Application for Certification

Model Year: 2027
Manufacturer Name: BMW

Test Group: VBMXV04.4H9X
Test Group Description: V8, 4-stroke, 4.4 Liter, gasoline PHEV

Durability Group: VBMXHHGVNV39
Durability Group Description: 4-Stroke Otto Cycle
gasoline
direct fuel injection
ceramic, metal, monolith
Palladium, Rhodium
Three-Way Catalyst

Evaporative Group: VBMXR0170H09

Applicable Standards: EPA
FTP Standard: Interim Tier 4 - Bin 70
SFTP Standard: Interim Tier 4 composite - 0.070
EVAP FEL: Tier 3 - 500

Vehicle Classes Covered: EPA
LDV

Carlines Covered: M5 Sedan, M5 Touring

Test EDV:

VID	CFG	Fuel	FTP sust.	HWY sust.	US06 sust.	SC03 sust.	Cold CO sust.
CR43501	00	T3E10	SBMX10087951	SBMX10087952	SBMX10087953	SBMX10087954	SBMX10087956
CR43501	03	T2E0	SBMX10088003	SBMX10088005	---	---	---

VID	CFG	Fuel	FTP depl.	HWY depl.	US06 Cold Start depl.
CR43501	03	T2E0	SBMX10087991	SBMX10087992	---

Test EDV EVAP:

Family	VID	CFG	Fuel	3-day	RL	2-day	ORVR	BTP	Leak
R0170H09	9N82497	06	T3E10	SBMX10084686	SBMX10084687	SBMX10084685	SBMX10084688	not applicable	SBMX10084689

For questions, Contact: Carlheinz Bayer, 201 / 571 - 5193

Table of Contents

1. Correspondence and Communications

1.1.	Authorized Persons	Refer to Common Section
1.2.	Certificate Information	Refer to Common Section
1.3.	Primary certification contact:	

Name: Carlheinz Bayer
Phone Number: 201 / 571 - 5193
Fax Number: 201 / 571 - 5479
E-Mail-Address: Carlheinz.Bayer@bmwna.com

2. Durability Group Description

2.1.	Durability Group Name	VBMXHHGVNV39
2.2.	Combustion Cycle	4-Stroke Otto Cycle
2.3.	Engine type	piston, water cooled
2.4.	Fuel used	gasoline
2.5.	Basic fuel metering system	direct fuel injection
2.6.	Catalyst construction	ceramic metal monolith
2.7.	Precious Metals in Catalyst	Palladium Rhodium
2.8.	Particulate Filter Construction	not applicable
2.9.	Precious Metals in Particulate Filter	not applicable
2.10.	Precious Metal Loading	Refer to Section 16, Confidential Information
2.11.	Range of Catalyst Grouping Statistics	6.2 - 8.2

3. Evaporative / Refueling Family Description

3.1.	Evaporative / Refueling Family Name	VBMXR0170H09
3.2.	Evaporative / Refueling Family Parameters specified in 40 CFR § 86.1821-01:	
3.2.1.	Type of vapor storage device	canister
3.2.2.	Basic canister design	
	Working capacity:	170 g
	System configuration:	1 canister
	Canister Construction:	active charcoal granulate closed bottom
	Canister Materials:	plastic
3.2.3.	Fuel system	time-contr. DI
3.2.4.	Type of refueling emission control system	non-integrated refueling canister only
3.2.5.	Fillpipe seal mechanism	liquid seal
3.2.6.	Vapor control system	pressurized tank system
3.2.7.	Purge control system	electric purge valve
3.2.8.	Vapor hose material	multilayer plastic
3.2.9.	Fuel tank material	steel
3.3.	Leak Family Description	same Leak-Standard in between the evaporative family

3.4. ORVR Statement

Evaporative Family VBMXR0170H09

ORVR safety application is carried over from previous model year.

This evaporative / refueling family was first certified for model year 2023.

During this time period we had no in-use problems or defects related to the ORVR system that required action by BMW.

There have been no service notifications, campaigns, instructions or bulletins to dealers or field personal or changes in production procedures or components.
No safety-related defect campaigns have been conducted related to the ORVR system.
Therefore no EPA/NHTSA review of this evaporative / refueling family was required.

4. Durability Procedure Description

4.1. Description of used durability process

4.1.1. Alternative Durability Program for Exhaust Emissions:

The durability data vehicle was aged according to the bench aging process described in §86.1823-08. Following parameters were used to age the catalyst of the durability data vehicle:

	Exhaust branch 1. line	Exhaust branch 2. line
Tref [°C] =	858.0	857.7
calculated tref [h] =	370.7	372.2
effective tref [h] =	371.5	371.5

Statement:

Based on BMW`s good engineering judgment, all the vehicles described in this Application for Certification comply with all applicable intermediate and full useful life standards.

4.1.2. Durability Program for Evaporative/Refueling Emissions:

Confidential Information:
Refer to Common Section

4.2. Determination of certification Levels

4.2.1. Exhaust Emissions:

additive deterioration factor:

For Deterioration Factors refer to Summary Sheet enclosed in Chapter 7 of this application.

4.2.2. Evaporative/Refueling Emissions:

additive deterioration factor:

For Deterioration Factors refer to Summary Sheet enclosed in Chapter 7 of this application.

5. Test Group Description

5.1.	Test Group Name	VBMXV04.4H9X
5.2.	Engine information	
5.2.1.	Engine displacement	4395 cm³
5.2.2.	Arrangement of cylinders	in V-configuration
5.2.3.	Number of cylinders	8
5.3.	Hybrid Electric Vehicle System Description	
5.3.1.	Electric Motor	Refer to Section 12
5.3.2.	Battery	Refer to Section 12
5.4.	Vehicle class	EPA
		LDV
5.5.	Emission standards class	Interim Tier 4 - Bin 70
5.6.	Applicable emission standards	Refer to Summary Sheet enclosed in Section 7 of this application.
5.7.	Battery Monitor Family	
5.7.1.	Battery Monitor Family Name	VBMXV04.4H9X

5.7.2. All vehicles coverd by this application are substantially similar with respect to the following elements:

- Algorithm for estimating on-board SOCE
- Sensor configuration
- Characteristics of battery cell as described in section 12

5.8.	Battery Durability Family	VBMXV04.4H9X
5.8.1.	Battery Durability Family Name	VBMXV04.4H9X

5.8.2. All vehicles coverd by this application are substantially similar with respect to the following elements:

- Type and number of electric machines as described in section 12
- Type of battery as described in section 12
- Battery management system
- Passive and active thermal management of the battery as described in section 12
- Type of electric energy converter between recharge -plug-in and battery as described by the different charging rates in setion 12
- Operation strategy of all components influencing the battery durability
- Declared maximum charging power as described in section 12

6. Test Vehicle Description

6.1. Test Vehicle Description EDV, FEDV, DDV

VID	CFG	Carline	Model	Trans Type	Type	Fuel	ESS	Road Load CFG	Gear	Mode	eDrive	ETW
CR43501	00	--	M5 Touring	SA-8	EDV	T3E10	---	10	refer to section 12	refer to section 12	refer to section 12	6000
CR43501	02	442	M5 Touring	SA-8	FEDV	T2E0	---	11	Comfort	Comfort	Hybrid	6000
CR43501	03	442	M5 Touring	SA-8	FEDV	T2E0	---	11	Comfort	Comfort	Hybrid	6000
CR43501	03	442	M5 Touring	SA-8	FEDV	T2E0	---	11	Sport+	Sport+	Hybrid	6000
CS68136	00	360	M5 Sedan	SA-8	FEDV	T2E0	---	11	Comfort	Comfort	Hybrid	5500
CS68136	00	360	M5 Sedan	SA-8	FEDV	T2E0	---	11	Sport+	Sport+	Hybrid	5500
CS68136	01	360	M5 Sedan	SA-8	FEDV	T2E0	---	11	Comfort	Comfort	Hybrid	5500
9L26165	---	---	XM	---	DDV	T3E10	---	---	---	---	---	6500

Test parameters are described in the EV-CIS vehicle information

Road Load Configuration Description

X_ means number of FEDV tire groups used for this model
10 Road Load for EDV (worst case)
11 Road Load for FEDV configuration

6.2. Test Vehicle Description EVAP EDV

VID	CFG	Model	Type	Fuel	Family
9N82497	06	XM Label	EDV EVAP	T3E10	R0170H09

For complete vehicle description, refer to Certification Summary Information Report Sheet, enclosed in Section 7 of this application.
Selection of vehicles carried out according to 40 CFR §86.1828-01(a).

