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1. Correspondence and Communications

1.1 Mailing information

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1.2 Responsible official

Names and title of persons authorized to communicate with EPA and CARB

Toyota Motor North America, Inc.

Jordan Choby --- Group Vice President, Powertrain Function

Tom Stricker --- Group Vice President, Carbon Neutrality & Regulatory Affairs

Brian Schneidewind --- Vice President, Powertrain Design

Kevin Webber --- General Manager, Carbon Neutrality & Regulatory Affairs

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2. Durability Group Description

2.1 Grouping statistics of durability groups

.01 Durability Group Name	TTYXHHGNNB22	TTYXHHGNNB2D
.02 Combustion Cycle	Otto Cycle 4 stroke	Otto Cycle 4 stroke
.03 Engine Type	Hybrid Electric (Piston)	Hybrid Electric (Piston)
.04 Fuel Used	Gasoline	Gasoline
.05 Basic Fuel Metering System	Port & Chamber Injections	Port & Chamber Injections
.06 Catalyst Construction	Monolith	Monolith
.07 Precious Metals in Catalyst	Confidential Information	
.08 Range of Catalyst Grouping Statistics (g/l)		
.09 Catalyst Code	3-IIr1+3-IIr2	3-IIZ50+3-IIr4

2.2 Catalytic converter/Adsorber information

Confidential Information

2.3 Structure of catalyst / adsorber code

Confidential Information

3. Evaporative/Refueling Family Description

Evap. Family	Test Group	Carline	Type of vapor storage device	Basic canister design									Vapor hose material
				Working capacity (gram)		Size (cc)		Number / Method of connection	Geometry	Construction	Material	Fuel system	
				Main	Sub	Main	Sub						
TTYXR0165J42	TTYXV02.4H3A	TOYOTA CROWN AWD	Canister	165	/	3500	/	1/-	Box	Closed bottom	Charcoal	Port and Direct fuel injection	Plastic
	TTYXV02.5H3B	TOYOTA CROWN AWD	Canister	165	/	3500	/	1/-	Box	Closed bottom	Charcoal	Port and Direct fuel injection	Plastic

3. Evaporative/Refueling Family Description

Evap. Family	Test Group	Carline	Fuel tank Material	Type of refueling emission control system	Vapor control system	Fill pipe seal mechanism	Purge control system	Carbon filter in the air cleaner box	Key-off monitor system
TTYXR0165J42	TTYXV02.4H3A	TOYOTA CROWN AWD	Plastic	Non-Integrated	Fuel vapor-containment valve	Liquid seal	Purge control valve	NO	YES*1
	TTYXV02.5H3B	TOYOTA CROWN AWD	Plastic	Non-Integrated	Fuel vapor-containment valve				

*1) 2DBL/3DBL result calculation in case adopting key-off monitor system.

According to the agreement with EPA and CARB at the meeting in March 2003 for CPM/CP, evaporative emissions by key-off monitor is added to the first day of diurnal test of both 2DBL and 3DBL. It is because that the key-off monitor may work out of DBL test.

4. **Durability Procedure Description**

4.1 Exhaust durability test procedure

Confidential Information

4.2 Durability Showing
Confidential Information

4.3 Evap/refueling durability test procedure
Confidential Information

4.4 Exhaust emission deterioration factors

Durability Group	Useful Life	FTP/SFTP					FTP	HWY		GHG							DF Type	Veh. ID. NO.	Conf NO.	Note
		NMOG	CO	NOx	NMOG +NOx	PM*	HCHO	NOx	NMOG +NOx	THC	CH4	N2O	CH3OH	C2H5OH	H3C2HO	CREE				
TTYXHHGNNB2D	50K	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	Additive	23D-AA1H	00	
	120K	0.0050	-	-	-	-	-	-	-	-	-	-	-	-	-					
	150K	0.0063	0.08	0.0010	0.0073	0.0000	-	-	0.0073	0.009	0.0034	0.0000	-	-	0.089					
TTYXHHGNNB22	50K	-	0.00	-	-	-	-	-	-	-	-	-	-	-	-	Additive	23D-TL1H	00		
	120K	0.0019	-	-	-	-	-	-	-	-	-	-	-	-						
	150K	0.0023	0.01	0.0049	0.0072	0.0000	-	-	0.0072	0.007	0.0053	0.0014	-	-	0.017					

*: Since PM deterioration have not been seen in the actual vehicle durability evaluation of applicable or similar model, we consider the same bench durability procedure as the other pollutants to be appropriate.

4.4 Exhaust emission deterioration factors
Durability data

Vehicle ID	Conf	Test Date	Test Point Mile	MFR Test ID#	Test Fuel	Test Type	THC	NMHC	NMOG	NOX	CO	HCHO	PM	CO2	CH4	N2O
23D-AA1H	00	2022/03/04	4000	23D-AA1H4KN1	GASOLINE-TIER3 E10	FTP	0.013	0.0098	0.0107	0.0016	0.08	-	0.0001	167	0.0032	0.0005
23D-AA1H	00	2022/03/09	4000	23D-AA1H4KN2	GASOLINE-TIER3 E10	FTP	0.014	0.0107	0.0118	0.0020	0.07	-	0.0002	168	0.0036	0.0004
23D-AA1H	00	2022/03/16	4000	23D-AA1H4KN3	GASOLINE-TIER3 E10	FTP	0.015	0.0110	0.0122	0.0025	0.08	-	0.0001	167	0.0039	0.0006
23D-AA1H	00	2022/06/07	150000	23D-AA1H150KN1	GASOLINE-TIER3 E10	FTP	0.021	0.0150	0.0165	0.0037	0.11	-	0.0001	160	0.0064	0.0003
23D-AA1H	00	2022/06/08	150000	23D-AA1H150KN2	GASOLINE-TIER3 E10	FTP	0.023	0.0165	0.0182	0.0030	0.18	-	0.0001	162	0.0073	0.0005
23D-AA1H	00	2022/06/09	150000	23D-AA1H150KN3	GASOLINE-TIER3 E10	FTP	0.024	0.0170	0.0187	0.0024	0.18	-	0.0001	165	0.0073	0.0007
23D-TL1H	00	2022/02/25	4000	23D-TL1H4KN1	GASOLINE-TIER3 E10 PREM	FTP	0.009	0.0050	0.0055	0.0071	0.13	-	0.0001	377	0.0042	0.0004
23D-TL1H	00	2022/03/02	4000	23D-TL1H4KN2	GASOLINE-TIER3 E10 PREM	FTP	0.009	0.0051	0.0056	0.0079	0.13	-	0.0000	375	0.0045	0.0007
23D-TL1H	00	2022/03/04	4000	23D-TL1H4KN3	GASOLINE-TIER3 E10 PREM	FTP	0.009	0.0052	0.0057	0.0087	0.13	-	0.0001	379	0.0048	0.0009
23D-TL1H	00	2022/05/18	150000	23D-TL1H150KN1	GASOLINE-TIER3 E10 PREM	FTP	0.015	0.0065	0.0072	0.0126	0.12	-	0.0001	376	0.0096	0.0023
23D-TL1H	00	2022/05/19	150000	23D-TL1H150KN2	GASOLINE-TIER3 E10 PREM	FTP	0.016	0.0075	0.0083	0.0143	0.14	-	0.0001	377	0.0097	0.0027
23D-TL1H	00	2022/05/20	150000	23D-TL1H150KN3	GASOLINE-TIER3 E10 PREM	FTP	0.017	0.0076	0.0083	0.0114	0.15	-	0.0001	376	0.0101	0.0013

4.5 Evap/refueling emission deterioration factors

Aged Components are adopted to EDV for all evaporative/refueling families.

4.6 Equivalency factor

Durability Group	Model	Test Group	Equivalency factor
TTYXHHGNNB22	TOYOTA CROWN AWD	TTYXV02.4H3A	1.28*2
TTYXHHGNNB2D	TOYOTA CROWN AWD	TTYXV02.5H3B	1.22*2

Note *1: U02/SRC

Note *2: 9LAP/SRC

5. **Test Group Description**

Please refer to each test group file.

6. **Test Vehicle Description**

Please refer to each test group file.

7. **Test Results**

Please refer to each test group file.

8. Emission testing waiver statements

8.1 Statement of Compliance

TOYOTA MOTOR CORPORATION states that:

- A Pursuant to 40CFR§86.1810-17(a)(1), Toyota states;
Any element of design, system or emission control device installed on or incorporated in our new motor vehicles or new motor vehicle engines, for the purpose of complying with standards prescribed under section 202 of the Clean Air Act, will not, to the best of our information and belief, cause the emission into the ambient air of pollutants in the operation of its motor vehicles or motor vehicle engines which cause or contribute to an unreasonable risk to public health or welfare except as specifically permitted by the standards prescribed under section 202 of the Clean Air Act. We further state that any element of design, system or emission control device installed on or incorporated in our new motor vehicles or new motor vehicle engines, for the purpose of complying with standards prescribed under section 202 of the Clean Air Act, will not, to the best of our information and belief, cause or contribute to an unreasonable risk to public safety.

"The term pollutant means:

- a. Diesel particulates
- b. Nickel
- c. MMT combustion products
- d. Ammonia
- e. Sulfates
- f. Hydrogen sulfide
- g. Hydrogen cyanide
- h. Ruthenium combustion products
- i. Nitrosamines

or any other pollutant which we have identified which can reasonably be expected to be emitted from these vehicles."

