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August 8, 2018
Yamaha Motor Co., Ltd.

Supplement to “3. If, as a result of the investigation, cases of fraud, etc. have been discovered”

1. Background

Yamaha Motor Co., Ltd. has been looking into any inappropriate actions which may have taken place since last year. As a result of the investigation requested by the Ministry of Land, Infrastructure, Transport and Tourism on July 9, 2018, regarding the fuel consumption and exhaust emissions of the specified vehicles, with reference to cases of the other manufacturers, we have come to discover the following facts as stated in Item 2 below.

2. Facts Discovered

In regards to the sampling inspection of exhaust emissions, there has been seven cases which the testes results have exceeded the tolerance level of outside the time specified (hereinafter “trace error”), and have been processed as valid between the period of January 2016 and July 2018.

With the exception of the seven cases mentioned, Yamaha Motor conducted a full re-inspection of the affected vehicles and confirmed that the emission results meet the relevant safety standards.

There were no other deviations observed for these test conditions.

There were also no inappropriate acts such as any rewriting of data.

(1) Details

Inspections of exhaust emissions from motorcycles are tested by an inspector operating the accelerator, brake, and gear shifting so that it works according to the conditions of speed and time -known as the "WMTC mode" or the "Motorcycle mode" - specified by the government. With the WMTC mode running for about 30 minutes, and the Motorcycle mode running for about 20 minutes, the trace error is less than 2 seconds in WMTC mode, and within 1 second in Motorcycle mode. If the requirements are not satisfied here, the results cannot be used for analysis.

As a result of our investigations, there were seven cases (WMTC mode 5 cases, and Motorcycle mode 2 cases) which were used for analysis for the trace error test results.

(Check results)

Total Number Checked Jul 2013 -Jul 2018	Log data number checked Jan 2016 -Jul 2018	Outside Testing Environment			Data Rewrite		
		Trace Error	Temperature	Not calibrated	Test data type	Component value	Temperature
760 units	335 units	7 units	N/A	N/A	Exhaust emission	N/A	N/A
					Fuel Consumption	Not eligible	Not eligible
	Percentage	2.1%	0%	0%	0%	0%	0%

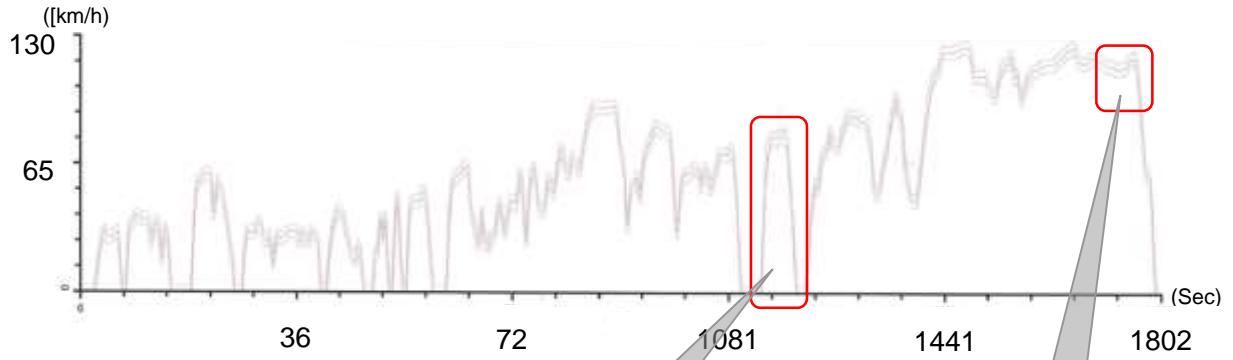
- In terms of fuel consumption, motorcycles are not required for notification at the time of application for model designations and are not included as items for completion inspections.
- For motorcycles, there is no instructions for humidity conditions.

(2) Details of trace errors

The test dates, model names, models, and deviation times etc. of the seven trace errors are shown as follows.

