including).

2.2.4.2 The scope of the test shall include the US06 and SC03 tests.

2.2.4.3 In principle, the applicant shall use the deterioration coefficient to calibrate the test result. Except where the applicant has used the deteriorated components in the vehicle test or where the conformity certificate is issued by the competent authority in the U.S. verifying that the deterioration coefficient will not be required to carry out the calibration.

2.2.4.4 The test result shall comply with the regulations defined in the table below:

Type of stage	Vehicle Type verification execution date	New vehicle execution date	Test cycle					
			US06 (Unit: mg/km)		SC03 (Unit: mg/km)		Comprehensive SFTP (Unit: mg/km)	
			NMHC+NOx	CO	NMHC+NOx	CO	NMHC+NOx	CO
1	January 1, 2024	January 1, 2025	-	-	-	-	-	-
2	-	January 1, 2027	87	4972	124	1678	-	-
3	January 1, 2028	January 1, 2029	-	-	-	-	60	2610
Remarks	1. If the execution date is not defined for the type of stage, then the applicant shall disclose a complete set of information. 2. The regulations defining the execution date of each stage are indicated in this table. The vehicle model inspection shall be verified according to the date at which, the Certificate of Conformity is issued for the new engine family. The new vehicle shall be verified according to the shipping date of the imported vehicles or the delivery date of the domestic vehicles. 3. Before December 31, 2026, the applicant shall conduct the SFTP Test only and then report the test result through the internet. 4. If the applicant has applied for or obtained the Certificate of Conformity required for the vehicle model inspection before June 30, 2024, then the applicant shall report the SFTP test result through the internet by January 1, 2025. 5. The calculation formula required for the Comprehensive SFTP Test shall be: 0.35×FTP+0.28×US06+0.37×SC03							

3. Deterioration Factors

3.1 Basic regulations

3.1.1 The exhaust emission and evaporative emission deterioration factors for each engine family are required to indicate the vehicle's durability performance in actual operative

condition, if the vehicle is under normal maintenance in accordance with the driver's manual.

3.1.2 The results of Driving Cycle Test shall be calibrated by multiplying or adding up the respective deterioration factors.

3.1.3 Evaporative emissions are determined by adding deterioration factors to the test results.

3.1.4 If the assigned multiplicative deterioration factor by the applicant is less than 1, it is deemed as equal to 1.

3.2 Deterioration factors shall be determined according to one of the following methods:

3.2.1 The Durability Test being conducted according to the regulations defined in 2.2.2 of this appendix.

3.2.1.1 The applicant shall submit the Durability Test Plan (including the accumulated durability mileage) to the inspection organization for confirming that the inspection-related data contained in such plan is correct. After being approved by the central competent authority, the applicant shall be allowed to conduct the plan. The content of such plan shall at minimum include the following items:

(1) Test laboratory name (includes proof of capability to perform the durability test)
(2) Test procedures
(3) Test schedule
(4) Test vehicles
(5) Test equipment
(6) Repair and maintenance items
(7) Test fuel testing report
(8) Adjustable parameters description and suggestions

3.2.1.2 After completing the Durability Test Plan, the applicant shall submit it to the inspection organization for confirmation that the inspection-related content contained therein is correct. After being approved by the central competent authority, the applicant shall be allowed to use the deterioration factors that are obtained from such test.

3.2.2 Using the deterioration factors defined in the Certificate of Conformity issued by other countries

3.2.2.1 It shall be applicable for the engine family granted with a Certificate of Conformity issued by the US, EU members or the UK.

3.2.2.2 Before submitting the deterioration factor data contained in the aforementioned Certificate of Conformity according to the following regulations, the applicant shall submit such data to the inspection organization for confirmation that the inspection-related data contained therein is correct. The applicant shall be then allowed to use the aforementioned data after it is approved by the central competent authority:

(1) Submit the conformity certificate issued by the US, EU members or the UK and the applicable supporting documentation.