- B Pursuant to 40CFR§86.1810-17(a)(2), Toyota states;
Such system will not, in its operation, function or malfunction, result in any unsafe condition endangering the motor vehicle, its occupants, or persons or property in close proximity to the vehicle, except under the following reasonably foreseeable conditions of malfunction, abuse or misuse of the vehicle equipped with catalytic converter:
- (1) Certain engine malfunctions caused by vehicle abuse, misuse, tampering or significant failure to perform essential maintenance, particularly involving the electrical (or electronic), fuel injection or ignition system, must result in large amounts of unburned fuel reaching the catalytic converter, which could cause the converter to overheat. Such malfunction will cause engine misfires, noticeable loss of performance or other unusual operating conditions.
In this event, occupants are cautioned in the Owner's Manual to discontinue operation of the vehicle and have the vehicle serviced.

8.1 Statement of Compliance

- (2) Parking or stopping the vehicle at the place where flammable materials, such as dry grass, waste paper or rags may come in contact with the exhaust system, may ignite such materials.
A caution against such parking and stopping is given in the Owner's Manual.
- (3) Pushing or towing the vehicle to start the engine, running out of fuel so as to cause intermittent fuel supply to engine or coasting with the ignition key off could cause the catalytic converter to overheat.
Cautions against such events are contained in the Owner's Manual.
- (4) Under the conditions described in B (1), (2) and (3) above, disregard of these cautions could result in damage to the converter, to the vehicle or to the property in close proximity to the vehicle.

C. Pursuant to 40CFR§86.1810-17(b), Toyota states;

Such system will provide safe vehicle driveability characteristics within the physically adjustable range of each adjustable parameter.

In our opinion, based on engineering tests and judgments, Toyota Vehicles meet the requirements of applicable emission regulations and will not represent a risk to motor vehicle safety.

D. Pursuant to 40CFR§86.1809-12(d)(2)(ii), Toyota states;

The applicable test group complies with CFR §86.1811-17 (g)(1) in regards to defeat devices for CO emissions at intermediate cold temperatures since the CO emissions at these intermediate points can be considered less than the line connecting the cold CO limit at 25°F and the FTP limit at 68°F. This is because the cold temperature CO emissions are determined by the temperature of the engine coolant when the engine is started and the amount of fuel enrichment. Generally, the colder the engine coolant temperature, the richer the air/fuel ratio and the greater the amount of fuel enrichment.

Therefore, the amount of CO emissions are greater for colder coolant temperatures since the amount of injected fuel is greater and the time between engine start and the activation of the air/fuel ratio feedback is longer;

The applicable test group complies with CFR §86.1811-17 (g)(2) in regards to defeat devices for NMHC emissions at intermediate cold temperatures since the NMHC emissions at these intermediate points can be considered less than the line connecting the NMHC FEL pass limit (e.g. 0.3499 g/mi for a 0.3 g/mi FEL) applicable at 20 °F and the Tier 3 NMOG standard to which the vehicle was certified at 68 °F. This is because the cold temperature NMHC emissions are determined by the temperature of the engine coolant when the engine is started and the amount of fuel enrichment. Generally, the colder the engine coolant temperature, the richer the air/fuel ratio and the greater the amount of fuel enrichment.

Therefore, the amount of NMHC emissions are greater for colder coolant temperatures since the amount of injected fuel is greater and the time between engine start and the activation of the air/fuel ratio feedback is longer.

E. Pursuant to 40CFR§86.1603(b), Toyota has determined that the vehicles within this test group are exempted from the requirements of submitting altitude performance adjustment instructions. All of vehicles within this test group have oxygen sensors which maintain a stoichiometric air-fuel ratio at all altitude conditions.

8.1 Statement of Compliance

- F. The vehicles and engines with respect to which data are being submitted, are in all material respects as described in the Application for Certification, have been tested in accordance with the applicable test procedures utilizing the fuels and equipment described in the Application; these vehicles and engines meet the requirements of such tests and on the basis of such tests, they conform to the requirements of the regulations.
- G. Pursuant to 40CFR §86.1844-01 (d)(16), Toyota has conducted an engineering analysis of the complete exhaust system to ensure that the exhaust system has been designed: (A) to facilitate leak-free assembly, installation and operation for the full useful life of the vehicles; and (B) to facilitate that such repairs as might be necessary on a properly maintained and used vehicle can be performed in such a manner as to maintain leak-free operation, using tools commonly available in a motor vehicle dealership or independent repair shop for the full useful life of the vehicle.
- H. Based on Toyota's good engineering judgement, all the vehicle described in this Application for Certification comply with all applicable intermediate and full useful life standards.
- I. Pursuant to 40CFR§86.1818-12(a)(2), and 86.1865-12(h)(3), for vehicles that comply with the cold temperature NMHC standards, and the CO₂, N₂O, and CH₄ exhaust emission standards, Toyota states that common calibration approaches and auxiliary emission control device (AECD) at low altitude for all light-duty vehicles and light-duty trucks are utilized at high altitude.
- J. Toyota has a responsibility to make sure that an emission control system will not cause or contribute to an unreasonable risk to public health, welfare or safety in its operation or function under sections 202(a)(4) and 206(a)(3) of the Clean Air Act.
- K. Toyota states, based on Toyota's good engineering judgment and available information, that the emission control devices on our vehicles or engines are durable and are designed and will be manufactured to operate properly and in compliance with all applicable requirements for the full useful life (or allowable maintenance interval) of the vehicles or engines.
- L. For LEVII compliant vehicles, pursuant to 40 CFR §86.1810-01(i)(6), Toyota states that the air to fuel ratio is not be richer at any time than the leanest air to fuel mixture required to obtain maximum torque (lean best torque), plus a tolerance of six percent, except the additional enrichment needed to protect the engine or emissions control hardware.
- M. For previously certified or current carryover ORVR systems, pursuant to EPA Guidance CCD-05-03 Toyota states that no substantial changes have been made from the previously certified system.
- N. For Tier 3/LEV IV compliant vehicles, pursuant to 40 CFR §86.1811-17(d)(1), Toyota states that the air to fuel ratio is not be richer at any time than the leanest air to fuel mixture required to obtain maximum torque (lean best torque), plus a tolerance of four percent over the US06 cycle, except the additional enrichment needed to protect the engine or emissions control hardware.

8.1 Statement of Compliance

- O. For plug-in hybrid electric vehicles (PHEV), Toyota states that the vehicles remain in compliance with the emission standards during the charge depletion and charge sustaining transition modes.
- P. Pursuant to 40 CFR §86.1844-01(d)(9)(iv), Toyota states that diagnostic system is adequate for the performance warranty test described in 40 CFR Part85, subpart W.
- Q. For vehicle meeting the Tier 3/LEVIII evaporative leak standard, Toyota is using the OBD option for testing.
- R. Based on CARB's questions, Toyota states as follows,
- The test and production vehicles have no defeat device.
 - All AECDs have been declared and described in the application.
 - The test and production vehicles do not have alternate maps.
 - The transmission is the part of AECD for greenhouse gas, but, not for criteria pollutants. Criteria emission spikes that might occur due to different transmission shifting or control is converted by the warmed-up catalyst. Please refer to the Section 11.1 "AECD Descriptions" for detailed information about purpose, entry/exit conditions, actuations, and justifications.
 - The transmission behaves and performs on a dynamometer the same as while on road, except for differences described in the Section 12.1.3.1 "Disabled control/features list".
- S. Pursuant to 40CFR §86.129-94(d)(6), Toyota states that the fuel tank pressure of Toyota's non-integrated system, a kind of pressurized system, does not vent the vapor to the atmosphere upon fuel cap removal at least as same level as conventional fuel tank. Because the fuel cap cannot be removed until the tank pressure goes down enough less than the 10 inches based on Toyota design policy.
- T. Using good engineering judgement, Toyota declares that we do not have adjustable parameters.
- U. For LEV IV Partial Soak exhaust emission standards applicable vehicles, pursuant to 13 CCR § 1961.4(d)(2)(B)1, Toyota states that the vehicles meet the Partial Soak exhaust emission standards for the full useful life of the vehicle when operated at low altitude and tested in accordance with the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles."

8.1 Statement of Compliance

AA. An engineering analysis for A/C system that use an improved condenser and oil separator

2. Greenhouse Gas (GHG) Compliance

2b. GHG Confirmation Items

GHG Implementation Air Conditioning Efficiency Credits

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Background

Toyota proposed our approach to EPA regarding menu based credits for Improved Condenser / Oil Separator on April 14, 2011

At the meeting, EPA and Toyota agreed the following:

(1) Improved Condenser

COP should be annualized based on the amount of time vehicles are driven at various speeds and temperatures in the U.S. → *Demonstrate > 10% improvement*

(2) Oil Separator

Oil Circulation Ratio (OCR) should be verified on A/C system bench for all series of compressors that have an Oil Separator → *Demonstrate oil circulation rates < 50% baseline*

Toyota conducted evaluations for these two items accordingly.

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8.1 Statement of Compliance

Results for (1) Improved Condenser				
Vehicle Name	COP (annualized)			Remark
	present (Sub Cool)	previous (Baseline)	improvement	
Camry	2.54	2.14	+18.3%	The largest selling vehicle
Yaris	2.41	2.13	+13.5%	The smallest sized vehicle (worst case)

COP's of the present condenser systems are *improved by more than 10% compared with previous condenser systems.*

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Results for (2) Oil Separator				
Compressor		Oil Circulation Rate % (compared with Baseline)		
Specification	Type	I45 (900rpm)	M45 (2500rpm)	
<u>Without</u> Oil Separator (Baseline)	10S17C	6.2	6.5	
<u>With</u> Oil Separator	10SR series	2.1 (34%)	3.1 (48%)	
	TS series	1.2 (19%)	2.6 (40%)	
	SES series	0.2 (3%)	0.6 (9%)	
	ES series	0.3 (5%)	1.2 (18%)	

All types of Oil Circulation Rate for Compressor *with Oil Separator* are less than 50% of Baseline Compressor.