7. Test results (Cover page)

7.1. Certification Summary Information Report submitted to EV-CIS

see attachment:
CSI-VBMXV04.4H9X-VBMXR0170H09

The certified usable battery energy is given in the respective test information.
BMW selects the HFET Full Charge Test to determine compliance with the battery energy Minimum Performance Requirement.

8. Statements

8.1 Emission Testing Waiver Statements

All applicable vehicles will conform with the emission standards for which emission data is not being provided, as allowed under 40 CFR §86.1806-27, §86.1811-27, §86.1829-15 and §86.1865-12. The statements below identify the standards for which emission testing was not performed.

Data submittal waiver for HCHO emission compliance

Based on our engineering evaluation of appropriate HCHO emissions we state, that all light-duty vehicles included in the respective applications comply with the applicable HCHO emission standards. According to 40 CFR §86.1829-15 (d) (4), we waive the data submittal on the basis of this statement.

Data submittal waiver for high-altitude exhaust and evaporative emissions compliance

Based on an engineering evaluation of appropriate high-altitude emission testing we state that all vehicles included in this application comply with the applicable exhaust and evaporative emissions standards at high altitude. According to 40 CFR §86.1829-15 (c), we waive the data submittal on the basis of this statement.
According to 40 CFR §86.1865-12 (h) (3), we state for all vehicles included in this application that the hardware and software emission control strategies used during low altitude condition testing are used similarly across all altitudes for in-use operation.
According to 40 CFR §86.1811-27(c)(4) for Tier 4 vehicles we state based on an engineering evaluation for all vehicles included in this application that common calibration approaches are used at high altitudes, there is no deviation from low altitude emission control practices.

Evaporative Leak-Detection

For test groups not selected for OBD demonstration testing we state as the manufacturer, consistent with good engineering judgment, that all vehicles included in this application comply with the applicable leak monitoring requirement.

Spitback Testing Waiver

According to 40 CFR §86.1829-15 (e) (5), BMW certifies, that all vehicles included in this application do not exceed the fuel dispensing spitback standard of 1.0g THCE as given in §86.1813-17 (c).

8.2 Compliance Statements

"Lean-on-cruise" calibration strategies

There are no "Lean-on-cruise" calibration strategies according to 40 CFR §86.1811-17 (d)(4) incorporated into the vehicle design of this Test Group.

91RON-Statement

According to VPCD 97-01 we confirm that city and highway fuel economy test result differences between comparing 91 RON operation and 96 RON operation is within 3%. Emission standards are met at 91 RON operation and 96 RON operation as demonstrated by certification testing. Hereby EDV testing is done using Tier 3 E10 fuel with 91 RON, FEDV testing is using Tier 2 E0 fuel with 96 RON.

A/C-on specific calibrations-Statement

According to 40 CFR §86.1811-27(d) we state as the manufacturer that there are no A/C-on specific calibrations that differ from A/C-off calibrations for a given set of engine operating conditions which unnecessarily reduce emission control effectiveness during A/C-on operation when the vehicle is operated under conditions that may reasonably be expected during normal operation and use.

Avoiding fuel vapor to atmosphere at opening fuel fill pipe cap for plug-in hybrid electric vehicles

According to 40 CFR 86.1844-01(d)(7)(v) we state as the manufacturer, based on our engineering evaluation in terms of the working principle of the pressurized fuel tank system, that vapor would not be vented into the atmosphere if the fuel fill pipe cap was removed. At any operation condition the fuel filler cap cannot be removed until the pressure of fuel tank system is completely released to the carbon canister.

Battery Durability

According to 40 CFR §86.1844 (d)(19)(iv) we state as the manufacturer that the vehicles covered by this test group meet the Minimum Performance Requirement specified in §86.1815-27(e). According to §86.1844 (d)(19)(ii) BMW selects the HFET Full ChargeTest to determine the certified usable battery energy in terms Minimum Performance Requirement.

Break-In Period Vehicle, Battery, Fuel Cell

According to EPA CD-2021-12 the test vehicles are stabilized for certification testing by aging at least to 2,000 miles. Test vehicle and the battery, in addition the fuel cell if applicable, that power the vehicle during testing are aged as one unit at the same time for the same number of miles. Aging is done by using the SRC cycle.

Cold Temperature Emission Control-Statement

According to 40 CFR §86.1809-12 (c) and based on engineering evaluations of emission testing between 25°F and 68°F, we confirm for all vehicles covered by this test group, that the guideline for CO, NMHC or NMOG+N0x as applicable, emission congruity in the intermediate temperature range is fulfilled by this test group.

Corporate Average Fuel Economy Calculation-Statement

Since the 2007 model year and in accordance with Dear Manufacturer letter CISD-09-19, BMW uses customer data to analyze whether predominance criteria are met regarding a certain operation mode of the multimode transmissions. Usage rates are determined by collecting data from the onboard powertrain and/or transmission control module. Using good engineering judgment, BMW has concluded that it is appropriate to carry-forward and carry-across the results of the earlier surveys where predominant use of one mode has been demonstrated.

Emission compliance of plug-in hybrid electric vehicles

According to guidance letter CD-14-19 we confirm that plug-in hybrid electric vehicles remain in compliance with the emission standards during the charge depletion and charge sustaining transition modes. During depleting operation for hot start test cycles (Highway, US06, SC03) compliance demonstration is limited to all test cycles following the cycle where the combustion engine was initially started.

Emission Control System Continuity-Statement

According to 40 CFR §86.1809-12 (e) and based on engineering evaluations of emission testing between 20°F and 86°F, we confirm for all vehicles covered by this test group, that there is no discontinuity in emissions of NMOG, PM, CO, CO2, N2O, NOx, CH4, HCHO, and in case of diesel vehicles also particulate emissions as measured on the FTP and Highway tests in the temperature range of 20°F to 86°F.

Engine Oil used for Certification Testing

Based on the guidance letters CISD-2008-11, CISD-10-11 and CD-2020-03 BMW confirms that it fulfills the "representativeness" requirements of 40 CFR 600.007(b)(6) with regard to the engine oils used in its test vehicles. BMW uses the factory fill oil for test vehicle run in, certification testing and fuel economy testing. The specific SAE viscosity grade used is included in the CSI information of each application. BMW uses non-API-registered fully synthetic oils. For factory fill, 0W-12, 0W-20, and 0W-30 oils are used (viscosity grades vary by engine model). For maintenance BMW recommends a 0W-12, 0W-20 or 0W-30 oil equivalent to or superior to the oil used for certification testing. BMW dealers are required to use this oil as part of the maintenance package included with each new vehicle. This approach is used to ensure that the oil used in certification test vehicles is no more fuel efficient than the oil that is used as the factory fill, or the oil recommended to the vehicle owner.

Enrichment Limit-Statement

According to 40 CFR §86.1811-17(d)(1) we confirm that the nominal air-fuel ratio throughout the US06 cycle at any speed and load point is not richer than the leanest air fuel mixture required to obtain maximum torque plus a tolerance of four percent.
For the engine covered by this application enrichment takes place at high engine loads (full load) resulting in high exhaust temperatures. Fixing spark advance at this condition allows very little Lambda variation without damaging either the engine (knocking) or the catalyst (over temperature). Therefore, BMW does not fix spark advance for LBT investigations at these full load engine operation conditions. The enrichment limit is fulfilled at any engine operation point.

Leak free exhaust system

Based on our engineering analysis of the complete exhaust system we state as the manufacturer, that the exhaust system installed on any vehicles covered by this application comply with the requirements of § 86.1844-01(d)(16). The analysis covers the exhaust system and all relared attached components from the engine block manifold gasket surface to a point sufficiently past the last catalyst and oxygen sensor in the system to assure that air will not reach the oxygen sensors under normal operating conditions.