(2) Vehicles with a US-issued Certificate of Conformity may use the NMOG to replace the NMHC deterioration factor value, if the NMHC deterioration factor is not available.

3.2.3. Assigned deterioration factors

3.2.3.1 Conducting the Driving Cycle Test and the Evaporative Pollutant Emission Test as defined in U.S. Test Specifications:

Test item	Driving cycle test			Evaporative Pollutant Emission Test (g/test)
Pollutant	CO	NMHC	NOx	
Assigned deterioration factors	1.500	1.600	1.500	0.00

3.2.3.2 Conducting the Driving Cycle Test and the Evaporative Pollutant Emission Test as defined in EU Test Specifications:

Test item	Driving cycle test						Evaporative Pollutant Emission Test (g/test)	
Pollutant	CO	HC	NMHC	NOx	PM	PN	Fuel tank permeation	Activated carbon canister (1)
Assigned deterioration factors	1.500	1.300	1.300	1.600	1.000	1.000	0.24	0.06
Remarks	(1): For each Evaporative family with accumulated sales volume less than 200 units.							

4. Evolution coefficient utilization regulations

For vehicles that adopt the EU driving cycle test procedures, before conducting the new vehicle random inspection or new vehicle quality control test, the vehicle model of each engine family may choose to use the evolution coefficients that have been approved by the central competent authority with the requirement that the test vehicle must be in a condition without run-in (accumulated mileage under 150 kilometers) for the testing results to be multiplied. The evolution coefficients are set according to one of the following methods:

4.1 Conduct vehicle on-road mileage accumulation test:

4.1.1 The Evolution Coefficient used in the exhaust emission test shall be set according to the result of the accumulated on-road mileage test. The applicant shall submit the Driving Cycle Test method and the plan required for the accumulated on-road mileage test. As a first step, the applicant shall submit the plan to the inspection organization for confirming that the inspection-related data contained therein is correct. After being approved by the central competent authority, the applicant shall be allowed to conduct the Accumulated On-road Mileage Test.

4.1.2 The contents of vehicle on road testing plan shall at minimum include the following items:

4.1.2.1 Test laboratory name (includes proof of capability to perform the test)

4.1.2.2 Test vehicle

4.1.2.3 Test procedure

4.1.2.4 Test schedule

4.1.2.5 Test equipment

4.1.2.6 Maintenance and repair items

4.1.2.7 Test fuel

4.1.3 The test vehicle shall conduct the emissions tests and measure the emission values at the zero mileage (mileage less than 150 kilometers) and at the required accumulation mileage (not over 15,000 kilometers) respectively.

4.1.4 The evolution coefficient calculation method for each regulated pollutant: the pollutant's emission test value at required accumulation mileage divided by the emission test value at the zero mileage condition. The evolution coefficient may be less than 1.

4.1.5 After completing the Accumulated On-road Mileage Plan, the applicant shall submit the plan to the inspection organization for confirmation that the inspection-related data contained therein is correct. After being approved by the central competent authority, the applicant shall be allowed to use the evolution coefficient for conducting the Accumulated On-road Mileage Test.

4.2 Adopting the evolution coefficient defined in the conformity certificate issued by EU members or the UK: The applicant shall prepare the documents that will be used to obtain the evolution coefficient certification from EU members or the UK for such vehicle models. In the meantime, the applicant is also required to submit the inspection-related data to the inspection organization for confirmation as correct. After being approved by the central competent authority, the applicant shall then be allowed to use the evolution coefficient defined in the supporting document.

5. Regeneration coefficient utilization regulations

5.1 If using EU test specifications, and the cyclic regenerative device is installed, and where the device regeneration should be executed during the test process, then the applicant shall secure the regeneration coefficient in accordance with the regulations defined in EC No. 715/2007 and the subsequent directives (including UN/ECE Regeneration No. 83 Annex 13). Cyclic Regeneration Device: Refers to the catalytic converter, smoke filter or other pollution control devices. In practice, at least one round of cyclic regeneration process shall be executed for the aforementioned device when the vehicle running mileage is within 4,000 km reached under normal vehicle operation mode.