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8.1 Statement of Compliance

Conclusion

Based on the evaluation results, Toyota confirmed that the COP improvement and Oil Circulation Rate meet the requirements set forth in the Greenhouse Gas Final Rule.

As a result, Toyota is eligible for the following:

- (1) Improved condenser credit of 1.1g/mile for vehicles equipped with a "Sub Cool Condenser" and,
- (2) Oil separator credit of 0.6g/mile for vehicles equipped with a compressor utilizing an "Oil Separator"

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8.2 Emission Testing Waiver Statement

TOYOTA MOTOR CORPORATION states that:

- A. Pursuant to 40 CFR §86.1829-15(C), based on the engineering judgement, all vehicles in these test groups comply with applicable standards.
- B. Pursuant to VPCD-97-01, we attest, based on the engineering evaluation, the city and highway fuel economy test result differences between comparing 91 RON operation and 96 RON operation is within 3%, and there are no emissions increases (beyond normal test variability) using 91 RON fuel when tested on the FTP (or SFTP as applicable).
- C. Pursuant to 40 CFR §86.1829-15(d)(4), Toyota states that all gasoline vehicles comply with the applicable formaldehyde (HCHO) emissions standards based on our good engineering judgment.
- D. Pursuant to 40 CFR §86.1829-15(e)(6), we have conducted 2DBL Evap testing and, based on the engineering evaluation, all vehicles in this Evap group comply with the emission standards at 2DBL Evap.
- E. Pursuant to 40 CFR §86.1829-15(e)(5), Toyota states that, the vehicles certified to the refueling emission standards inherently comply with the fuel dispensing spitback standard based on our good engineering evaluation.
- F. For electric vehicles and fuel cell vehicles, pursuant to 40 CFR §86.1829-15(f), the vehicles comply with all the testing requirements of Part 86, subpart S.
- G. For Tier3 compliant vehicles and the vehicles complying with applicable PM standards after the minimum number of PM tests have been conducted, pursuant to 40 CFR §86.1829-15(d), Toyota states that all light-duty vehicles and light-duty trucks comply with the particulate emission standards based on our good engineering evaluation.
- H. For Tier3/LEV IV evaporative emission compliant test groups not selected for demonstration of the OBD system pursuant to 40 CFR §86.1806-17(b)(1)(vi), Toyota states that the vehicle meet leak-detection requirements based on previous OBD tests, development tests or other appropriate information.
- I. Pursuant to 40 CFR §86.1829-15(e)(4), Toyota states that, the vehicles meeting the Tier 3/LEV IV evaporative leak standard comply with the leak standard in §86.1813 based on our good engineering evaluation.
- J. For LEV IV compliant vehicles and the vehicles complying with applicable PM standards after the minimum number of PM tests have been conducted, pursuant to Part I, section G.3.4 in California 2026 and Subsequent Model year Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, Toyota states that all Passenger Cars and light-duty trucks comply with the particulate emission standards based on our good engineering evaluation.

9. **OBD System Description**

Confidential Information

10. Description of Alternate-fueled Vehicles

Dedicated alternate fuel vehicles

In 2026MY Toyota introduces Electric vehicle and Fuel cell vehicle.

11. AECD Descriptions

11.1 AECD and EI-AECD Descriptions
Confidential Information

11.2 SFTP / Lean Best Torque (LBT) Air fuel Ratio Information
Confidential Information

12. Descriptions of Vehicles Covered by Certificate and Test Parameters

12.1 Vehicle parameters

(i) Preparation

Manual transmission

Shift into neutral and hold down the clutch pedal until the engine starts.

Automatic transmission

Depress the brake pedal until driving off.

Put the gear selector in "P" or "N" range.

(ii) Engine start

In case of key type

Turn the "key" to start position

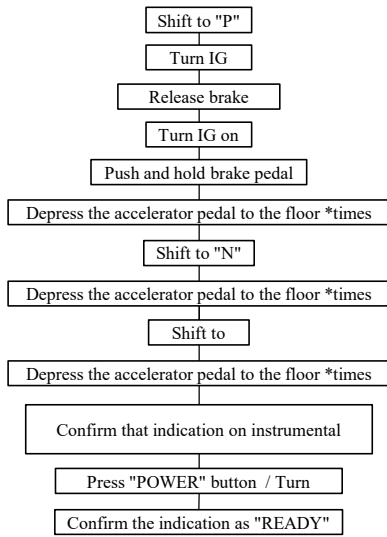
In case of push button type

Be equipped with "key" and push the "START STOP BUTTON" (=engine switch)

12.1.1 Preparation for Toyota tests on the 2WD/4WD dynamo with customer's vehicle (for HEV and PHEV)

Drive	System start by	Engine start at cold start	Engine start at hot start	Indication when system ready	2WD dynamo				4WD dynamo			
					How to set "Special Mode"	Indication on instrumental panel	(see *1) How to set "Special Mode"	Indication on instrumental panel	(see *1) How to set "Special Mode"	Indication on instrumental panel	(see *1) How to set "Special Mode"	Indication on instrumental panel
FF,FR	Power Button or Rotary	No	No	READY	See *1	CDY-2	See *1	CDY-2E	-	-	-	-
4WD	Power Button or Rotary	No	No	READY	See *1	CDY-2	See *1	CDY-2E	See *1	CDY-4	See *1	CDY-4E

*1) How to set "Special Mode" on the dynamo.

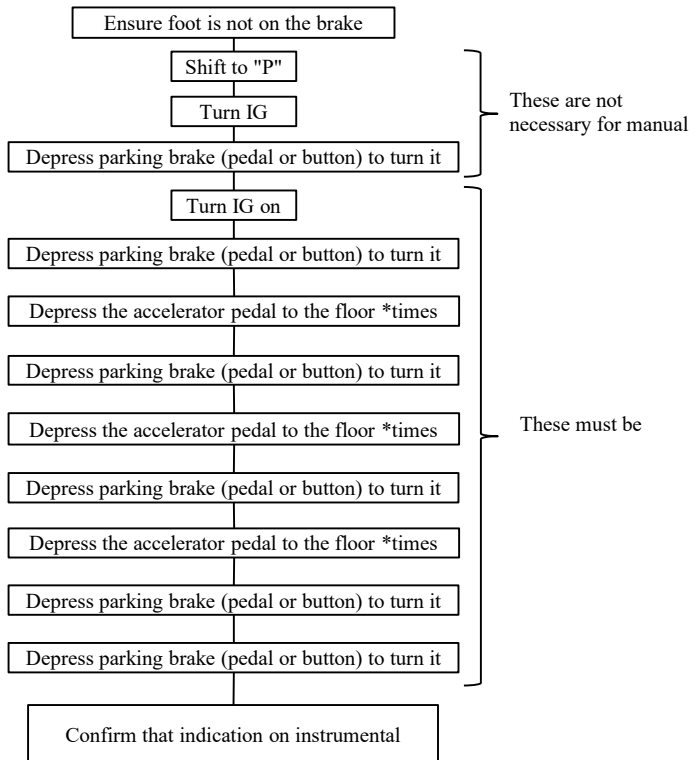


*2) 2times for road load investigation and setting for 2WD dynamo, 3times for driving for 2WD dynamo

12.1.2 Preparation for Toyota tests on the 2WD/4WD dynamo with customer's vehicle (for Gasoline fueled vehicle, BEV and FCEV)

Drive	2WD dynamo		4WD dynamo	
	for driving and road load investigation and setting		for driving and road load investigation and setting	
	How to set "Special Mode"	Indication on instrumental panel	How to set "Special Mode"	Indication on instrumental panel
FF,FR	See *1	CDY-2 or VSC=OFF lamp is illuminated	-	-
4WD	See *1	CDY-2 or VSC=OFF lamp is illuminated	See *1	CDY-4 or VSC=OFF lamp is illuminated

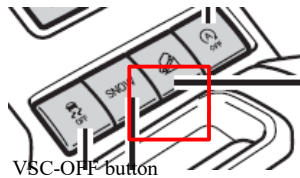
*1) How to set "Special Mode" on the dynamo.



*2) 2times for 2WD dynamo, 4times for 4WD dynamo

*3) If instrumental panel changes cyclically before displaying the indication, please wait approximately 6 seconds.

*4) If below slip indicator in a display may not be illuminated though you activate CDY mode, please keep pressing the VSC-OFF button until the indicator is illuminated.



12.2 Test Parameters

1) Manual transmission

(a) Idling

Idle modes shall be run with transmission in gear and with clutch disengaged (except first idle).

(b) Acceleration

Acceleration modes shall be run in accordance with the upshift speeds on the Table in section 12.3.

(c) Deceleration

Deceleration modes shall be run with the clutch engaged and without shifting the gear from the previous mode.

For those modes which decelerate to zero, the clutch shall be depressed when the speed drops below 15 mph.

(d) Downshifting

The vehicle shall be shifted down during the transient from the speed less than the downshift speed on the Table in section 12.3 to the acceleration mode.

2) Automatic transmission

All test conditions shall be run with the transmission in "Drive".

Idle modes shall be run with the transmission in "Drive" and the wheels braked (except first idle).