OBD system

According to 40 CFR 86.1844-01 (d)(9)(iv) we confirm that the emission control diagnostic system installed on any vehicles included in this application is adequate for the performance warranty test described in 40 CFR Part 85 subpart W.

State of Health Indication Accuracy

According to 40 CFR §86.1844 (d)(19)(iii) and § 86.1815-27 (d) we state as the manufacturer that vehicles covered by this test group display SOCE values that are accurate within 5 percent of measured values as calculated in GTR No. 22.

9. OBD System Description

The OBD System Description of this Test Group, MY 2027 has been uploaded separately to EV-CIS.

10. Description of Alternate-fueled Vehicles

not applicable

11. Auxiliary Emission Control Devices (AECD) descriptions

Confidential Information: Please refer to uploaded AECD document in EV-CIS

12. Description of vehicles and test parameters covered by certificate

12.1. Vehicle Parameters

12.1.1. Vehicle Information

Model Name	Carline	Trans	Vehicle Class	VCW [lbs]	ETW [lbs]	GVW [lbs]	Tank [gal]	Canister Working Capacity [g]	Canister Bed Volume [ccm]	Hydrocarbon Trap - Fleece
M5 Sedan	360	SA	LDV	5390	5500	6482	15.9	180	3060	No
M5 Touring	442	SA	LDV	5523	6000	6724	15.9	180	3060	No
M5 Touring	--	SA	LDV	5523	6000	6724	15.9	180	3060	--

12.1.2. Drive Train Information

Model Name	Carline	Trans-Type (-drive Sys.)	# Gears	Axle ratio		Engine Code	Combustion engine power [hp / rpm]	Combustion engine torque ft-lb / rpm
				front	rear			
M5 Sedan	360	SA (A)	8	3.3	3.3	XB1161T0G90X	577 / 6000	553 / 1800 - 5400
M5 Touring	--	SA (A)	8	3.3	3.3	XB1161T0G91X	577 / 6000	553 / 1800 - 5400
M5 Touring	442	SA (A)	8	3.3	3.3	XB1161T0G91X	577 / 6000	553 / 1800 - 5400

12.1.3. Tire Information

Modell	Carline	Trans	Road Load CFG	Tire Front	Tire Rear
M5 Sedan	360	SA	11	285/40 ZR20 (111Y) STD	295/35 ZR21 (110Y) STD
M5 Touring	--	SA	10	worst case represented	worst case represented
	442	SA	11	285/40 ZR20 (111Y) STD	295/35 ZR21 (110Y) STD

M+S indicates an all season tire and not a dedicated winter tire
RSC indicates a tire with run flat capability
STD indicates a tire without run flat capability

12.1.4. Emission control system description:

12.1.4.1.	Catalyst	2TWC, 2WU-TWC
12.1.4.2.	Particulate Filter	not applicable
12.1.4.3.	EGR / EGRC	EGR: no EGRC: no
12.1.4.4.	Air pump type	not applicable
12.1.4.5.	Fuel system type	Direct injection
12.1.4.6.	Intake air aspiration method	exhaust gas turbocharger with boost pressure control via waste gate
12.1.4.7.	Other	Charged Air Cooler
12.1.5.	Number of valves per cylinder	4
12.1.6.	Engine displacement	4395 cm³
12.1.7.	Certification Region	FA

12.1.8. Shift Indicator Light — not applicable

12.2. Test Parameters

12.2.1. Engine Starting Procedures — Refer to Common Section

12.2.2. Shift Schedules — not applicable

12.2.3. Dynamometer loading information

12.2.3.1. Sort of dynamometer — all wheel roll

12.2.3.2. Electric Dynamometer Coefficients

Modell	Carline	Trans	Road Load CFG	N/V	A [lbf]	B [lbf/mph]	C [lbf/mph²]	TRLHP	a [lbf]	b [lbf/mph]	c [lbf/mph²]	Grill Shutter
M5 Sedan	360	SA	11	25.2	78.1	-0.374	0.02923	17.7	16.0	-0.044	0.02244	No
M5 Touring	--	SA	10	25.2	80.8	-0.367	0.03006	18.3	18.8	-0.131	0.02370	No
M5 Touring	442	SA	11	25.2	80.8	-0.367	0.03006	18.3	18.8	-0.131	0.02370	No

Road Load Configuration Description

X_ means number of FEDV tire groups used for this model
10 Road Load for EDV (worst case)
11 Road Load for FEDV configuration

12.3. Hybrid Electric Vehicle System Description

12.3.1. Description of electric motor

Model Name	Type	Power (peak) [kW]	Max. torque [Nm]
M5 Sedan	permanent excited synchronous machine	145 @ 6000	280
M5 Touring	permanent excited synchronous machine	145 @ 6000	280

12.3.2. Description of batteries

Model Name	System Chemistry	Capacity (C) [Ah]	Energy Capacity (E) [kWh]	Nominal Voltage [V]	Min. Voltage Pack [V]	Number of Packs	Number of Modules	Number of Battery Cells
M5 Sedan	LI-ION	63.5	22.08	347.5	268.8	1	3	96
M5 Touring	LI-ION	63.5	22.08	347.5	268.8	1	3	96

Model Name	Cell format	Min. Voltage Cell [V]	Weight [kg]	Specific Energy Density [Wh/kg]	Chemistry Identifier
M5 Sedan	prismatic	2.80	204.8	108	Li MM(NMC) - C.F
M5 Touring	prismatic	2.80	204.8	108	Li MM(NMC) - C.F

Battery specific energy data are determined in accordance with U.S. Advanced Battery Consortium`s Electric Vehicle Battery Procedure No. 2 (Constant Current Discharge Test Series).

12.3.3. Description of thermal management

	Component	Medium
battery	evaporator	refrigerant / evaporator plate
cooling module	ratiator / fan	air / coolant
	condenser	air or coolant / refrigerant
passenger compartment	evaporator	refrigerant / air
	heat exchanger	coolant / air
	engine (ICE)	coolant
	electric heater	coolant

12.3.4. Description of battery charger

The charger is capable of charging with different rates. For each charging power, the following approximate charge rates apply:

Model Name	Current Type Charging Source	Charging Power [kW]	Voltage [V]	Rated Current [A]	Charging Rates [hh:mm]
M5 Sedan M5 Touring	AC	7.6	240	32	2:30
M5 Sedan M5 Touring	AC	11.5	240	48	1:45
M5 Sedan M5 Touring	AC	9.6	240	40	2:00
M5 Sedan M5 Touring	AC	1.44	120	12	13:45

Model Name	Current Type Charging Source	Max. Charging Power [kW]
M5 Sedan M5 Touring	DC	not applicable

The conductive charging port meets SAE J1772.

12.4. Information on driver selectable modes

Drive Mode	Default Mode	Function
Auto E	yes	combined use of combustion engine and electric engine.
comfortable	yes	comfortable setting for defined systems (e.g. climatic control, gas pedal progression)
Max E	no	pure electric driving if possible (e.g. above defined state of charge, below specific driving load)
SOC Set	no	selected target state of charge is reached either by charge depleting or charge increasing
sporty	no	sporty setting for defined systems (e.g. steering, gas pedal progression, shift points, less pure electric drive, e-boost)

Transmission Mode	Default Mode	Function
comfortable	no	standard comfortable vehicle gear operation

Transmission Mode	Default Mode	Function
sporty	no	sporty setting for shift points

12.5. Modes used for EDV Testing

Test EDV:

VID	CFG	Fuel	FTP sust.	HWY sust.	US06 sust.	SC03 sust.	Cold CO sust.
CR43501	00	T3E10	SBMX10087951	SBMX10087952	SBMX10087953	SBMX10087954	SBMX10087956
CR43501	03	T2E0	SBMX10088003	SBMX10088005	---	---	---

Drive Mode
Sustaining T3E10 EDV testing is done in the drive mode "Hybrid" + "Comfort" (comfortable) and transmission mode "Comfort" (comfortable). This is the worst case combination allowing a SOC neutral condition during the test sequence. Recuperation settings have no influence on energy consumption and E-range at dynamometer testing. Sustaining T2E0 EDV testing is done in both best case and worst case configuration. Best case testing is done in drive mode "Hybrid" + "Comfort" (comfortable) and transmission mode "Comfort" (comfortable). This represents the best case mode. Worst case testing is done in drive mode "Hybrid" + "Sport+" (sporty) and transmission mode "Sport+" (sporty). This is the worst case combination with highest engine revolutions. Recuperation settings have no influence on energy consumption and E-range at dynamometer testing.