	Date of sampling inspections	Name of Model	Models	Testing Mode	Tolerated Deviation Time	Deviation Time
(1)	October 24, 2017	TRACER900	2BL-RN51J	WMTC Mode	Less than 2 seconds	5.8 seconds
(2)	Feb 8, 2018					6.0 seconds
(3)	June 13, 2018	MT-09 SP	2BL-RN52J			5.4 seconds
(4)	December 14, 2016	MT-03	EBL-RH07J			5.1 seconds
(5)	March 8, 2017	XSR900	EBL-RN46J			4.3 seconds
(6)	September 15, 2016	Drag Star 400	EBL-VH02J	Motorcycle mode	Within 1 sec	1.2 seconds
(7)	September 16, 2016	XJR1300	EBL-RP17J			1.1 seconds

(Conditions of speed and time defined in WMTC mode)



Deviated from the test conditions for about 5 to 6 seconds when rapidly accelerating from an idling state to around 80km/h.

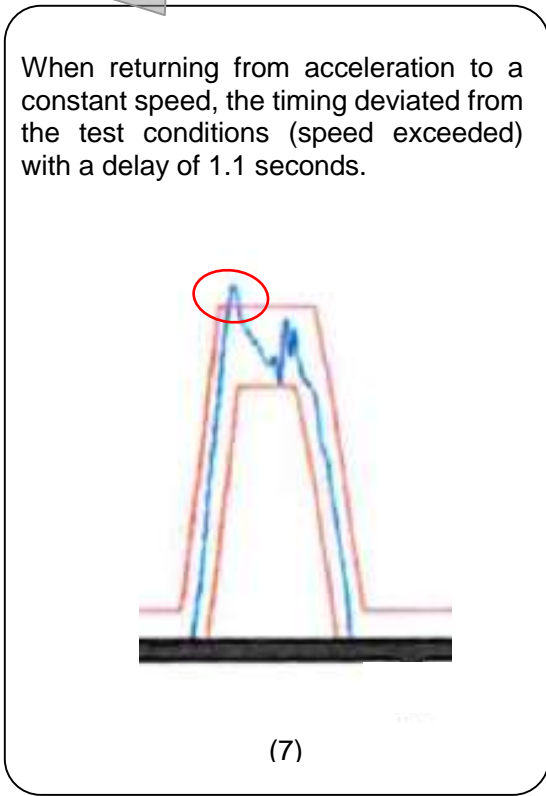
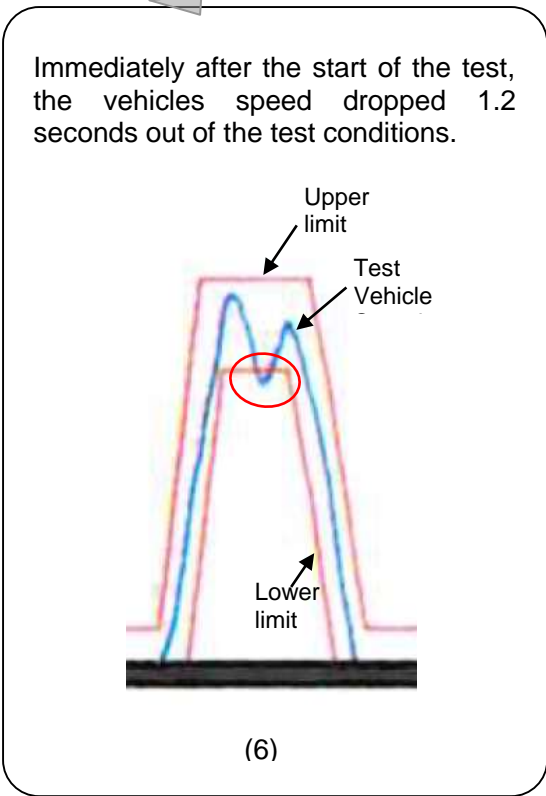
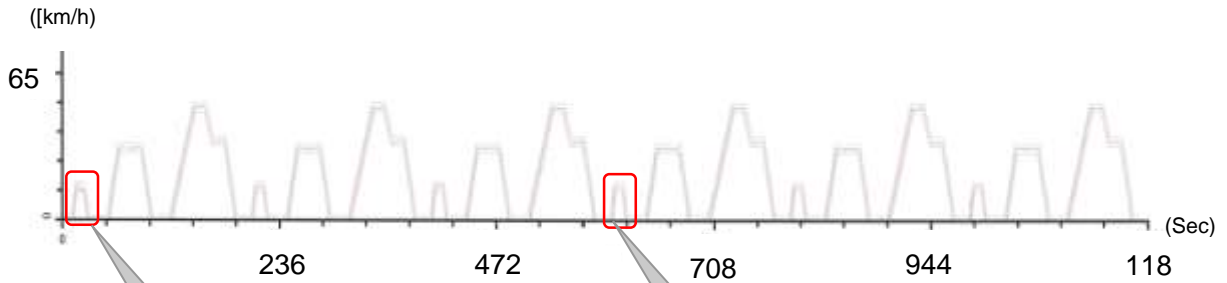
Upper limits
Test Vehicle Speed
Lower