1) Shift point for FTP

No.	Acceleration up-shift speed							Cruising up-shift speed							Special up-shift speed							Down shift time(sec.)-Gears									
	1-2	2-3	3-4	4-5	5-6	6-7	7-8	1-2	2-3	3-4	4-5	5-6	6-7	7-8	1-2	2-3	3-4	4-5	5-6	6-7	7-8										
FT5	15	25	40	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	187; 3-2	840; 3-2								
FT6	15	25	40	45	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	187; 3-2	840; 3-2								
0092	15	25	40	45	50	55	60	15	25	40	45	50	55	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	187; 3-2	840; 3-2								
0095	13	22	31	40	48	N/A	N/A	7	14	25	34	41	N/A	N/A	15	25	40	45	50	N/A	N/A	43; 3-2	55; 3-2	81; 4-3	187; 3-2	592; 3-2	840; 5-2	919; 4-3	990; 4-3	1089; 4-3	
0098	13	24	33	41	47	N/A	N/A	8	14	25	34	41	N/A	N/A	15	25	40	45	50	N/A	N/A	187; 3-2	840; 5-2	1089; 4-3							
0129	10* ^{1,2}	19* ²	31* ²	40* ²	47* ²	N/A	N/A	6	15	23	26	40	N/A	N/A	13,15	25	40	45	50	N/A	N/A	39; 3-2	54.1; 3-2	823.1 5-4	841 4-3						
0131	15	25	40	45	50	N/A	N/A	15	25	40	45	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	187; 3-2	840; 3-2								
0135	15	25	40	45	50	N/A	N/A	15	25	40	45	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	187; 3-2	840; 3-2								
0139	14.4	26.2	37.6	43	49.8	N/A	N/A	9	17	30	40	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	187; 3-2	840; 4-2	1556; 3-2							

*1: Under cold engine conditions (1st hill in FTP), up-shifts delay to match standard shift speed.

*2: During 2nd acceleration in 2nd hill of FTP, up-shifts delay to match speeds.

*3: Under cold engine conditions (1st and 2nd hill in FTP), up-shifts delay to match standard shift speed.

1) Shift point for FTP

No	Acceleration up-shift speed				Special up-shift time(sec.)-Gears						Down shift time(sec.)-Gears			
	1-2	2-3	3-4	4-5	time	shift	time	shift	time	shift	time	shift	time	shift
129	-	-	-	-	24.6	1-2	538.0	4-5	1111.5	2-3	39.0	3-2		
					28.4	2-3	571.1	1-2	1119.0	3-4	54.1	3-2		
					44.9	2-3	575.0	2-3	1171.5	1-2	120.2	5-0		
					56.6	2-3	649.0	1-2	1174.2	2-3	327.2	6-0		
					78.0	3-4	653.7	2-3	1201.2	1-2	391.9	5-0		
					86.7	4-5	659.0	3-4	1212.3	2-3	424.1	5-0		
					167.6	1-2	698.5	1-2	1268.7	1-2	499.5	6-0		
					171.5	2-3	702.0	2-3	1271.8	2-3	547.5	5-0		
					198.6	3-4	713.5	3-4	1277.0	3-4	615.4	3-0		
					202.0	4-5	731.3	1-2	1296.0	4-5	673.8	4-0		
					220.0	5-6	735.6	2-3	1340.7	1-2	720.0	4-0		
					349.8	1-2	742.0	3-4	1345.5	2-3	758.0	5-0		
					352.6	2-3	745.0	4-5	1398.6	1-2	823.1	5-4		
					360.5	3-4	769.2	1-2			841.0	4-3		
					365.0	4-5	773.5	2-3			951.6	5-0		
					405.3	1-2	780.0	3-4			1017.8	4-0		
					408.0	2-3	783.0	4-5			1081.0	4-0		
					414.0	3-4	851.0	3-4			1147.5	4-0		
					417.0	4-5	854.0	4-5			1181.6	3-0		
					450.1	1-2	962.5	1-2			1236.3	3-0		
					452.8	2-3	966.3	2-3			1308.0	5-0		
					457.9	3-4	974.0	3-4			1361.4	3-0		
					461.0	4-5	1055.9	1-2						
					516.7	1-2	1059.3	2-3						
					522.0	2-3	1068.0	3-4						
					528.0	3-4	1106.1	1-2						

2) Shift point for HWY

No.	Acceleration up-shift speed							Cruising up-shift speed							Down shift time(sec.)-Gears			
	1-2	2-3	3-4	4-5	5-6	6-7	7-8	1-2	2-3	3-4	4-5	5-6	6-7	7-8				
HW5	15	25	40	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
HW6	15	25	40	45	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
0093	15	25	40	45	50	55	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
0096	13	22	31	40	48	N/A	N/A	7	14	25	34	41	N/A	N/A	49; 5-4	142; 6-5	215; 6-5	296; 6-3
0101	13	24	33	41	47	N/A	N/A	8	14	25	34	41	N/A	N/A	297; 6-3			
0130	10	19	31	40	47	N/A	N/A	6	15	23	26	40	N/A	N/A	297; 6-3			
0132	15	25	40	45	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
0136	15	25	40	45	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
0140	14.4	26.2	37.6	43	49.8	N/A	N/A	9	17	30	40	49	N/A	N/A	142; 6-5	297; 6-3	922; 6-5	1077; 6-3

2) Shift point for HWY

No	Acceleration up-shift speed				Special up-shift time(sec.)-Gears		Down shift time(sec.)-Gears	
	1-2	2-3	3-4	4-5	time	shift	time	shift
0130	-	-	-	-	5.7	1-2	297.0	6-3
					8.7	2-3	756.8	6-0
					17.6	3-4		
					22.0	4-5		
					57.0	5-6		
					300.0	3-4		
					304.0	4-5		
					307.0	5-6		

12.3 Shift schedules

3) Shift point for US06 mode

No.	Acceleration up-shift speed							Cruising up-shift speed							Down shift Gears					
	1-2	2-3	3-4	4-5	5-6	6-7	7-8	1-2	2-3	3-4	4-5	5-6	6-7	7-8						
0062	15	25	40	45	N/A	N/A	N/A	15	25	40	45	N/A	N/A	N/A	514;3-2	530;3-1	546;3-1			
0063	15	25	40	45	50	N/A	N/A	15	25	40	45	50	N/A	N/A	514;3-2	530;3-1	546;3-1			
0066	22	36	43	57	66	N/A	N/A	16	27	37	50	57	N/A	N/A	81;5-4	185;5-4	514;2-1	530;2-1	546;2-1	
0094	15	25	40	45	50	55	60	15	25	40	45	50	55	60	514;3-2	530;3-1	546;3-1			
0097	21	40	50	70	85	N/A	N/A	15	26	39	56	73	N/A	N/A	82;5-4	188;5-4	348;6-5	514;2-1	530;2-1	546;2-1
0099	25	33	45	60	75	N/A	N/A	25	38	45	60	64.3	N/A	N/A	514;2-1	530;2-1	546;2-1			
0134	15	25	40	45	50	N/A	N/A	15	25	40	45	50	N/A	N/A	514;3-2	530;3-1	546;3-1			
0138	15	25	40	45	50	N/A	N/A	15	25	40	45	50	N/A	N/A	514;3-2	530;3-1	546;3-1			
0142	14.4	26.2	37.6	43	49.8	N/A	N/A	9	17	30	40	49	N/A	N/A	82;6-5	514;3-2	530;3-1	546;3-1		

3) Shift point for US06 mode

No	Acceleration up-shift speed				Special up-shift time(sec.)-Gears				Down shift time(sec.)-Gears	
	1-2	2-3	3-4	4-5	time	shift	time	shift	time	shift
0128	-	-	-	-	11.2	1-2	519.3	2-3	81.3	7-5
					14.2	2-3	533.7	1-2	280.4	7-6
					20.1	3-4	536.7	2-3		
					51.1	1-2	549.0	1-2		
					54.1	2-3	552.0	2-3		
					57.8	3-4	570.4	1-2		
					60.8	4-5	573.4	2-3		
					63.8	5-6	576.4	3-4		
					66.8	6-7				
					94.3	5-6				
					137.9	1-2				
					141.6	2-3				
					143.9	3-4				
					146.9	4-5				
					149.9	5-6				
					156.3	6-7				
					333.3	6-7				
					503.9	1-2				
506.9	2-3									
516.9	1-2									

4) Shift point for SC03 mode

No.	Acceleration up-shift speed					Cruising up-shift speed					Down shift time(sec.)-Gears		
	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	5-6			
0052	15	25	40	45	N/A	N/A	N/A	N/A	N/A	N/A	121;3-2		
0054	15	25	40	45	50	15	25	40	45	N/A	121;3-2		
0056	15	25	40	45	N/A	15	25	40	45	N/A	121;3-2		
0100	15	25	40	45	50	15	25	40	45	50	121;3-2		
0133	15	25	40	45	50	15	25	40	45	50	121;3-2		
0137	15	25	40	45	50	15	25	40	45	50	121;3-2		
0141	14.4	26.2	37.6	43	49.8	9	17	30	40	49	432;4-3		

12.3 Shift schedules

4) Shift point for SC03 mode

No	Acceleration up-shift speed				Special up-shift time(sec.)-Gears		Down shift time(sec.)-Gears	
	1-2	2-3	3-4	4-5	time	shift	time	shift
0127	-	-	-	-	42.2	1-2	-	-
					70.6	1-2	-	-
					88.7	1-2	-	-
					92.3	2-3	-	-
					124.5	1-2	-	-
					127.9	2-3	-	-
					209.8	1-2	-	-
					213.5	2-3	-	-
					221.9	3-4	-	-
					284.4	1-2	-	-
					287.4	2-3	-	-
					293.0	3-4	-	-
					302.7	4-5	-	-
					312.3	5-6	-	-
					373.6	1-2	-	-
378.1	2-3	-	-					
550.5	1-2	-	-					

12.3 Shift schedules

Applicable Test Group

Test Group	Model	TM	Low-altitude		High-altitude		Highway	SC03	US06
			FTP	Cold CO /NMHC	FTP	Cold CO			
TTYXV02.4H3A	TOYOTA CROWN AWD	S6	FT6	FT6	FT6	FT6	HW6	0054	0063