VID	CFG	Fuel	FTP depl.	HWY depl.	US06 Cold Start depl.
CR43501	03	T2E0	SBMX10087991	SBMX10087992	---

Drive Mode
Depleting T3E0 EDV testing is done in the drive mode "Hybrid" + "Comfort" (comfortable) and transmission mode "Comfort" (comfortable). This combination allows depleting operation during the test sequence. Recuperation settings have no influence on energy consumption and E-range at dynamometer testing.

13. Projected Sales

Refer to Common Section for Model Year 2027

14. Request for certification

We herewith apply for the Federal Certificate of conformity for the Test Group VBMXV04.4H9X.

The mentioned Test Group complies with all applicable regulations contained in 40 Code of Federal Regulations Part 85 and Part 86.

Dr. Bernd Ofner

15. Other Information

15.1. Vehicle Emission Control Information Label

Label according to certification requirements in 40 CFR § 86.1807-01.

The VECI label is attached to the engine hood.

Refer to Section 17, Attachment

Carline	Model Name	VECI Label
360	M5 Sedan	see attachment: 03VE-VH9X-01
442	M5 Touring	see attachment: 03VE-VH9X-01

15.2. Fuel Tank Temperature Profile

Fuel Tank Temperature Profile according to certification requirements in 40 CFR § 86.129-94(d).

Refer to Section 17, Attachment

Carline	Model Name	Evaporative Group	FTTP
360	M5 Sedan	VBMXR0170H09	see attachment: FTTP-0H09-01
442	M5 Touring		

17. Attachment

17.1	Fuel Tank Temperature Profile	see attachment: FTTP-0H09-01
17.2	VECI Label	see attachment: 03VE-VH9X-01
17.3	Certification Summary Information Report	see attachment: CSI-VBMXV04.4H9X-VBMXR0170H09

Test Vehicle Data		**Ambient Conditions**		**Test Data**	
Vehicle Type:	XM	Weather:	sunny	Date of test:	06/04/2022
Mileage:	739 mi	clouds:	0 %	Engine start:	10:52
Fuel tank volume:	69.0 L	Wind speed:	0 mph	Measure start:	11:00
Fuel volume:	27.6 L	Ambient temp:		Measure stop:	12:12
		Start:	113 °F	Test track:	Dubai Bab Al Shams
		delta:	2 °F		
		Surface temperature:	100 %		

Time [s]	Fuel Temp 1 [°F]	Fuel Temp 2 [°F]	Fuel Temp Average [°F]	Fuel Temp Average Correctet (to95°F) [°F]	Vapor Temp [°F]	Tank pressure [in H_2O]
0	87,0	86,9	87,0	95,0	88,5	-22,6
30	87,1	86,9	87,0	95,0	88,5	-22,5
60	87,1	86,9	87,0	95,0	88,5	-22,5
90	87,1	86,9	87,0	95,0	88,6	-22,5
120	87,1	86,9	87,0	95,0	88,6	-22,6
150	87,1	86,9	87,0	95,0	88,7	-22,5
180	87,1	87,0	87,0	95,1	88,7	-22,4
210	87,2	87,0	87,1	95,1	88,7	-22,3
240	87,2	87,1	87,1	95,2	88,7	-22,2
270	87,2	87,1	87,2	95,2	88,8	-22,1
300	87,3	87,1	87,2	95,2	88,8	-22,2
330	87,3	87,1	87,2	95,2	88,9	-22,3
360	87,3	87,2	87,3	95,3	88,9	-22,2
390	87,4	87,2	87,3	95,3	88,9	-22,2
420	87,4	87,3	87,3	95,4	89,0	-22,1
450	87,4	87,3	87,3	95,4	89,0	-22,0
480	87,4	87,3	87,3	95,4	89,1	-22,0
510	87,4	87,3	87,4	95,4	89,1	-22,0
540	87,5	87,3	87,4	95,4	89,1	-21,9
570	87,5	87,3	87,4	95,4	89,2	-21,9
600	87,5	87,3	87,4	95,4	89,2	-21,8
630	87,6	87,4	87,5	95,5	89,2	-21,8
660	87,6	87,4	87,5	95,5	89,2	-21,6
690	87,6	87,4	87,5	95,6	89,2	-21,7
720	87,6	87,4	87,5	95,6	89,2	-21,6
750	87,6	87,4	87,5	95,6	89,2	-21,4
780	87,6	87,4	87,5	95,6	89,3	-21,3
810	87,6	87,4	87,5	95,6	89,3	-21,2
840	87,6	87,4	87,5	95,6	89,4	-21,3
870	87,6	87,4	87,5	95,6	89,4	-21,2
900	87,7	87,5	87,6	95,6	89,4	-21,2
930	87,8	87,5	87,6	95,7	89,4	-21,1
960	87,8	87,6	87,7	95,7	89,4	-21,0
990	87,8	87,6	87,7	95,7	89,5	-20,9
1020	87,8	87,6	87,7	95,8	89,6	-20,9
1050	87,9	87,6	87,8	95,8	89,6	-20,9

1080	87,9	87,6	87,8	95,8	89,6	-20,8
1110	88,0	87,7	87,8	95,9	89,6	-20,7
1140	88,0	87,7	87,9	95,9	89,6	-20,6
1170	88,0	87,8	87,9	95,9	89,6	-20,5
1200	88,0	87,8	87,9	95,9	89,7	-20,4
1230	88,0	87,8	87,9	95,9	89,7	-20,2
1260	88,0	87,8	87,9	95,9	89,8	-20,2
1290	88,0	87,8	87,9	95,9	89,8	-20,0
1320	88,0	87,8	87,9	95,9	89,8	-20,1
1350	88,0	87,8	87,9	95,9	89,8	-19,9
1380	88,1	87,8	87,9	96,0	89,9	-19,9
1410	88,1	87,8	88,0	96,0	89,9	-19,9
1440	88,1	87,8	88,0	96,0	89,9	-19,8
1470	88,2	87,8	88,0	96,0	90,0	-19,7
1500	88,2	87,8	88,0	96,0	90,0	-19,6
1530	88,2	87,9	88,0	96,0	90,0	-19,5
1560	88,2	87,9	88,0	96,1	90,0	-19,4
1590	88,2	88,0	88,1	96,1	90,0	-19,4
1620	88,2	88,0	88,1	96,1	90,0	-19,3
1650	88,2	88,0	88,1	96,1	90,0	-19,2
1680	88,2	88,0	88,1	96,1	90,0	-19,2
1710	88,2	88,0	88,1	96,1	90,0	-19,0
1740	88,2	88,0	88,1	96,1	90,0	-18,9
1770	88,2	88,0	88,1	96,1	90,0	-18,8
1800	88,2	88,0	88,1	96,1	90,0	-18,7
1830	88,2	88,0	88,1	96,1	90,0	-18,7
1860	88,2	88,0	88,1	96,1	90,0	-18,6
1890	88,2	88,0	88,1	96,1	90,1	-18,5
1920	88,2	88,0	88,1	96,1	90,1	-18,5
1950	88,3	88,0	88,2	96,2	90,1	-18,5
1980	88,3	88,1	88,2	96,2	90,1	-18,4
2010	88,3	88,1	88,2	96,3	90,1	-18,2
2040	88,3	88,1	88,2	96,3	90,1	-18,1
2070	88,3	88,2	88,2	96,3	90,2	-18,1
2100	88,3	88,2	88,2	96,3	90,2	-18,1
2130	88,3	88,2	88,3	96,3	90,3	-18,0
2160	88,3	88,2	88,3	96,3	90,3	-18,0
2190	88,3	88,2	88,3	96,3	90,3	-17,8
2220	88,3	88,2	88,3	96,3	90,3	-17,8
2250	88,3	88,2	88,3	96,3	90,3	-17,7
2280	88,3	88,2	88,3	96,3	90,3	-17,6
2310	88,3	88,2	88,3	96,3	90,3	-17,4
2340	88,3	88,3	88,3	96,4	90,3	-17,4
2370	88,4	88,3	88,4	96,4	90,3	-17,3
2400	88,4	88,3	88,4	96,4	90,3	-17,3
2430	88,5	88,3	88,4	96,4	90,4	-17,2
2460	88,5	88,3	88,4	96,5	90,4	-17,1
2490	88,5	88,3	88,4	96,5	90,5	-17,0
2520	88,5	88,3	88,4	96,5	90,5	-16,9
2550	88,5	88,3	88,4	96,5	90,5	-16,8
2580	88,5	88,3	88,4	96,5	90,5	-16,8
2610	88,5	88,3	88,4	96,5	90,5	-16,6
2640	88,5	88,3	88,4	96,5	90,5	-16,3
2670	88,6	88,4	88,5	96,5	90,5	-16,5
2700	88,6	88,4	88,5	96,6	90,5	-16,4
2730	88,7	88,5	88,6	96,6	90,5	-16,3