5.2 The regeneration coefficient shall be set according to either of the following methods:

5.2.1 Executing the Regeneration Coefficient Test:

5.2.1.1 The applicant shall submit the Regeneration Coefficient Test Plan to the inspection organization for confirmation of the inspection-related data. After being approved by the central competent authority, the applicant shall be allowed to execute the Regeneration Coefficient Test Plan.

5.2.1.2 After completing the regeneration coefficient test, the applicant shall submit the test result to the inspection organization for confirmation that the inspection-related data is correct, and then the plan shall be used after being approved by the central competent authority.

5.2.2. Adopting the regeneration coefficient defined in the conformity certificate issued by EU members or the UK:

5.2.2.1 When selecting the vehicle model granted with the conformity certificate issued by EU members or the UK, in accordance with EC or UN/ECE regulations, the applicant shall submit the documents required for obtaining the regeneration coefficient certification from the EU. Until then, the applicant shall be allowed to use the regeneration coefficient defined in the supporting document.

5.2.2.2 If failing to obtain the conformity certificate issued by EU members or the UK, the applicant shall submit the conformity certificate issued by the original engine or vehicle manufacturer which proves that the same regeneration family (i.e. Periodically regeneration system family, Ki family) is being used by such engine family or vehicle model. Further, the applicant shall also comply with the regulations specified in Regulation (EC) No 715/2007 and the subsequent directives of the European Union. In the meantime, the applicant is also required to submit the declaration or the supporting documentation justifying that an identical regeneration coefficient is also provided for the engine family or the vehicle model that is defined in the aforementioned conformity certificate. To this extent, the applicant shall be allowed to use the regeneration coefficient defined in its Certificate of Conformity.

6. **OBD system**

6.1 Terms used in this Appendix are defined as follows:

6.1.1 Malfunction: means the failure of an emission-related component or system that would result in emissions exceeding the regulated limits or if the OBD system is unable to fulfill the basic monitoring requirements of this Appendix.

6.1.2 Malfunction simulation: done by replacing the emission control device with a deteriorated or defective one, or use an electronic simulator to simulate such a failure.

6.1.3 Malfunction indicator: means a visible or audible indicator that clearly informs the driver of the vehicle in the event of a malfunction of any emission-related component connected to the OBD system, or the OBD system itself.

6.1.4 Continuous monitoring: Continuous monitoring of the circuit continuity of emission-related components connected to a computer, including any relevant sensors that enable monitoring functions (such as lack of circuit continuity, circuit malfunction, and values exceeding normal operating values).

6.1.5 Driving Cycle: Refers to the vehicle driving process required for the OBD system to perform a comprehensive diagnostic assessment of the pollution control devices and related components. This includes engine start-up, operation, a period of driving, followed by engine shutdown and sufficient idle time before the next engine start. Any malfunctions occurring during this driving cycle should be diagnosed.

6.1.6 Warm-up cycle: A warm-up cycle means a sufficient vehicle operation such that the coolant temperature has risen by at least 22°K after engine start and reaches a minimum temperature of 343 °K (71 °C).

6.1.7 OBD family: Refers to vehicle models produced by the same vehicle manufacturer with identical engine characteristics, emission control system, OBD monitoring functions and strategies that may be categorized in the same OBD family.

6.2 Functions and related testing items of OBD must comply with the following provisions:

6.2.1 An OBD system shall be able to monitor and perform a periodical assessment of emission control equipment and related components; the frequency shall be one OBD monitoring assessment for each driving cycle.

6.2.2 The vehicle must be equipped with standardized OBD Malfunction Indicator Light (MIL), malfunction code storage capability, and allow reading of malfunction codes via a connector.