12.4 Dynamometer loading information
FTP, SFTP and Cold CO testing

Carline	Vehicle Model	Eng. Code	Eng. Disp.	T/M Code	GVWR (lbs)	Curb Weight (lbs)	LVW (lbs)	ETW (lbs)	Axle Ratio	N/V	Tire *1	Tire Mfr.	CDT	RLHP at 50 mph	Target Coeff for FTP & SFTP F(lbf)=a+bv+cv ² (v: mph)			Target Coeff for 20F F(lbf)=a+bv+cv ² (v: mph)			Determination Method
															a	b	c	a	b	c	
TOYOTA CROWN AWD	TZSH35L-AETATA	02	2.4	PC60-B	5285	4365	4665	4750	3.33	26.6	225/45R21 AS	ALL	23.96	12.2	33.901	0.21891	0.018740	37.291	0.24080	0.020614	*3
TOYOTA CROWN AWD	AZSH35L-AEXMBA	03	2.5	P710-F	5020	4065	4365	4250	3.61	21.8	225/45R21 AS	ALL	22.96	11.4	26.068	0.26163	0.018583	28.675	0.28779	0.020441	*3
TOYOTA CROWN AWD	AZSH35L-AEXMBA	03	2.5	P710-F	5020	4065	4365	4250	3.61	22.3	225/55R19 AS	ALL	22.99	11.4	26.936	0.26383	0.018147	29.630	0.29021	0.019962	*3

Note *1: AS/AS#2: All-season tire
SM/SM#2: Summer-season tire
RF: Run-flat tire
OFF: Off-road tire
RF-AS: Run-flat all-season tire
RF-SM: Run-flat summer tire
F/D: F SPORT design
*2: Calculated
*3: Measured
*4: For Normal and Eco mode
*5: For Sport mode

12.5 Method used to determine the road load forces other than SAE procedure J2263

Confidential Information

13. **Projected Sales and Compliance Plans**

Confidential Information

14. Request for Certificate

Please refer to the each test group file.

15. Other Information

15.1 Fee filing form

Please refer to the each test group file.

16. **Confidential Information**

Confidential Information

17. California ARB Information

17.1 Statement of Compliance

General statement

The production vehicles which are subject to registration or sale in the state of California will be, in all material respects, substantially the same in construction as the test vehicles which are certified by the California Air Resources Board, and will meet all the applicable vehicle emission standards which are set forth by the California Air Resources Board in accordance with Section 43101 of the Health and Safety Code.

Driveability Statement

In accordance with "California Exhaust Emission Standards and Test Procedures for 1988 And Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, 11.e." as amended August 5, 1999, Toyota certifies that its production vehicles covered by the certificate for the applicable model year have driveability and performance characteristics which satisfy the manufacturer's specific driveability and performance requirements. This statement is based on driveability data and other evidence showing compliance with the manufacturer's in-house performance criteria which, we believe, assures elimination of one of the major causes of wide-spread tampering with the emission control systems.

Durability Warranty Statement

In accordance with "California Exhaust Emission Standards & Test Procedures for 2015 and Subsequent MY PC, LDT, and MDV" F.4.1, "California Evaporative Emission Standards & Test Procedures for 2001 & Subsequent Model Motor Vehicles" PART II.2 and "California Refueling Emission Standards & Test Procedures for 2001 & Subsequent Model Motor Vehicles" G, Toyota states, based on our good engineering judgment and available information, that the exhaust, evaporative and refueling emission control devices on our vehicles or engines are durable and are designed and will be manufactured to operate properly and in compliance with all applicable requirements for the full useful life (or allowable maintenance interval) of the vehicles or engines.

California Environmental Performance Labels

Toyota will use Federal Fuel Economy and Environment Labels in lieu of California Environmental Performance Labels.

17.2 High-Altitude Test Requirements

Demonstration for fuel injected engines

Fuel injection system which consists of electronic fuel injection and closed loop are using an air flow sensor to sense the air mass flow. Therefore, they can control the air-fuel ratio stoichiometrically to comply with California and Federal emission standards and to ensure vehicle driveability at high altitude.

17.3 Compliance with fuel fill pipe specifications

Statement

The fill pipes and openings for the models covered by this application are in compliance with the requirements specified by the Air Resources Board's "Specifications for Fill Pipes and Openings of 2015 and Subsequent Model Motor Vehicle Fuel Tanks" amended May 31, 2019, and are not obstructed in any manner by bumpers, body parts, body trims or accessories that are either factory or dealer installed.

Bench Leak Rate Specification

The fill pipes for the models covered by this application are in compliance with the maximum allowable bench leak rate requirements specified by the Air Resources Board's "Specifications for Fill Pipes and Openings of 2015 and Subsequent Model Motor Vehicle Fuel Tanks" amended May 31, 2019

CARB APPLICATION FORM FOR COMPLIANCE WITH THE FILL PIPE REQUIREMENTS**Manufacturer** TOYOTA**Model Year**

2026

Terms and symbols used below are the same as those defined in "Specifications for Fill Pipes and Openings of 2015 and Subsequent Motor Vehicle Fuel Tanks", amended May 31, 2019 (CARB Fill Pipe Spec.) (Refer to ISO-13331-1995[E] as adopted June 1,1995)

	<u>General Specification</u>	<u>ARB Specification</u>	<u>ISO-13331 Reference or Noted Otherwise</u>	<u>Manufacturer Specification¹</u>	
1	Angle α in degrees	$-10^\circ < \alpha < 20^\circ$	2.8 & 3.4/Fig 2a & 3a	-4°	
2	Spill Prevention in degrees (angle btwn. centerline of test spout in resting position and the horiz. plane)	30° (MIN)	3.5	30°	
3	Test nozzle penetration of restrictor	2.25 cm or 22.5 mm(MIN)	3.4	3.5	cm
4	Angle β in degrees	none	2.9/Fig 2b & 3b	-2°	
Fill Pipe Specification					
1	Fill Pipe face surface in TIR	0.025 cm or 0.25 mm(MAX)	3.1/Fig 1	0.025	cm
2a	Fill Pipe face outside diameter: unless meets criteria in 2b. Below	5.75 cm or 57.5 mm(MAX) ⁴	3.1/Fig 1	6.01	cm
		5.20 cm or 52.0 mm(MIN)	3.1/Fig 1	5.95	
2b	Fill Pipe face outside diameter: criteria: new fill pipe head design starting MY 2024	5.79 cm or 57.9 mm(MAX)	3.1/Fig 1	-	
		5.20 cm or 52.0 mm(MIN)	CARB Fill Pipe Spec.		
3	Internal locking lip in degrees of the inside circumference degrees extending each side of ref. plane	100° (MIN)	3.2/Fig 2 and 3	350°	cm
		35° (MIN) LS ² each side RS ²	3.2/Fig 2 and 3	301°	
			3.2/Fig 2 and 3	35°	
4	Height of lip measured from fill pipe inside wall: or height of lip measured from fill pipe outside wall for outside diameters between 5.20 and 5.75 cm.	0.25 cm or 2.5 mm(MIN)	3.2	0.26	cm
		0.85 cm or 8.5 mm(MIN)	3.2	N/A	
5a	Depth of lip (D) in centimeters: unless meets criteria in 5b. Below	$0.4 < D < 1.3$	3.2	1.2 thru 1.3	cm
5b	Depth of lip (D) in centimeters: criteria: new fill pipe head design starting MY 2024	$0.4 < D < 1.1$	CARB Fill Pipe Spec.	-	
Offset					
	Offset A	none	3.3.1/Fig 5 shown as "f"	0.33mm	
	Offset B	none	3.3.1/Fig 5 shown as "g"	-0.08cm	
6a	Fill Pipe Face Clearance (Axial): unless meets criteria in 6b. Below	0.25 cm or 2.5 mm (MIN)	Fig 5 shown as "2.5"	Yes	
6b	Fill Pipe Face Clearance (Axial): criteria: new fill pipe head design starting MY 2024	40 degrees out to 12 mm depth	CARB Fill Pipe Spec.	-	
7a	Fill Pipe Face Clearance (Radial): unless meets criteria in 7b below	≥ 40 mm	Fig 5 shown as "R40"	Yes	
7b	Fill Pipe Face Clearance (Radial): criteria: new fill pipe head design starting MY 2024	≥ 43 mm	CARB Fill Pipe Spec.	-	
8	Fill Pipe Face Inside Diameter	49.8 mm(MAX)	Fig 1	46.7	mm
9	Bench Leak Test: Phase in schedule in CARB Fill Pipe Spec.	2.5 L/Min (MAX) at 500 Pa Vacuum		Yes	
10	Capped or Capless			Capped	
11	Seal (Mechanical or Liquid)			Liquid	
12	Disruption in the Fill Pipe Face			N	
13	ORVR Design (I / NI / NIRCO / NO) ³			NIRCO	
14	Type (Threaded or Bayonet)		Fig 1	Threaded	
15	Usage of Design (Models or Evaporative Family(s))			TOYOTA CROWN AWD	
16	Total vehicle model year sales			Please refer section 17 phase-in page.	
17	New or C/O			C/O	
18	Reference number for C/O model			20MY RAV4	

¹ dimension should include adverse tolerance condition² LS = Left side of reference plane, RS = Right side of reference plane³ ORVR Design : Integrated (I)/Non-Integrated(NI)/Non-Integrated Refueling Canister Only (NIRCO)/Non-ORVR(NO)⁴ Max value stated in J1114 of SAE standard

17.4 Compliance with the location requirement of the vent tube opening in the fill pipe
Not applicable

17.5 Supplemental information and data for compliance with the enhanced evaporative requirements for California

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

[Test vehicle]

Model name : TOYOTA CROWN AWD
Data is representative for : TOYOTA CROWN AWD

[Test procedure]

: CARB method

[Test conditions]