2760	88,7	88,5	88,6	96,6	90,6	-16,3
2790	88,7	88,5	88,6	96,6	90,7	-16,2
2820	88,7	88,5	88,6	96,6	90,7	-16,1
2850	88,7	88,5	88,6	96,7	90,7	-16,0
2880	88,8	88,6	88,7	96,7	90,7	-15,8
2910	88,8	88,6	88,7	96,8	90,8	-15,8
2940	88,9	88,7	88,8	96,8	90,8	-15,7
2970	88,9	88,7	88,8	96,8	90,9	-15,6
3000	89,0	88,7	88,8	96,9	90,9	-15,6
3030	89,0	88,7	88,9	96,9	90,9	-15,3
3060	89,0	88,8	88,9	96,9	91,0	-15,0
3090	89,1	88,8	88,9	97,0	91,0	-15,0
3120	89,1	88,9	89,0	97,0	91,0	-15,1
3150	89,1	88,9	89,0	97,0	91,0	-15,1
3180	89,1	88,9	89,0	97,0	91,0	-14,9
3210	89,1	88,9	89,0	97,0	91,0	-14,8
3240	89,1	88,9	89,0	97,0	91,0	-14,8
3270	89,1	88,9	89,0	97,0	91,0	-14,6
3300	89,1	88,9	89,0	97,0	91,0	-14,6
3330	89,1	88,9	89,0	97,0	91,0	-14,5
3360	89,1	88,9	89,0	97,0	91,0	-14,4
3390	89,1	88,9	89,0	97,0	91,0	-14,2
3420	89,2	88,9	89,0	97,1	91,1	-14,1
3450	89,2	88,9	89,1	97,1	91,1	-14,2
3480	89,2	88,9	89,1	97,1	91,2	-14,0
3510	89,2	89,0	89,1	97,2	91,2	-14,0
3540	89,2	89,0	89,1	97,2	91,2	-13,9
3570	89,2	89,1	89,1	97,2	91,2	-13,8
3600	89,2	89,1	89,1	97,2	91,2	-13,7
3630	89,2	89,1	89,2	97,2	91,3	-13,5
3660	89,2	89,1	89,2	97,2	91,3	-13,5
3690	89,3	89,1	89,2	97,2	91,4	-13,4
3720	89,3	89,1	89,2	97,3	91,4	-13,3
3750	89,4	89,2	89,3	97,3	91,4	-13,3
3780	89,4	89,2	89,3	97,3	91,4	-13,2
3810	89,4	89,2	89,3	97,4	91,4	-13,0
3870	89,4	89,2	89,3	97,4	91,4	-12,7
3900	89,4	89,2	89,3	97,4	91,4	-12,7
3930	89,5	89,3	89,4	97,4	91,4	-12,2
3960	89,5	89,3	89,4	97,4	91,4	-12,2
3990	89,6	89,4	89,5	97,5	91,5	-12,1
3990	89,6	89,4	89,5	97,5	91,5	-12,1
4020	89,6	89,4	89,5	97,5	91,5	-12,1
4050	89,6	89,4	89,5	97,5	91,6	-12,1
4080	89,6	89,4	89,5	97,5	91,6	-12,0
4110	89,6	89,4	89,5	97,5	91,6	-11,9
4140	89,6	89,4	89,5	97,5	91,6	-11,8
4170	89,6	89,4	89,5	97,6	91,6	-11,7
4200	89,7	89,4	89,5	97,6	91,6	-11,6
4230	89,7	89,4	89,6	97,6	91,7	-11,6
4260	89,7	89,4	89,6	97,6	91,7	-11,5
4290	89,7	89,4	89,6	97,6	91,8	-11,3
4320	89,7	89,4	89,5	97,6	91,8	-11,2

BMW

Designation

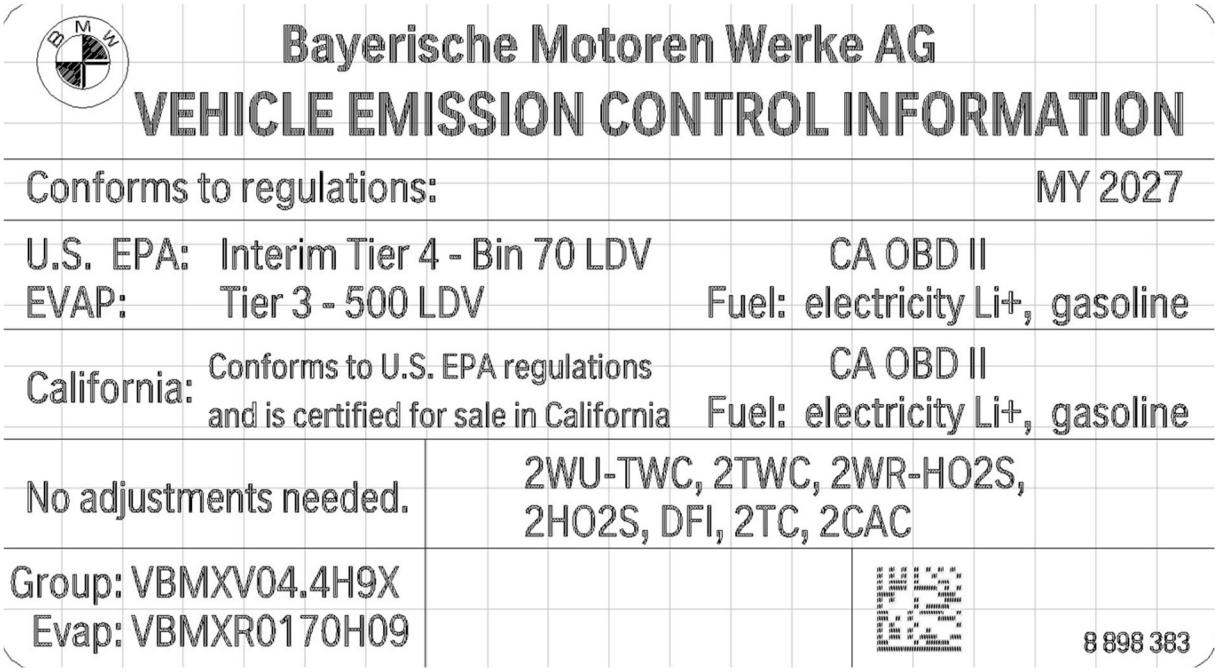
Attachment

VECI Label LDV, VBMXV04.4H9X, VBMXR0170H09

Date: 03.12.2025

03VE-VH9X-01

DRAFT - Inverted Representation



Original representation

Base: Black
Characters: Silver

Certification Summary Information Report

Manufacturer	BMW	**Manufacturer Code**	BMX
Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09
Certificate Number	--	**CARB Executive Order #**	--
Certificate Issue Date	--	**Certificate Revision Date**	--
Certificate Effective Date	--	**Conditional Certificate**	--
CSI Revision #	--	**CSI Submission/Revision Date**	02/12/2026 09:57:52 AM
Model Year	2027		

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Group Information

CSI Type	Update for Correction	**Running Change Reference Number**	--
GHG Exempt Status	Not Exempt		

Drive Sources and Fuel(s)