6.2.3 The OBD system shall perform a monitoring assessment of the emission control equipment or related components, unless there is a possibility of damaging emission control equipment and related components, or there are safety concerns, or the power take-off units are running.

6.2.4 OBD testing shall be performed on a test vehicle that has completed durability testing or the equivalent deterioration testing. In the case of a new vehicle, deterioration factors may be applied to the new vehicle OBD test results to derive final OBD test results.

6.2.5 The applicant shall conduct the test according to the test regulations defined in paragraph 2.2.2 of this Appendix or the On-board Diagnosis System (OBD) Test Plan approved by the central competent authority. The applicant shall submit the aforementioned OBD Test Plan to the inspection organization for confirmation that the inspection data is correct. After being approved by the central competent authority, the applicant shall be allowed to conduct the test. The OBD test plan shall include the following items:

6.2.5.1 Test laboratory (information includes how to perform malfunction simulation and the laboratory's test capability description). When conducting tests abroad, it should undergo third-party verification by the testing organizations approved by the central competent authority.

6.2.5.2 Test procedure, malfunction simulation test flowchart and schedule.

6.2.5.3 Description of the test vehicle and the OBD family covered vehicle models.

6.2.5.4 Description of OBD test items, equipment and malfunction simulation methods.

6.2.5.5 OBD related supporting documents shall include the following items:

(1) Description of the OBD system

(2) Description or annotated drawing of the MIL used in the OBD

(3) Description of all emissions control equipment and related components and systems monitored by the OBD, as well as a list of malfunction codes, related computer code format and contents

(4) Description or flowchart of the actuating principle for the OBD monitoring devices (including monitoring strategy, malfunction indicator standards and MIL light on timing)

(5) OBD testing report format

(6) An explanation of adopted solutions or strategies to prevent arbitrary adjustment or modification of the Engine Control Units (ECU)

(7) Description of the location of the OBD connector (DLC)

(8) Other required supplemental documents when deemed necessary

6.2.6 The test results of the representative vehicle that emits the most emissions will be taken as the test results for the OBD family.

6.2.7 The OBD system shall be used to monitor all exhaust emissions-related control equipment, devices and systems. The applicant shall conduct the testing as follows:

6.2.7.1 During the new vehicle model certification process, the vehicle manufacturer or its designated agent shall perform at least 4 OBD monitoring item tests. The test items shall include: catalytic converter, oxygen sensor, misfire, and evaporative leakage.

6.2.7.2 After meeting the following conditions, the applicant shall conduct the OBD disconnection test for at least one of the items in accordance with the testing regulations defined in 2.2.2 of this Appendix:

(1) Every vehicle model in an OBD family whose sales are under 200 units.

(2) For applications, file with the association of importers and distributors or an applicant not based on the engine family.

6.3 The OBD threshold limits, scope, items, and the OBD in-use monitoring performance shall comply with the following provisions:

6.3.1 The OBD threshold limits are to be set as follows:

6.3.1.1 Conducting the test defined in U.S. Test Specifications shall comply with the table below:

Class	CO (mg/km)	NMHC (mg/km)	NOx (mg/km)	PM (mg/km)
M1、N1	3920	81	66	9
1. The PM standards only apply to gasoline direct injection (GDI) engine vehicles.				

6.3.1.2 Conducting the test defined in EU Test Specifications shall comply with the table below:

Class		CO(mg/km)	NMHC(mg/km)	NOx(mg/km)	PM*(mg/km)
M1		1900	170	90	12
N1	RW ≤ 1305 kg	1900	170	90	12
	1305 kg < RW ≤ 1760 kg	3400	225	110	12
	1760 kg < RW	4300	270	120	12

1. The PM standards only apply to gasoline direct injection (GDI) engine vehicles.
2. As to the simulated deterioration or malfunction driving cycle test results, for each pollutant, if the emission value exceeds its applicable OBD threshold limit but is within the 120% range, it shall be deemed as in compliance.