Date : 03/28/2022
Ambient air temperature (at initiation) : 105.4 °F
Ambient air temperature (at completion) : 110.1 °F
Track surface temperature (at initiation) : 141.1 °F
Track surface temperature (at completion) : 144.0° F
Wind speed : N/A
Test fuel RVP : 7.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

[Test conditions]

Date : 03/29/2022
Ambient air temperature (at initiation) : 105.1 °F
Ambient air temperature (at completion) : 110.3 °F
Track surface temperature (at initiation) : 142.2° F
Track surface temperature (at completion) : 144.7 °F
Wind speed : N/A
Test fuel RVP : 7.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

Note : Fuel tank temperature profiles in this section are averaged with these two profiles in accordance with 40CFR §86.129-94(d)(1)

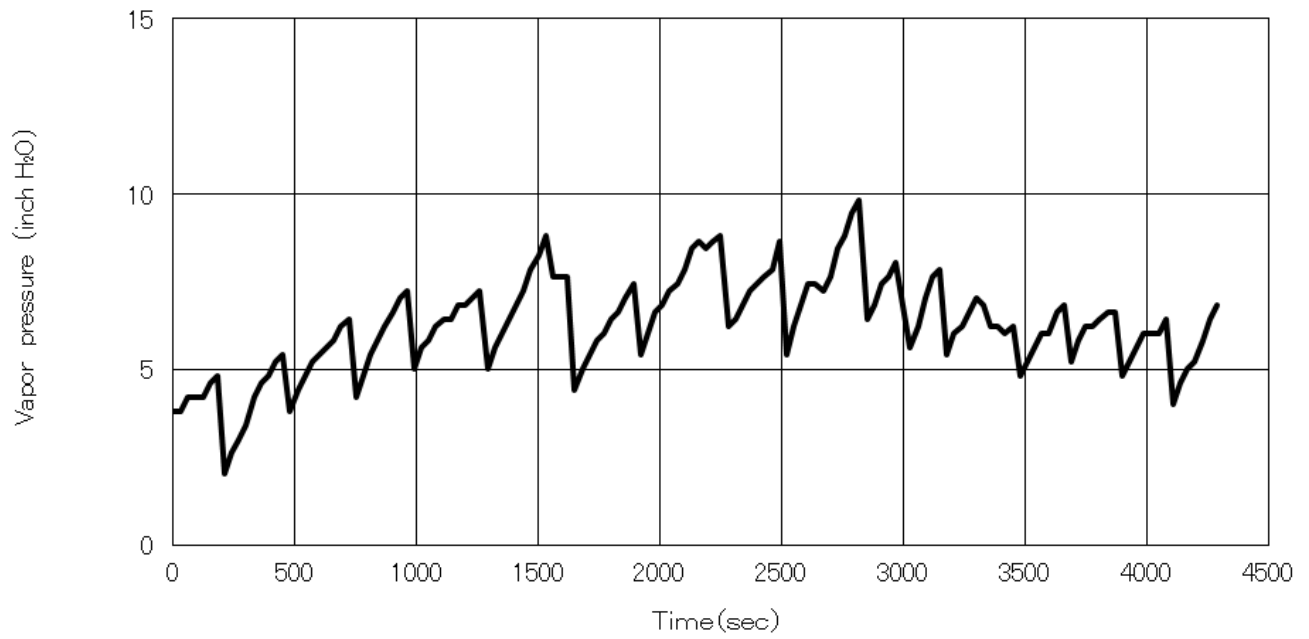
17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.
Measured temperature and pressure profiles

- (a) Measured average fuel temperature
 This profile is raw data and not corrected actually.

Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)
0	106.9	1200	109.6	2400	112.3	3600	115.3
30	107.1	1230	109.6	2430	112.3	3630	115.3
60	107.2	1260	109.8	2460	112.3	3660	115.5
90	107.4	1290	109.9	2490	112.3	3690	115.5
120	107.6	1320	109.8	2520	112.5	3720	115.5
150	107.8	1350	109.8	2550	112.5	3750	115.5
180	107.8	1380	109.9	2580	112.5	3780	115.7
210	108.0	1410	109.9	2610	112.5	3810	115.7
240	108.0	1440	109.9	2640	112.8	3840	115.7
270	108.0	1470	109.9	2670	112.8	3870	115.9
300	108.0	1500	110.1	2700	112.8	3900	115.9
330	108.1	1530	110.1	2730	113.0	3930	115.9
360	108.1	1560	110.3	2760	113.0	3960	115.9
390	108.3	1590	110.3	2790	113.0	3990	116.1
420	108.3	1620	110.5	2820	113.0	4020	116.1
450	108.5	1650	110.5	2850	113.2	4050	116.1
480	108.7	1680	110.7	2880	113.2	4080	116.4
510	108.7	1710	110.8	2910	113.4	4110	116.4
540	108.9	1740	110.7	2940	113.5	4140	116.4
570	108.9	1770	110.7	2970	113.5	4170	116.4
600	108.9	1800	110.8	3000	113.7	4200	116.6
630	108.9	1830	110.8	3030	113.7	4230	116.6
660	108.9	1860	110.8	3060	113.9	4260	116.6
690	108.9	1890	110.8	3090	113.9	4290	116.6
720	108.9	1920	111.0	3120	114.1		
750	108.9	1950	111.0	3150	114.1		
780	109.0	1980	111.2	3180	114.1		
810	109.0	2010	111.2	3210	114.3		
840	109.0	2040	111.4	3240	114.6		
870	109.2	2070	111.4	3270	114.4		
900	109.0	2100	111.4	3300	114.6		
930	109.0	2130	111.4	3330	114.4		
960	109.2	2160	111.6	3360	114.6		
990	109.2	2190	111.6	3390	114.6		
1020	109.2	2220	111.6	3420	114.8		
1050	109.4	2250	111.9	3450	115.0		
1080	109.6	2280	111.7	3480	115.2		
1110	109.4	2310	111.9	3510	115.0		
1140	109.6	2340	112.1	3540	115.2		
1170	109.6	2370	112.1	3570	115.2		

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

(b) Measured vapor space pressure profile



17.5 Supplemental information and data for compliance with the enhanced evaporative requirements for California

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

[Test vehicle]

Model name : TOYOTA CROWN AWD
Data is representative for : TOYOTA CROWN AWD

[Test procedure] : EPA method

[Test conditions]

Date : 03/28/2022
Ambient air temperature (at initiation) : 99.5 °F
Ambient air temperature (at completion) : 99.9 °F
Track surface temperature (at initiation) : 128.7 °F
Track surface temperature (at completion) : 132.8° F
Wind speed : N/A
Test fuel RVP : 9.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

[Test conditions]

Date : 03/29/2022
Ambient air temperature (at initiation) : 96.8 °F
Ambient air temperature (at completion) : 100.0 °F
Track surface temperature (at initiation) : 129.9° F
Track surface temperature (at completion) : 132.8 °F
Wind speed : N/A
Test fuel RVP : 9.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

Note : Fuel tank temperature profiles in this section are averaged with these two profiles in accordance with 40CFR §86.129-94(d)(1)

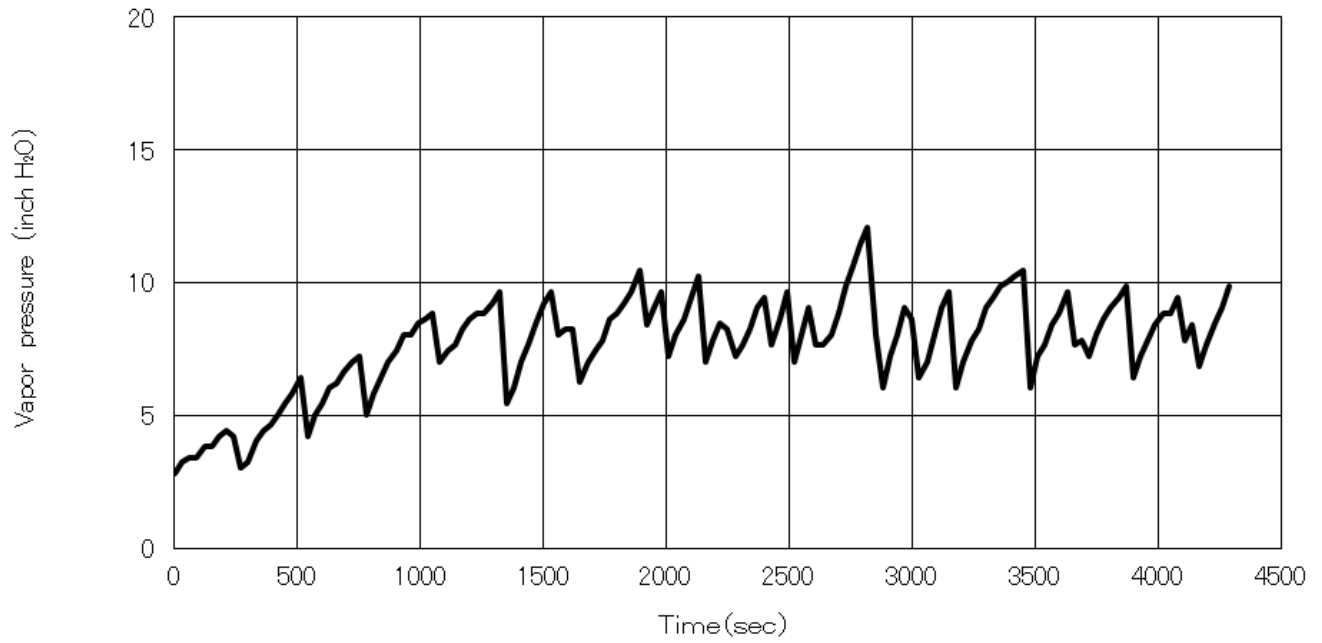
17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.
Measured temperature and pressure profiles

- (a) Measured average fuel temperature
 This profile is raw data and not corrected actually.

Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)
0	96.3	1200	99.9	2400	101.7	3600	104.2
30	96.3	1230	99.9	2430	101.8	3630	104.2
60	96.3	1260	99.9	2460	101.8	3660	104.4
90	96.3	1290	100.0	2490	101.8	3690	104.4
120	96.4	1320	100.0	2520	101.8	3720	104.5
150	96.4	1350	100.2	2550	102.0	3750	104.5
180	96.6	1380	100.2	2580	101.8	3780	104.5
210	96.6	1410	100.2	2610	102.0	3810	104.5
240	96.6	1440	100.4	2640	102.2	3840	104.5
270	96.8	1470	100.4	2670	102.2	3870	104.7
300	96.6	1500	100.2	2700	102.0	3900	104.7
330	96.8	1530	100.2	2730	102.2	3930	104.7
360	97.0	1560	100.4	2760	102.0	3960	104.9
390	97.2	1590	100.4	2790	102.0	3990	104.9
420	97.2	1620	100.4	2820	102.0	4020	104.9
450	97.5	1650	100.6	2850	102.2	4050	104.9
480	97.7	1680	100.8	2880	102.2	4080	105.1
510	97.7	1710	100.8	2910	102.4	4110	105.1
540	97.9	1740	100.8	2940	102.6	4140	105.3
570	98.1	1770	100.9	2970	102.6	4170	105.3
600	98.2	1800	100.8	3000	102.6	4200	105.3
630	98.4	1830	100.9	3030	102.7	4230	105.3
660	98.4	1860	100.9	3060	102.9	4260	105.4
690	98.6	1890	100.9	3090	102.9	4290	105.4
720	98.6	1920	100.8	3120	103.1		
750	98.8	1950	101.1	3150	103.1		
780	99.0	1980	101.1	3180	103.1		
810	99.0	2010	101.1	3210	103.3		
840	99.1	2040	100.9	3240	103.3		
870	99.3	2070	100.9	3270	103.3		
900	99.1	2100	101.1	3300	103.6		
930	99.1	2130	101.1	3330	103.5		
960	99.3	2160	101.3	3360	103.6		
990	99.3	2190	101.3	3390	103.6		
1020	99.3	2220	101.5	3420	103.6		
1050	99.5	2250	101.5	3450	103.8		
1080	99.5	2280	101.7	3480	104.0		
1110	99.5	2310	101.5	3510	103.8		
1140	99.7	2340	101.7	3540	103.8		
1170	99.9	2370	101.7	3570	104.0		

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

(b) Measured vapor space pressure profile



17.5 Supplemental information and data for compliance with the enhanced evaporative requirements for California

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

[Test vehicle]

Model name : TOYOTA CROWN AWD
Data is representative for : TOYOTA CROWN AWD

[Test procedure]

: CARB method

[Test conditions]

Date : 03/15/2022
Ambient air temperature (at initiation) : 106.3 °F
Ambient air temperature (at completion) : 110.1 °F
Track surface temperature (at initiation) : 138.2 °F
Track surface temperature (at completion) : 140.5° F
Wind speed : N/A
Test fuel RVP : 7.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

[Test conditions]

Date : 03/16/2022
Ambient air temperature (at initiation) : 105.8 °F
Ambient air temperature (at completion) : 110.1 °F
Track surface temperature (at initiation) : 141.6° F
Track surface temperature (at completion) : 144.7 °F
Wind speed : N/A
Test fuel RVP : 7.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

Note : Fuel tank temperature profiles in this section are averaged with these two profiles in accordance with 40CFR §86.129-94(d)(1)

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.
Measured temperature and pressure profiles

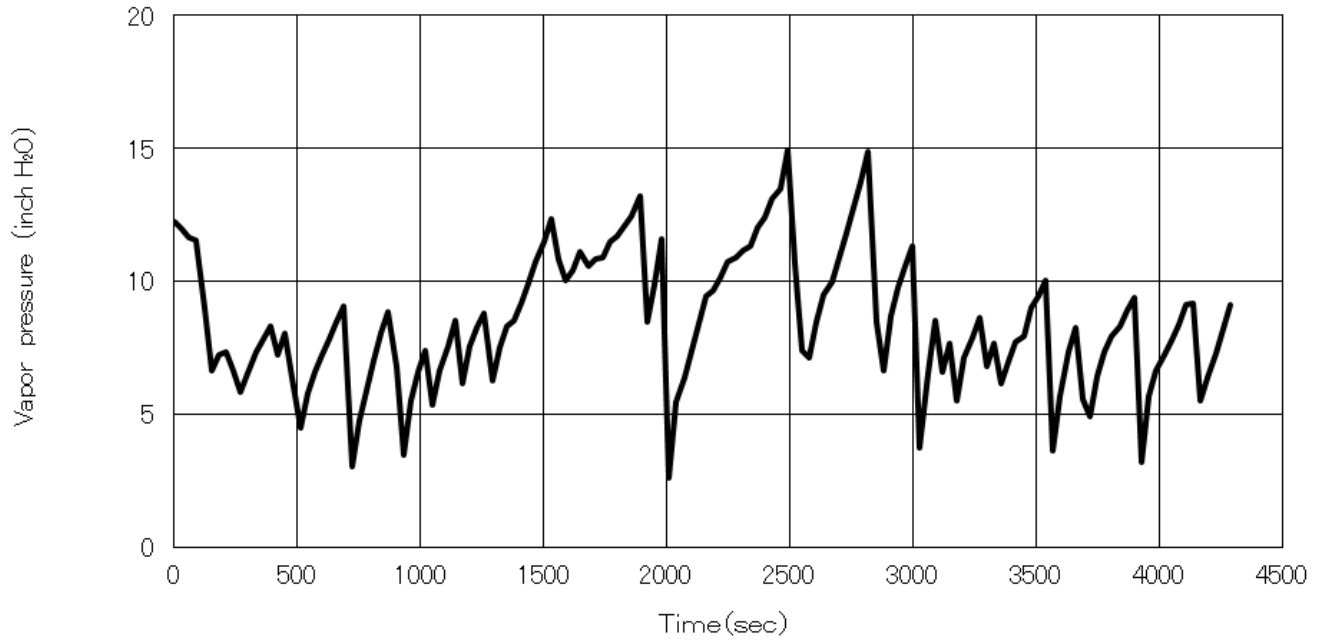
(a) Measured average fuel temperature

This profile is raw data and not corrected actually.

Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)	Time(sec.)	Liquid('F)
0	106.0	1200	109.8	2400	113.4	3600	117.1
30	106.0	1230	109.4	2430	113.7	3630	117.1
60	106.2	1260	109.8	2460	113.7	3660	117.9
90	106.2	1290	109.8	2490	113.9	3690	117.7
120	106.2	1320	109.8	2520	113.9	3720	117.3
150	106.3	1350	109.9	2550	113.7	3750	117.7
180	106.3	1380	110.1	2580	114.1	3780	117.9
210	106.3	1410	110.3	2610	113.7	3810	117.9
240	106.3	1440	110.5	2640	114.1	3840	118.2
270	106.3	1470	110.5	2670	114.3	3870	118.2
300	106.3	1500	110.7	2700	114.4	3900	118.2
330	106.5	1530	110.7	2730	114.6	3930	118.4
360	106.7	1560	110.7	2760	114.6	3960	118.2
390	106.5	1590	110.8	2790	114.6	3990	118.4
420	106.9	1620	111.0	2820	114.6	4020	118.6
450	107.1	1650	111.0	2850	114.6	4050	118.6
480	106.9	1680	111.2	2880	114.8	4080	118.8
510	106.9	1710	111.2	2910	115.0	4110	118.8
540	107.1	1740	111.4	2940	115.2	4140	118.9
570	107.2	1770	111.7	2970	115.3	4170	118.8
600	107.1	1800	111.6	3000	115.3	4200	119.1
630	107.2	1830	111.6	3030	115.0	4230	119.3
660	107.4	1860	111.9	3060	115.3	4260	119.3
690	107.4	1890	111.9	3090	115.3	4290	119.5
720	107.4	1920	111.9	3120	115.3		
750	107.6	1950	111.9	3150	115.9		
780	108.0	1980	112.3	3180	115.9		
810	107.8	2010	111.9	3210	115.7		
840	107.8	2040	112.3	3240	116.1		
870	108.0	2070	112.3	3270	116.4		
900	108.0	2100	112.5	3300	116.2		
930	108.1	2130	112.5	3330	116.6		
960	108.1	2160	112.5	3360	116.2		
990	108.5	2190	112.8	3390	116.6		
1020	108.5	2220	112.8	3420	116.6		
1050	108.7	2250	113.0	3450	117.0		
1080	108.7	2280	113.0	3480	117.0		
1110	109.2	2310	113.0	3510	117.1		
1140	109.0	2340	113.2	3540	117.1		
1170	109.4	2370	113.4	3570	117.0		

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

(b) Measured vapor space pressure profile



17.5 Supplemental information and data for compliance with the enhanced evaporative requirements for California

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

[Test vehicle]

Model name : TOYOTA CROWN AWD
Data is representative for : TOYOTA CROWN AWD

[Test procedure] : EPA method

[Test conditions]

Date : 03/15/2022
Ambient air temperature (at initiation) : 96.1 °F
Ambient air temperature (at completion) : 100.2 °F
Track surface temperature (at initiation) : 128.7 °F
Track surface temperature (at completion) : 131.2° F
Wind speed : N/A
Test fuel RVP : 9.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

[Test conditions]