Drive Source #1: Combustion Engine

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Gasoline	Spark Ignition Direct fuel injection	No

Drive Source #2: Electric Motor

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Electricity	--	--

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Rechargeable Energy Storage System Indicator**	Yes
Multiple Fuel Combustion	--	**Off-board Charge Capable Indicator**	Yes
Fuel Cell Indicator	No	**EPA Vehicle Class**	LDV
Federal Clean Fuel Vehicle	No	**Federal Clean Fuel Vehicle Standard**	--
Federal Clean Fuel Vehicle ILEV	No	**California Partial Zero Emissions Vehicle Indicator**	No
Durability Group Name	VBMXHHGVNV39	**Durability Group Equivalency Factor**	1
Reduced Fee Test Group	No	**Certification Region Code(s)**	FA
Complies with HD GHG 2b/3 regulations?	No		
Introduction into Commerce Date	--	**CAP2000 Conditional Certificate?**	N/A
Independent Commercial Importer?	--	**Alternative Fuel Converter Certificate?**	--
SFTP Federal Composite Compliance Identifier	Tier 3	**SFTP Tier 2 Composite CO Option**	No
SFTP LEV-III Composite Compliance Indicator	No		
OBD Compliance Type	CARB	**OBD Demonstration Vehicle Test Group**	VBMXV04.4H9X
Test Group OBD Compliance Level	Partial - with deficiencies and penalty	**Number of Test Group OBD Deficiencies**	4
OBD Deficiencies Comments	E-26-025		
Mfr Test Group Comments	--		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Evaporative/Refueling Family Information

Evaporative Summary Information Type	New	**Submission/Correction Date**	11/20/2025 01:07:13 PM
Integrated ORVR?	No	**Fuel(s)**	Gasoline
Multiple Fuel Storage	--		
Bladder Fuel Tank?	No		
Fuel Tank Material	Metal	**Fuel Tank Material Description**	--
Fill Pipe Seal Type	Liquid seal		
Air Intake System Vapor Storage Device?	No	**Air Intake System Vapor Storage Device Description**	--
Fuel System Vapor Storage Canister?	Yes	**Other Vapor Storage**	--
Fuel System Vapor Storage Canister(s) Total Working Capacity (grams)	170	**Number of Primary Canisters**	1
Number of Bleed Canisters	0	**Bleed Canister Total Working Capacity (grams)**	--
Mfr Evaporative/Refueling Family Comments	non-integrated refueling system		

Leak Family Details

Leak Family Indicator	No		
Canister Bleed Test Indicator	No	**Applicability of Evaporative Canister Bleed Test**	--
Evaporative Canister Bleed Test Comments	--		
CARB Fuel Only (Rig) Test Indicator	No	**Applicability of CARB Fuel Only (Rig) Test**	--
CARB Fuel Only (Rig) Test Comments	--		

Models Covered by this Certificate

Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	- # of Gears	Trans - Lockup
BMW	1 - BMW	442 - M5 Touring	Federal	All Wheel Drive	Semi-Automatic	8	No
BMW	1 - BMW	360 - M5 Sedan	Federal	All Wheel Drive	Semi-Automatic	8	No

Engine Description

Hybrid Type	IC Engine/Electric Motor	**Hybrid Description**	--
Engine Type	4-Stroke Spark Ignition	**Mfr Engine Description**	--
Engine Block Arrangement	V-shaped engine	**Mfr Engine Block Arrangement Description**	--
Camless Valvetrain Indicator	No	**Oil Viscosity/Classification**	0W30
Number of Cylinders/Rotors	8	**Mechanically Variable Compression Ratio Indicator**	N

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

After Treatment Device(s) (ATD)

ATD Number	ATD Type	ATD Precious Metal	Substrate Material	Substrate Construction
1	Three-way catalyst	Palladium + Rhodium	Ceramic	Monolith
2	Three-way catalyst	Palladium + Rhodium	Ceramic	Monolith
3	Three-way catalyst	Palladium + Rhodium	Metal	Monolith
4	Three-way catalyst	Palladium + Rhodium	Metal	Monolith

Mfr After Treatment Device (ATD) Comments	--
Direct Ozone Reduction (DOR) Device	Not Equipped
Mfr Emission Control Device Comments	--

Engine Configuration Number 1

Engine Displacement (liters)	4.4	**Engine Rated Horsepower**	577
Number of Inlet Valves Per Cylinder	2	**Number of Exhaust Valves Per Cylinder**	2
Air Aspiration Method	Turbocharged	**Number of Air Aspiration Devices**	2
Air Aspiration Device Configuration	Parallel	**Charge Air Cooler Type**	Liquid
Air Aspiration Drive Method(s)	Mechanical		
Cylinder Deactivation	No		
Cylinder Deactivation Description	--		
Variable Valve Timing	Yes		
Variable Valve Timing System Description	variable valve timing at inlet and outlet valves		
Variable Valve Lift?	Yes		
Variable Valve Lift System Description	variable valve lift at inlet valves		
Number of Knock Sensors	4	**Number of Air/Fuel Sensors**	4
Air/Fuel Sensor # 1 Type	Heated oxygen	**Air/Fuel Sensor # 1 Description**	--
Air/Fuel Sensor # 2 Type	Air fuel	**Air/Fuel Sensor # 2 Description**	--
Air/Fuel Sensor # 3 Type	Heated oxygen	**Air/Fuel Sensor # 3 Description**	--
Air/Fuel Sensor # 4 Type	Air fuel	**Air/Fuel Sensor # 4 Description**	--
Mfr Air/Fuel Sensor Comments	--		
Exhaust Gas Recirculation	No	**Cooled Exhaust Gas Recirculation**	No
EGR Type	--	**Exhaust Gas Recirculation Description if 'Other'**	--
Closed Loop Air Injection System	No		
Air Injection Type	--	**Air Injection Type if 'Other'**	--
Mfr Engine Configuration Comments	--		

Certification Summary Information Report

Test Group	VBMXV04.4H9X	Evaporative/Refueling Family	VBMXR0170H09

Official Test Numbers

Test Group Fuel	FTP	US06	SC03	Cold CO	Highway	EPA City Litmus Value	EPA City Litmus Threshold	EPA Highway Litmus Value	EPA Highway Litmus Threshold	CREE Weighting Factor
Electricity	--	--	--	--	--	--	--	--	--	--
Gasoline	SBMX10087951	SBMX10087953	SBMX10087954	SBMX10087956	SBMX10087952	20.4	228.2	27.9	286.1	--

SFTP LEV-III Official Test Numbers

Test Group Fuel	FTP	US06	SC03
Gasoline	SBMX10087951	SBMX10087953	SBMX10087954

Official Charge Depleting Test Numbers

Test Group Fuel	UDDS	Highway
Electricity	SBMX10087991	SBMX10087992

Hybrid Electric Vehicle And Fuel Cell Information

Rechargable Energy Storage System	Battery(s)	**Rechargable Energy Storage System, if Other**	--
Battery Type	Lithium Ion	**Number of Battery Packs**	3
Total Voltage of Battery Packs	348	**Battery Energy Capacity**	63.5
Battery Specific Energy	108	**Battery Charger Type**	On-Board
Number of Capacitors	--	**Capacitor Rating (In Farads)**	--
Mfr Capacitor Comments	--		
Hydraulic System Description	--		
Regenerative Braking Type	Electrical Regen Brake		
Regenerative Braking Source	Both	**Driver Controlled Regenerative Braking**	Yes
Mfr Regenerative Braking Description	--		
Drive Motor(s)/Generator(s)	1		
Motor/Generator Type 1	(PMSM)	**Rated Motor/Generator Power**	145
Mfr Fuel Cell Description	--		
Fuel Cell On-Board H2 Storage Capacity (kg)	--	**Usable H2 Fill Capacity (kg)**	--
Mfr Hybrid Electric/ Electric Vehicle Comments	permanent magnet synchronous machine (PMSM)		

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Emission Data Vehicle Information

Vehicle ID / Configuration	9N82497 / 6	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	SBMXT04.4H09	**Original Evaporative/Refueling Family**	SBMXR0170H09
Original Test Vehicle Model Year	2025		