(1) (2) (3) (4)

The speed declined before the final deceleration, deviating from the test condition for 4.3 seconds.

(5)

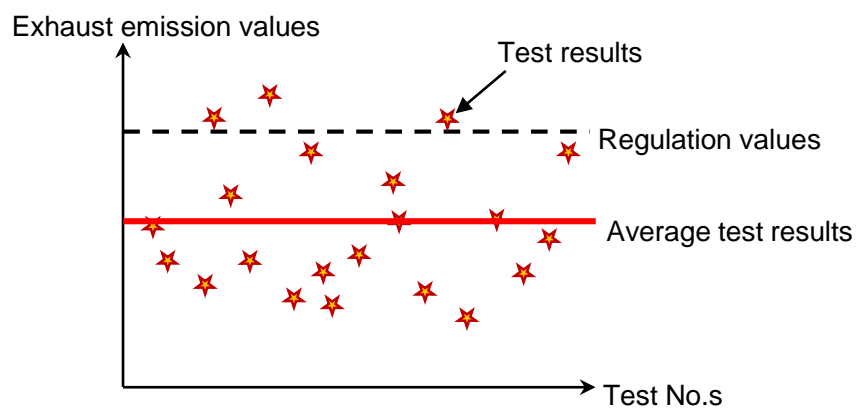
(Conditions of speed and time defined in Motorcycle mode)



3. Management methods regarding exhaust emission regulations

(1) Approach to conformity determinations

For exhaust emissions, it is a requirement that the average value of all vehicles produced for each type of model is not more than the specified regulation value. At the company, testing is made at the frequencies - specified as internal rules- and the conformity is determined by using the results from analysis of the tested data. We estimate and manage these determinations as representing the situation of all vehicles.



(Image)

4. Conformity to safety standards

(1) Validation using all data measured

Except for data containing the seven trace errors, we confirmed safety standard compatibility using all valid data tested to date. As a result, we confirmed that the exhaust emission conforms to safety standards (the average of the tested results is less than the regulation value).

(2) Complementary investigations on the seven cases where trace errors were observed

i) Regarding Item (1) and Items (4) to (7) in the table

By removing the test data from item (1), and items (4) to (7) will result in a shortage against the sampling frequency determined by the company. Therefore, in order to compensate for this shortage, we obtained units of the same production lot as the vehicles tested from items (1), and items (4) to (7), where new exhaust emission testing was carried out. As a result, we were able to confirm that all vehicles conform to the safety standards.

ii) Regarding Items (2) and (3) of the table

We have previously determined the number of checks on exhaust gas emissions according to the planned quantity of annual production, and in respect of the models, we confirmed that this is three times (from January to April, May to August, September to December in each period). That plan from January to May, June to August, and September to December was changed, and additionally, a measure was adopted to cover the shortage in July. By doing this, we were able to confirm that this was as determined by our company rules.

Changing the plan for the period is also an appropriate action as it can take place even during fluctuations in production quantity.