Date : 03/16/2022
Ambient air temperature (at initiation) : 97.0 °F
Ambient air temperature (at completion) : 100.2 °F
Track surface temperature (at initiation) : 131.5° F
Track surface temperature (at completion) : 134.8 °F
Wind speed : N/A
Test fuel RVP : 9.0 PSI
Driving cycles : LA#4+NYCC+NYCC+LA#4
Percent cloud cover : N/A

Note : Fuel tank temperature profiles in this section are averaged with these two profiles in accordance with 40CFR §86.129-94(d)(1)

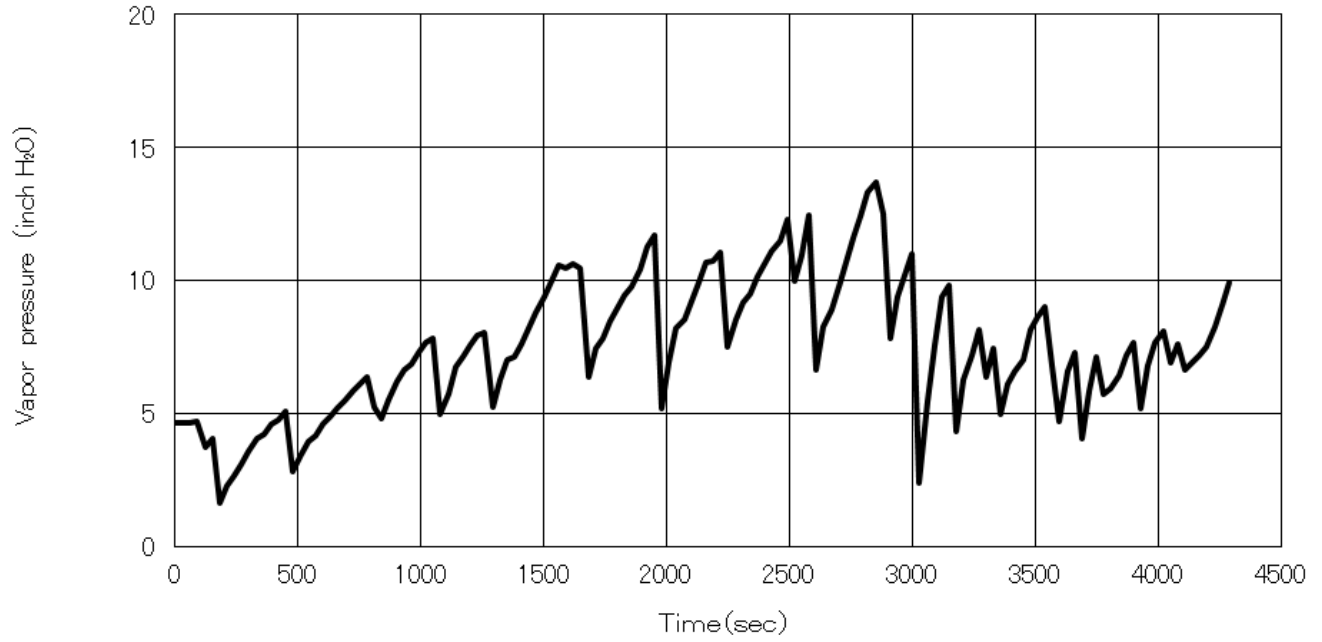
17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.
Measured temperature and pressure profiles

- (a) Measured average fuel temperature
 This profile is raw data and not corrected actually.

Time(sec.)	Liquid(°F)	Time(sec.)	Liquid(°F)	Time(sec.)	Liquid(°F)	Time(sec.)	Liquid(°F)
0	95.9	1200	98.2	2400	101.1	3600	104.5
30	95.9	1230	98.2	2430	101.1	3630	104.5
60	95.9	1260	98.4	2460	101.5	3660	104.7
90	96.1	1290	98.4	2490	101.3	3690	104.7
120	96.1	1320	98.6	2520	101.3	3720	104.7
150	96.1	1350	98.4	2550	101.3	3750	104.7
180	96.3	1380	98.6	2580	101.5	3780	105.1
210	96.1	1410	98.8	2610	101.5	3810	105.1
240	95.9	1440	98.8	2640	101.7	3840	105.3
270	95.9	1470	99.0	2670	101.7	3870	105.3
300	95.9	1500	99.0	2700	101.8	3900	105.3
330	96.1	1530	99.0	2730	101.8	3930	105.4
360	96.1	1560	98.8	2760	102.0	3960	105.4
390	96.3	1590	99.1	2790	102.0	3990	105.6
420	96.4	1620	99.1	2820	102.0	4020	105.8
450	96.6	1650	99.3	2850	102.0	4050	105.8
480	96.4	1680	99.1	2880	102.2	4080	106.0
510	96.6	1710	99.3	2910	102.4	4110	106.0
540	96.6	1740	99.5	2940	102.6	4140	106.2
570	96.8	1770	99.7	2970	102.6	4170	106.0
600	96.6	1800	99.5	3000	102.6	4200	106.2
630	96.6	1830	99.7	3030	102.2	4230	106.3
660	96.8	1860	100.0	3060	102.4	4260	106.5
690	96.8	1890	99.9	3090	102.6	4290	106.5
720	96.8	1920	99.9	3120	102.6		
750	97.0	1950	100.0	3150	102.7		
780	97.2	1980	100.0	3180	103.1		
810	97.0	2010	100.0	3210	103.1		
840	97.0	2040	100.0	3240	103.5		
870	97.2	2070	100.4	3270	103.6		
900	97.2	2100	100.4	3300	103.5		
930	97.2	2130	100.2	3330	103.6		
960	97.3	2160	100.4	3360	103.5		
990	97.5	2190	100.6	3390	103.8		
1020	97.5	2220	100.6	3420	104.0		
1050	97.9	2250	100.8	3450	104.4		
1080	97.9	2280	100.6	3480	104.2		
1110	98.1	2310	100.9	3510	104.4		
1140	97.9	2340	100.9	3540	104.4		
1170	98.2	2370	101.3	3570	104.2		

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

(b) Measured vapor space pressure profile



17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

Evaporative emission test log

Vehicle Description

Evaporative emission vehicle
Test group : PTYXJ02.4P3L
Vehicle ID : 23-TL1H
Rep. car/truck line : RX 500h AWD
Rep. vehicle model : TALH17L-CWTGTA
Displacement : 146.0 CID
Transmission : PC60-A
Test weight : 5,000 lbs.
Road load : 15.4 HP
Evap. code : TL1G

Refueling emission vehicle
Test group : LTYXT02.5P34
Vehicle ID : 20-AU1H
Rep. car/truck line : HIGHLANDER HYBRID AWD
Rep. vehicle model : AXUH78L-ARXGHA
Displacement : 151.8 CID
Transmission : P810-B
Test weight : 5,000 lbs.
Road load : 15.4 HP
Evap. code : AU1G

Test results

Test procedure : EPA's procedure

3-day diurnal sequence test results

Running loss : 0.007 (g/mile)
Hot soak loss : 0.0433 (g/test)
3DBL 1st day : 0.1116*1 (g/test)
2nd day : 0.0695 (g/test)
3rd day : 0.0589 (g/test)

2-day diurnal sequence test results

Hot soak loss : 0.0292 (g/mile)
2DBL 1st day : 0.1048*1 (g/test)
2nd day : 0.0639 (g/test)

Refueling sequence test results

Refueling emission : 0.003 (g/gal)

*1: DBL is added key off monitor loss (0.0002 gram).

17.5.1 Fuel tank temperature profile (FTTP) and pressure profile for TTYXR0165J42.

Evaporative emission test log

Vehicle Description

	Evaporative emission vehicle	Refueling emission vehicle
Test group	: PTYXV02.5P33	JTYXV02.5P33
Vehicle ID	: 23-AZ1H	18-AV3H
Rep. car/truck line	: ES 300h	CAMRY HYBRID
Rep. vehicle model	: AXZH11L-BEXGBA	AXVH71L-CEXSBA
Displacement	: 151.8CID	151.8CID
Transmission	: P710-C	P710-A
Test weight	: 4,000 lbs.	3,875 lbs.
Road load	: 10.8 HP	10.2 HP
Evap. code	: AZ1W	AV1W

Test results

Test procedure : EPA's procedure

3-day diurnal sequence test results

Running loss	:	0.004	(g/mile)
Hot soak loss	:	0.0328	(g/test)
3DBL	1st day	: 0.1014	(g/test)
	2nd day	: 0.0523	(g/test)
	3rd day	: 0.0356	(g/test)

2-day diurnal sequence test results

Hot soak loss	:	0.0258	(g/mile)
2DBL	1st day	: 0.1247*1	(g/test)
	2nd day	: 0.0626	(g/test)

Refueling sequence test results

Refueling emission : 0.0005 (g/gal)

*1: DBL is added key off monitor loss (0.0003 gram).

17.6 New unique or changed emission control technology

New, unique or changed Exhaust, Evaporative/Refueling emission control technology or parts in Toyota 2026 MY is shown below

New, unique or changed emission control technology

Test group	New, unique or changed emission control technology
Not applicable	-

17.7 Service literature

Toyota will make available service bulletins, service manual and Fed World electronically.

17.8 Emission Control Information Labels.

Please refer to the test group file

17.9 Reserved

17.10 Identification of AB71-Qualified Vehicles (Mail-Out #MSO-2000-04)

No vehicles qualified for the 2026MY.

17.11 Supplemental Data Sheet and Certification Review Sheet

Please refer to the each test group file.

17.12 Test group and Evaporative family sales for California

Confidential Information

17.13 California Phase-in Compliance

Confidential Information

17.14 Compliance with OBD-II Phase-in Requirements

Confidential Information

17.15 ZEV and HEV information

Confidential Information

17.16 Warranty information

Please refer to CBI file.

18. Information on Service of Process

Please refer to Section 1.