6.3.2 The diagnosis scope and items of OBD

Before performing the following OBD monitoring item tests, the applicant must verify that the test vehicle conforms to the *Emission Standards*. The central competent authority may assign specific items for which the applicant is to perform tests.

6.3.2.1 Catalytic converter: the OBD system must be able to identify catalytic converter deterioration or malfunctions before they cause NMHC and NOx exhaust emissions to exceed the OBD regulated threshold limits.

6.3.2.2 Engine misfire: the OBD system must be able to identify engine misfire malfunction status before the engine misfire causes NMHC, CO, NOx, or PM exhaust emissions to exceed the OBD regulated threshold limits, or causes damage to the catalytic converter.

6.3.2.3 Oxygen sensor: the OBD system must be able to identify oxygen sensor deterioration or malfunction status before it causes NMHC, CO, NOx, or PM exhaust emissions to exceed the OBD regulated threshold limits.

6.3.2.4 Evaporative emissions

(1) For vehicles that comply with EU emissions standards, emissions related electronic devices must be monitored for circuit continuity and the engine control unit must be able to diagnose the accuracy of reading values and adjust accordingly.

(2) For vehicles that comply with the US emissions standards

(A) If an aperture causes leakage in the evaporative control system (excluding the tubes and connection devices between the purge valve and the air inlet manifold) greater than or equal to 1.1mm, or if there is no purge flow in the entire evaporative emission control system, the OBD system must be able to diagnose the malfunction status.

(B) For vehicles with a fuel tank capacity exceeding 94 liters, the central competent authority may accept the OBD strategies for monitoring the evaporative leakage aperture based on the engineer analysis data provided by the applicant.

6.3.2.5 For other emission control equipment, related systems or components – the OBD system must be able to diagnose any deterioration or malfunction of power system components or systems before they cause NMHC, CO, NOx, or PM exhaust emissions to exceed the regulated threshold limits, or diagnose systems that may cause excess emissions but are not described in 6.3.2 of this Appendix such as the Exhaust Gas Re-circulation (EGR), Secondary Air System, and Fuel Trim System.

6.3.2.6 For other emissions control related components – the OBD system must be able to diagnose the deterioration or malfunction of sensors, actuators or components related to the electronic signal input and output that affect emissions control but are not described in 6.3.2 of this Appendix. This portion the continuity and rationality of electronic circuits shall be monitored, as to the actuator, it must be actuated according to the instruction of ECU.

6.3.3 OBD In-Use Performance Ratio

During their in-use condition, the OBD system shall be able to monitor and store In-Use Performance related information. The relevant OBD In-Use Performance stipulation shall be in accordance with the provisions in 2.2.2 of this Appendix. Upon application for certification, the provided OBD monitored items, monitoring conditions and the OBD In-Use Performance Ratio (IUPR) shall conform to the following requirements table:

6.3.3.1 The average of OBD IUPR for each major component or system shall meet the requirements listed in the abovementioned table:

	Secondary air system and other cold start-related items	Evaporative system	Other items
IUPR	≥ 0.260	≥ 0.520	≥ 0.336

6.3.3.2 The selection of test vehicles shall be in accordance with the provisions in Appendix 3 paragraphs 4.3.2 and 4.4.1. At least 50% of the test vehicle, their major components' or systems' OBD IUPR shall conform to the requirements listed in the table above.

6.3.3.3 The major components or systems mentioned in paragraphs 6.3.1 and 6.3.2 of this Appendix are optional equipment for the vehicle, including: catalytic converter, oxygen sensor (including secondary oxygen sensor), evaporative system, EGR system, variable valve timing (VVT) system, secondary air system, PM filter, NOx post-treatment system (such as NOx adsorbent catalyst, NOx reagent/catalyst system), turbo and supercharger boost system.