	Date of sampling inspections	Name of Model	Models	Complementary method
(1)	October 24, 2017	TRACER900	2BL-RN51J	i) Same as below
(2)	Feb 8, 2018			
(3)	June 13, 2018	MT-09 SP	2BL-RN52J	ii) Confirmation of plan changes
(4)	December 14, 2016	MT-03	EBL-RH07J	i) Confirming that vehicles were produced in the same lot as the tested vehicle models
(5)	March 8, 2017	XSR900	EBL-RN46J	
(6)	September 15, 2016	Drag Star 400	EBL-VH02J	
(7)	September 16, 2016	XJR1300	EBL-RP17J	

Based on the above, we believe that market measures such as recalls are unnecessary for vehicles with mistaken handling of the test data.

5. Investigation method and results

(1) Exhaust gas testing

i) Inspector interviews

All of the inspectors (seven of them) were interviewed to find out whether they were aware of any deviation from the inspection criteria, and whether they were involved in any inappropriate conduct such as changing measured data. As a result, none of them were aware of any deviation from the inspection criteria, or were involved in any inappropriate conduct.

ii) Confirmation of testing environment and conditions

We checked the test log data (for January 9, 2016 to July 12, 2018) which had been stored to see if there were any trace errors; this led to the discovery of seven trace errors.

We also checked the testing room temperature log, but no deviation from the specified testing room temperature conditions was found.

Other measurement conditions including the calibration of the testing equipment used were also checked, but no deviation from the specified conditions was found.

iii) Confirmation of inspection records, etc.

There are four testing instruments that are used for mode exhaust emission inspections.

Two of them have a mechanism where inspection performance sheets are directly outputted from systems that are password protected, therefore we decided that there could not have been any changing of the data. The other two instruments have involved manual input of inspection results outputted from systems into the format of inspection report that are submitted for completion inspections. Previous inspection data from these two that had remained in the systems was checked against the inspection reports kept on paper. As a result, no differences were found.

We also checked completion inspection reports that have been kept (for July 2013 to July 2018), but none of them had signs of data alterations.

6. Causes

The quality assurance department did interpret the law correctly, verified the testing environment and conditions that need to be managed on site for inspections, and reflected all of this on their operation standards. However, our latest investigation has found that operation standards concerning trace errors had not been clearly specified.

For this reason, no training on trace errors could be provided to the inspectors that carry out exhaust emission testing. When they found any speed values that exceeded the tolerance range on actual test, they tried to restore them back within the tolerance range immediately, and thought that there were no problems if they could restore them immediately.

The inspection leader has also been verifying any measured data after carrying out measurement to determine the validity of it. When they do this, they also check on items that have been set forth in our internal standards, such as running mileage, temperature, settings on testing instruments etc., in order to determine the validity. However, the said standards do not have a clause that provides for trace errors, so the trace errors could not be found.

We also checked for any issues other than trace errors in the testing environment and

conditions that should be managed on site for inspections, but no such issues were found.

7. Recurrence prevention measures

(1) Instructions on control items

The quality assurance department will interpret the law correctly, verify the testing environment and conditions that need to be managed on site for inspections, as well as provide diversified verification by drawing on expertise from other departments as required to meet operation standards.

(2) Determination of effectiveness of testing results

On completing the exhaust emission tests, results including deviation time etc. were made available to be printed on a chart, and after confirming riding speed was within the allowable deviation time (no trace error) as specified in the Notification of Attachment 44 of Announcement That Prescribes Details of Safety Regulations for Road Vehicles, the leader or foreman of the testing inspector deemed the results to be valid.

(3) Automatic detection of trace errors by the system

When a trace error occurs at the time of testing, we will continue to consult with testing instrument manufacturers as to whether these can be detected automatically in place of human assessment, such as by means of the testing instruments automatically detecting errors and stopping the test.

(4) Training of inspectors and maintaining and improving capabilities

We are also educating through planned dissemination of regulations and issues involving trace errors.

In the event of a trace error, we decided to check what happened and examine countermeasures, and these would be shared fully by all inspectors. By doing so, we will accumulate and share know-how such as "points of caution, timing, and countermeasures" while striving to maintain and improve the skills of the inspectors.