6.4 The malfunction indicator light (MIL) shall be installed on the dashboard facing the driver's seat and comply with the following provisions:

6.4.1 A vehicle must not be equipped with more than one general purpose MIL for emission-related problems. A vehicle must install in a visible place not more than one general purpose MIL to the driver with sufficient brightness. The use of red color for an MIL is prohibited. Before the engine starts and with the key turned on, the MIL shall be on with check engine, or service engine soon display functionalities. The MIL messages such as "Check Engine" , "Service Engine Soon" must comply with the symbol requirements regulated in ISO 2575, or the texts or symbols approved by the central competent authority. Separate specific purpose telltales (e.g. brake system, fasten seat belt, oil pressure, etc.) are permitted.

6.4.2 When the OBD system detects a malfunction, the MIL must activate. If an engine misfire occurs causing possible damage to the catalytic converter, the MIL must flash once per second. If this type of misfire is detected again during the sequential driving cycle (including engine start-up and engine shut-off) or if a similar condition occurs again during the following driving cycle, the MIL must remain activated.

6.4.3 The MIL must be activated when the vehicle's ignition is in the "key-on" position before the engine starts and deactivated after the engine starts if no malfunction has previously been detected. In the case where the fuel system or engine misfire had been diagnosed previously, if in the following three consecutive driving cycles under similar conditions the MIL detects no new malfunctions, the indicator light shall be turned off. Similar conditions mean the engine speed differential is within 375rpm, the engine load differential is 20%, and the engine warm-up conditions are identical to those of the engine misfire that was initially detected.

6.4.4 For malfunctions other than the detection of fuel system and engine misfire, the MIL may be de-activated after three subsequent sequential driving cycles during which the monitoring system responsible for activating the MIL ceases to detect the malfunction and if no other malfunction has been identified that would independently activate the MIL. With the consent of the central competent authority, the applicant may use the other statistical method protocol to set the criteria for MIL activation.

6.5 The OBD fault code storage and scanning must comply with the following provisions:

6.5.1 The OBD system must save and store the information such as: diagnosed malfunction codes; readiness codes for the emission control system and related components; and emission control system status codes in the computer memory. The stored computer codes must be retrievable through the serial port of the standard link connector.

6.5.2 The OBD system must record the entire detected fault code(s) with the MIL activated. The separate malfunction codes must be used and be capable to identify the malfunctioned equipment, systems or components. The malfunction codes must be stored and showing the MIL activation status.

6.5.3 When a misfire occurs in a single cylinder, the malfunction code shall be capable to identify the malfunctioned cylinder, unless the applicant can provide engineering data or evaluation report to prove that during certain engine operating conditions, the misfired cylinder could not be identified accurately. If a multi-cylinder misfire occurs, the malfunction code must be capable to identify the malfunction status. When the stored malfunction code is for multi-cylinder misfire, there is no need to identify the misfired cylinder separately.

6.5.4 The OBD system may erase a fault code if the same fault is not re-registered in at least 40 engine warm-up cycles and turn off the MIL.

6.5.5 Separate status codes and readiness codes must be recorded in the computer memory and be used to identify the correctly functioning of the emission control systems. Those emission control systems need further vehicle operation to be fully evaluated.

6.5.6 For those items that require continuous monitoring (such as engine misfire, fuel system monitoring, etc.), if abnormal operating conditions occurs continuously during the test (such as ambient temperature below 4.5℃ or at elevations over 2,438 meters above sea level), the OBD system may disable the monitoring and temporarily suspend the storage of relevant status codes.

6.6 OBD malfunction code storage and reading of the diagnostic-related data shall comply with the following provisions:

6.6.1 Upon determination of the first malfunction of any component, "freeze-frame" engine conditions present at the time must be stored in the computer's memory. Should a subsequent fuel system or misfire malfunction occur, any previously stored freeze-frame conditions must be replaced by the fuel system or misfire conditions (whichever occurs first). Stored engine conditions must include, but not limited to, engine speed, open-loop or closed-loop operation, fuel trim value(s), coolant temperature, calculated load value, fuel pressure, vehicle speed, air flow rate, intake manifold pressure, etc., and the fault code which caused the data to be stored.