8. Overview of other completion inspections

(1) Inspector interviews

All of the inspectors who had engaged in completion inspections were interviewed to find out whether there was any deviation from the inspection criteria, and whether they were involved in any inappropriate conduct such as changing measured data. No inspectors were found to be involved in any inappropriate conduct.

(2) Confirmation of testing environments and conditions

The inspection records were checked such as for the headlight tester, to confirm that calibration had been carried out for equipment that needed calibration for testing. This revealed that calibrations had been carried out appropriately.

(3) Confirmation of inspection records, etc.

When inspection report that have been kept (from July 2013 to July 2018) were checked, it was found that none of them had signs of data alterations. For the running noise inspection report, the temperature and wind speed at the time of the test are recorded; so these were verified. It was shown that there were no deviations from the specified standards. Also, there were no differences when comparing the measured data of the stored running noise inspection with the inspection report.

(4) Management of inspectors

In order to check whether a qualified person was carrying out the completion inspection, the person filling out the completion inspection report and the inspection date were checked against the inspector list at that time. It was confirmed that all inspections were conducted by a qualified person.

(5) Appropriateness of completion inspection

Notification forms were checked against inspection instructions to ascertain if inspection instructions were carried out according to completion inspection items issued. As a result, no differences were found.

Notification forms were checked against performed inspections to ascertain if inspections were carried out according to completion inspection items issued. As a result, no differences were found.

9. Reference

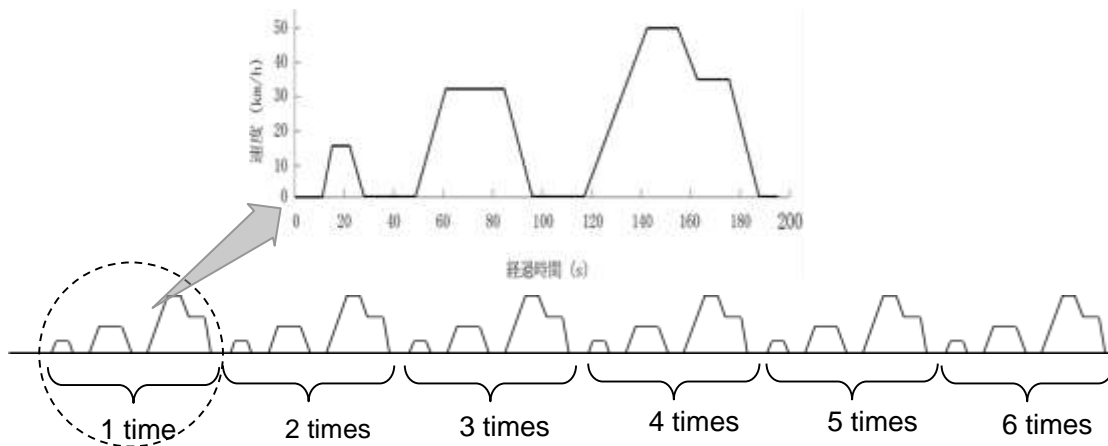
(1) Driving mode during mode exhaust gas emission measurement

In the mode exhaust gas emission test, when running on the chassis dynamometer according to the operation mode determined by a combination of the vehicle speed and the elapsed time, the tested value of the exhaust emission component recovered in the testing instrument is averaged as the weight (g / km) of discharge per 1 km of running.

i) Motorcycle mode

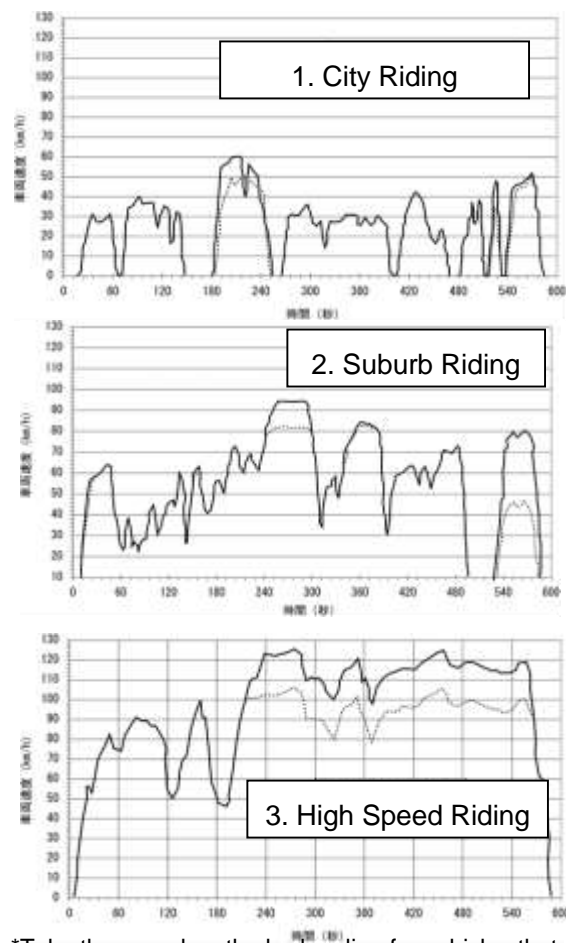
According to 2007 regulations, emission emission test is performed by running under the speed and time conditions specified in motorcycle mode for 6 cycles.

(Conditions of speed and time defined in motorcycle mode)



ii) WMTC mode

In Motorcycle mode, the maximum speed was 50km/h, which was suitable as a driving pattern imitating past Japanese city riding, however it was decided that the adoption of a driving mode incorporating a higher speed range was more suitable from 2005. This is known as the WMTC mode (Worldwide- harmonized Motorcycle Test Cycle), and it is obtained by combining the following three parts.



*Take the speed on the broken line for vehicles that are not able to reach to highest speed

(2) Excerpts from Attachment 44 of Announcement That Prescribes Details of Safety Regulations for Road Vehicles

(2) Excerpts from Attachment 44 of Announcement That Prescribes Details of Safety Regulations for Road Vehicles

Attachment 44

MEASUREMENT PROCEDURE FOR EXHAUST EMISSIONS OF MOTOR CYCLES

II. WMTC-MODE METHOD

4-5-4-2 Speed tolerances

4-5-4-2-1 The speed tolerance at any given time on the test cycle prescribed in Paragraph 4-5-4-1 is defined by the following upper and lower limits. The upper limit is 3.2 km/h higher than the highest point on the trace within 1 second of the given time. The lower limit is 3.2 km/h lower than the lowest point on the trace within 1 second of the given time. Speed variations greater than the tolerances (such as may occur during gear changes) are acceptable provided they occur for less than 2 seconds on any occasion.

Speeds lower than those prescribed are acceptable provided the vehicle is operated at maximum available power during such occurrences. Figure 3 shows an example of this.

4-5-4-2-2 Apart from the above exceptions, the deviations of the roller speed of the chassis dynamometer from the set speed of the test cycles must meet the requirements described above. If not, the test results shall not be used for the further analysis and the run has to be repeated.

(2) Excerpts from the former Attachment 44 of Announcement That Prescribes Details of Safety Regulations for Road Vehicles

Attachment 44

MEASUREMENT PROCEDURE FOR EXHAUST EMISSIONS OF MOTOR CYCLES

8.1 Driving schedule of test motorcycle

8.1.2 With regard to the tolerable ranges of the vehicle speed and time in operating the test motorcycle, the test motorcycle shall be operated within a range of ± 2 km/h of the specified speed and within a range of ± 1 second of the specified time during all the operations specified in Table 2. However, in the case of test low-powered motorcycles incapable of attaining the accelerations and speeds specified in Table 2 by opening the throttle fully, the aforesaid requirements shall not apply.

TRIAS 31-J044(1)-01 TEST FOR EXHAUST EMISSIONS OF MOTOR CYCLES

2. Exception for Driving Tolerable Range for Test Motor Cycle

When driving a test motor cycle, deviation from the norm within one second shall be deemed to be within the margin of permissible tolerances if such deviation happens while a gear shifting operation is performed or switching to another driving mode is made.