6.6.2 The applicant must choose the most appropriate set of conditions facilitating effective repairs for freeze-frame storage. After the malfunctioned components or systems are serviced and repaired, and in compliance with the requirements of this regulation, the stored malfunction code may be deleted.

6.6.3 If available, the following signals' information in addition to the required freeze-frame information must be made available on demand through the serial port on the standardized data link connector, which includes: the engine coolant temperature, fuel control system status (closed-loop, open-loop, etc.), fuel trim, ignition timing advance, intake air temperature, manifold air pressure, air flow rate, engine speed, throttle position sensor output value, secondary air status (upstream, downstream or atmosphere), calculated load value, vehicle speed and fuel pressure. The signals must be complied according to the standards of the Society of Automotive Engineers (SAE) or the standards of the International Organization for Standardization (ISO), and the actual signal must be clearly identified separately whether it's in the default value or limp-home mode.

6.7 The standardized interface for the OBD system, for vehicles adopting the EU emission standards, shall comply with relevant provisions stipulated in directive (EC) No 715/2007. Vehicles adopting the US emission standards shall comply with relevant provisions stipulated in CFR Title 40 Part 86.

6.8 For engine family vehicles that are unable to comply with all OBD regulations, the certificate application shall be handled according to the following principles:

6.8.1 Applicants, considering the feasibility of technology, the timing of vehicle phase-in and phase-out schedule for the production, or any relevant special circumstances such as computer program upgrades, which may lead to the unreliability of the On-Board Diagnostics (OBD) monitoring function, may submit a temporary non-compliance

application stating that the on-board diagnostic system (OBD) temporarily failed to fully comply with the regulations. After submitting it to the inspection organization for confirming that the inspection-related data contained therein is correct, and receiving approval from the competent authority, the on-board diagnostic system (OBD) may temporarily be exempt from fully complying with the relevant regulations.

6.8.2 For the primary OBD monitoring items such as the catalytic converter, oxygen sensor, engine misfire, the evaporative purge control device, and EGR, monitoring is required.

6.8.3 The type approved engine family that temporary without fulfill all the OBD requirements in this regulation, the next year, before applying for carry-over for the certification, the OBD system must be improved to meet all the requirements in this regulation. If considering the hardware or software modification and lead-time for this vehicle model, the deficiency improvements cannot be completed in that year, the applicant may provide related documents to request for the deficiency carried-over to the inspection organization for confirming that the inspection-related data contained therein is correct, and then the competent authority may accept the request, but the carried-over period must not exceed 3 years.

6.8.4 For engine family with the US or EU Certificate of Conformity and being issued a Taiwan Certificate of Conformity, if the applicant's on-board diagnostic system (OBD) temporarily fails to fully comply with the regulations but has been improved, the applicant must not re-apply for the extension of certificate with carried-over deficiency.

6.8.5 For vehicles using alternative clean fuels (such as natural gas, liquefied petroleum gas, methanol, and ethanol), if the usage of alternative clean fuels may reduce the reliability of OBD monitoring function, the applicant may request to the competent authority for the exemptions from some specific monitoring requirements. However, equipped with an OBD system is still being requested.

7. Vehicle model certification verification testing

7.1 The central competent authority may select a representative vehicle of the engine family to conduct the certification emissions tests. The vehicle shall be sent to the testing organization designated by the central competent authority to undergo the certification testing. These test results shall be deemed as the official results.

7.2 When conducting the certification verification testing, the central competent authority may decide whether or not it is necessary to conduct evaporative emission testing.

7.3 The applicant shall refer to the adjustable parameter specifications recorded on the new vehicle certification and adjust the test vehicle to be within the tolerance range. Within the adjustable tolerance range, the test results for of the test vehicle shall comply with the Emission Standards.