Vehicle Model

Represented Test Vehicle Make	BMW	**Represented Test Vehicle Model**	XM Label

Leak Family Details

Leak Family Identifier	--	**Leak Family Name**	--

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Electric Motor	Electricity
2	Combustion Engine	Gasoline

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	0	**Odometer Correction Factor**	1
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Miles		
Engine Code	XB1161T0G09X1	**Rated Horsepower**	577
Displacement (liters)	4.4		
Air Aspiration Method	Turbocharged	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	2	**Air Aspiration Device Configuration**	Parallel
Charge Air Cooler Type	Liquid	**Drive Mode While Testing**	All Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	6091	**Equivalent Test Weight (pounds)**	6500
GVWR (lbs)	7209	**N/V Ratio**	26.1
Axle Ratio	3.63		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	No	**Creeper Gear**	No

Dynamometer Coefficients:

	Target Coefficients			Set Coefficients			
Coefficient Category	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients**
City/Highway/Evap	83.7	-0.331	0.03912	17	-0.101	0.03348	22

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Emission Control Device Comments --

Manufacturer Test Vehicle Comments vi_9N82497_06_EVAP EDV_XM Label_A_ETW-6500_RG10_E10

Test #	**SBMX10084685**	**Test Procedure**	**23 - 2-day evap**
Exhaust Test # for this Evap Test	SBMX10084683	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	12/14/2023	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	39
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	7747	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	No		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
HC-TOTAL (Total Hydrocarbon)	0.15543	--
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.16787	--

Manufacturer Test Comments EVAP EDV - 2Day, XM Label

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC-TOTAL-EQUIV	0.1679	0.0150	0.183	0.500	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10084686**	**Test Procedure**	**34 - Federal fuel 3-day evap**
Exhaust Test # for this Evap Test	SBMX10084684	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	01/25/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	39
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	7871	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	No		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
HC-TOTAL (Total Hydrocarbon)	0.13265	--
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.14326	--

Manufacturer Test Comments EVAP EDV - 3Day, XM Label

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC-TOTAL-EQUIV	0.1433	0.0150	0.158	0.500	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10084687**	**Test Procedure**	**32 - Federal Fuel Running Loss**
Exhaust Test # for this Evap Test	SBMX10084684	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	01/25/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	39
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	7844	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	No		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
HC (Hydrocarbon for Running Loss and ORVR)	0.0002	--
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.0002	--

Manufacturer Test Comments EVAP EDV - RL, XM Label

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC-TOTAL-EQUIV	0.000	0.000	0.00	0.05	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10084688**	**Test Procedure**	**24 - Federal fuel refueling test (ORVR)**
Exhaust Test # for this Evap Test	SBMX10084683	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	01/10/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	39
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	7776	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	No		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
HC (Hydrocarbon for Running Loss and ORVR)	0.00714	--

Manufacturer Test Comments EVAP EDV, ORVR, XM Label

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC	0.007	0.028	0.04	0.20	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10084689**	**Test Procedure**	**67 - Leak Test - Port Near Canister**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	02/05/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	39
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	7926	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	--		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value
LEAK-DIA (Effective Leak Diameter (inches))	0	--

Manufacturer Test Comments EVAP EDV - Leak Test, XM Label

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	LEAK-DIA	0.000	0.0000	0.00	0.02	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Emission Data Vehicle Information

Vehicle ID / Configuration	CR43501 / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	SBMXV04.4H9X	**Original Evaporative/Refueling Family**	SBMXR0180H0F
Original Test Vehicle Model Year	2025		

Vehicle Model

Represented Test Vehicle Make	BMW	**Represented Test Vehicle Model**	M5 Touring

Leak Family Details

Leak Family Identifier	--	**Leak Family Name**	--

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Electric Motor	Electricity
2	Combustion Engine	Gasoline

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	0	**Odometer Correction Factor**	1
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Miles		
Engine Code	XB1161T0G99X	**Rated Horsepower**	577
Displacement (liters)	4.4		
Air Aspiration Method	Turbocharged	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	2	**Air Aspiration Device Configuration**	Parallel
Charge Air Cooler Type	Liquid	**Drive Mode While Testing**	All Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	5523	**Equivalent Test Weight (pounds)**	6000
GVWR (lbs)	6724	**N/V Ratio**	25.2
Axle Ratio	3.3		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	No	**Creeper Gear**	No

Certification Summary Information Report

Test Group	VBMXV04.4H9X	Evaporative/Refueling Family	VBMXR0170H09

Dynamometer Coefficients:

Coefficient Category	Target Coefficients A (lbf)	Target Coefficients B (lbf/mph)	Target Coefficients C (lbf/mph**2)	Set Coefficients A (lbf)	Set Coefficients B (lbf/mph)	Set Coefficients C (lbf/mph**2)	EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
City/Highway/Evap	80.8	-0.367	0.03006	18.8	-0.131	0.0237	18.3
Cold CO	88.9	-0.403	0.03307	-6.7	-0.094	0.0237	N/A
US06	80.8	-0.367	0.03006	18.8	-0.131	0.0237	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments vi_CR43501_00_EDV_M5 Touring_A_ETW-6000_RG10_E10_charge sustaining and charge depleting

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087951**	**Test Procedure**	**31 - Federal fuel 3-day exhaust**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	08/13/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	43
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2465	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	482.6404	--
FE BAG 1 (Bag 1 Fuel Economy)	17.8	17.8
CO2 BAG 2 (Bag 2 Carbon Dioxide)	343.5741	--
FE BAG 2 (Bag 2 Fuel Economy)	25.2	25.2
CO2 BAG 3 (Bag 3 Carbon Dioxide)	334.9811	--
FE BAG 3 (Bag 3 Fuel Economy)	25.8	25.8
CO2 BAG 4 (Bag 4 Carbon Dioxide)	299.1467	--
FE BAG 4 (Bag 4 Fuel Economy)	28.9	28.9
METHANE (CH4 - Methane)	0.00355	--
CO (Carbon Monoxide)	0.396	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.899	--
DT-EER (Drive Trace Energy Economy Rating)	-0.483	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-1.192	--
MFR FE (Manufacturer Fuel Economy)	24.2	24.2
NOX (Nitrogen Oxide)	0.00464	--
N2O (Nitrous Oxide)	0.00061	--
HC-NM (Non-methane Hydrocarbon)	0.00752	--
NMOG (Non-methane organic gases)	0.00827	--
PM (Particulate Matter)	0.000638	--
HC-TOTAL (Total Hydrocarbon)	0.0109	--

Certification Summary Information Report

Test Group	VBMXV04.4H9X	Evaporative/Refueling Family	VBMXR0170H09

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	358	999

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	356.8835	--

Manufacturer Test Comments 01_FTP_CR43501_00_EDV_M5 Touring_A_ETW-6000_RG10_Comfort_Comfort_Hybrid_sustaining

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Other	CREE	999	--	--	--	0.3	--	999	--	--
Fed	120,000 miles	Other	METHANE	0.0036	--	--	--	0.0025	--	0.006	0.030	Pass
Fed	120,000 miles	Other	N2O	0.0006	--	--	--	0.0002	--	0.001	0.010	Pass
Fed	150,000 miles	Other	CO	0.40	--	--	--	0.19	--	0.6	1.7	Pass
Fed	150,000 miles	Other	CO-COMP	0.52	--	--	--	--	--	0.5	4.2	Pass
Fed	150,000 miles	Other	NMOG	0.0083	--	1.10	--	0.0057	--	0.014	99.999	Pass
Fed	150,000 miles	Other	NMOG+NOX	0.0129	--	--	--	--	--	0.020	0.070	Pass
Fed	150,000 miles	Other	NMOG+NOX-COMP	0.0243	--	--	--	--	--	0.024	0.070	Pass
Fed	150,000 miles	Other	NOX	0.0046	--	--	--	0.0014	--	0.006	99.999	Pass
Fed	150,000 miles	Other	PM	0.0006	--	--	--	0.0004	--	0.001	0.003	Pass

NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087956**	**Test Procedure**	**11 - Cold CO**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	28 - Cold CO E10 Regular Gasoline (Tier 3)
Test Date	08/29/2024	**Fuel**	Gasoline
Fuel Batch ID	COE10	**Fuel Calibration Number**	56
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2945	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	722.3991	--
FE BAG 1 (Bag 1 Fuel Economy)	11.9	11.9
CO2 BAG 2 (Bag 2 Carbon Dioxide)	411.5901	--
FE BAG 2 (Bag 2 Fuel Economy)	20.9	20.9
CO2 BAG 3 (Bag 3 Carbon Dioxide)	576.8827	--
FE BAG 3 (Bag 3 Fuel Economy)	14.9	14.9
METHANE (CH4 - Methane)	0.00455	--
CO (Carbon Monoxide)	0.4012	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.548	--
DT-EER (Drive Trace Energy Economy Rating)	-0.409	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-0.87	--
MFR FE (Manufacturer Fuel Economy)	16.5	16.5
HC-NM (Non-methane Hydrocarbon)	0.01537	--
HC-TOTAL (Total Hydrocarbon)	0.01976	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	521.4995	--

Manufacturer Test Comments 06_FTPCOLD_CR43501_00_EDV_M5 Touring_A_ETW-6000_RG10_Comfort_Comfort_Hybrid_sustaining

Certification Summary Information Report

Test Group VBMXV04.4H9X **Evaporative/Refueling Family** VBMXR0170H09

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	50,000 miles	Other	CO	0.40	--	--	--	0.06	--	0.5	10.0	Pass
Fed	120,000 miles	Other	HC-NM	0.02	--	--	--	0.00	--	0.0	0.3	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087952**	**Test Procedure**	**3 - HWFE**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	08/13/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	43
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2479	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
METHANE (CH4 - Methane)	0	--
CO (Carbon Monoxide)	0.0502	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.491	--
DT-EER (Drive Trace Energy Economy Rating)	0.19	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.105	--
MFR FE (Manufacturer Fuel Economy)	30.2	30.2
NOX (Nitrogen Oxide)	0.00362	--
HC-NM (Non-methane Hydrocarbon)	0	--
NMOG (Non-methane organic gases)	0	--
HC-TOTAL (Total Hydrocarbon)	0	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	286	999

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	286.2604	--

Manufacturer Test Comments 02_HWFET_CR43501_00_EDV_M5 Touring_A_ETW-6000_RG10_Comfort_Comfort_Hybrid_sustaining

Certification Summary Information Report

Test Group VBMXV04.4H9X **Evaporative/Refueling Family** VBMXR0170H09

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Other	CREE	999	--	--	--	0.3	--	999	--	--
Fed	150,000 miles	Other	NMOG	0.0000	--	1.03	--	0.0057	--	0.006	99.999	Pass
Fed	150,000 miles	Other	NMOG+NOX	0.0036	--	--	--	--	--	0.011	0.070	Pass
Fed	150,000 miles	Other	NOX	0.0036	--	--	--	0.0014	--	0.005	99.999	Pass

NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087953**	**Test Procedure**	**90 - US06**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	08/13/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	43
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2500	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	616.4179	--
FE BAG 1 (Bag 1 Fuel Economy)	14	14
CO2 BAG 2 (Bag 2 Carbon Dioxide)	367.2412	--
FE BAG 2 (Bag 2 Fuel Economy)	23.5	23.5
METHANE (CH4 - Methane)	0.00158	--
CO (Carbon Monoxide)	0.3793	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-1.551	--
DT-EER (Drive Trace Energy Economy Rating)	-0.412	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-3.351	--
MFR FE (Manufacturer Fuel Economy)	20.4	20.4
NOX (Nitrogen Oxide)	0.00926	--
HC-NM (Non-methane Hydrocarbon)	0.00382	--
NMOG (Non-methane organic gases)	0.00393	--
PM (Particulate Matter)	0.001628	--
HC-TOTAL (Total Hydrocarbon)	0.00534	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	422.5572	--

Manufacturer Test Comments 03_US06_CR43501_00_EDV_M5 Touring_A_ETW-6000_RG10_Comfort_Comfort_Hybrid_sustaining

Certification Summary Information Report

Test Group VBMXV04.4H9X **Evaporative/Refueling Family** VBMXR0170H09

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Other	CO	0.38	--	--	--	0.19	--	0.6	999.9	Pass
Fed	150,000 miles	Other	NMOG	0.0039	--	1.03	--	0.0057	--	0.010	99.999	Pass
Fed	150,000 miles	Other	NOX	0.0093	--	--	--	0.0014	--	0.011	99.999	Pass
Fed	150,000 miles	Other	PM	0.0016	--	--	--	0.0004	--	0.002	0.006	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087954**	**Test Procedure**	**95 - SC03**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	09/23/2024	**Fuel**	Gasoline
Fuel Batch ID	T10/87	**Fuel Calibration Number**	43
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	3517	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
METHANE (CH4 - Methane)	0.0009	--
CO (Carbon Monoxide)	0.2162	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-2.441	--
DT-EER (Drive Trace Energy Economy Rating)	-0.323	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-2.018	--
MFR FE (Manufacturer Fuel Economy)	14.9	14.9
NOX (Nitrogen Oxide)	0.02361	--
HC-NM (Non-methane Hydrocarbon)	0.00078	--
NMOG (Non-methane organic gases)	0.0008	--
HC-TOTAL (Total Hydrocarbon)	0.00166	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	579.8468	--

Manufacturer Test Comments 04_SC03_CR43501_00_EDV_M5 Touring_A_ETW-6000_RG10_Comfort_Comfort_Hybrid_sustaining

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Other	CO	0.22	--	--	--	0.19	--	0.4	999.9	Pass
Fed	150,000 miles	Other	NMOG	0.0008	--	1.03	--	0.0057	--	0.006	999.999	Pass
Fed	150,000 miles	Other	NOX	0.0236	--	--	--	0.0014	--	0.025	999.999	Pass

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Emission Data Vehicle Information

Vehicle ID / Configuration	CR43501 / 3	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	SBMXV04.4H9X	**Original Evaporative/Refueling Family**	SBMXR0180H0F
Original Test Vehicle Model Year	2025		

Vehicle Model

Represented Test Vehicle Make	BMW	**Represented Test Vehicle Model**	M5 Touring

Leak Family Details

Leak Family Identifier	--	**Leak Family Name**	--

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Combustion Engine	Gasoline
2	Electric Motor	Electricity

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	0	**Odometer Correction Factor**	1
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Miles		
Engine Code	XB1161T0G99X	**Rated Horsepower**	577
Displacement (liters)	4.4		
Air Aspiration Method	Turbocharged	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	2	**Air Aspiration Device Configuration**	Parallel
Charge Air Cooler Type	Liquid	**Drive Mode While Testing**	All Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	5523	**Equivalent Test Weight (pounds)**	6000
GVWR (lbs)	6724	**N/V Ratio**	25.2
Axle Ratio	3.3		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	No	**Creeper Gear**	No

Certification Summary Information Report

Test Group	VBMXV04.4H9X	Evaporative/Refueling Family	VBMXR0170H09

Dynamometer Coefficients:

Coefficient Category	Target Coefficients A (lbf)	Target Coefficients B (lbf/mph)	Target Coefficients C (lbf/mph**2)	Set Coefficients A (lbf)	Set Coefficients B (lbf/mph)	Set Coefficients C (lbf/mph**2)	EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
City/Highway/Evap	80.8	-0.367	0.03006	18.8	-0.131	0.0237	18.3
Cold CO	88.9	-0.403	0.03307	-6.7	-0.094	0.0237	N/A
US06	80.8	-0.367	0.03006	18.8	-0.131	0.0237	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments vi_CR43501_03_FEDV_M5 Touring_A_ETW-6000_RG11_E0_worst case_charge sustaining and charge depleting

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10088003**	**Test Procedure**	**31 - Federal fuel 3-day exhaust**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	09/19/2024	**Fuel**	Gasoline
Fuel Batch ID	T2/E0	**Fuel Calibration Number**	54
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	3413	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	1039.9293	--
FE BAG 1 (Bag 1 Fuel Economy)	8.4	8.4
CO2 BAG 2 (Bag 2 Carbon Dioxide)	829.5395	--
FE BAG 2 (Bag 2 Fuel Economy)	10.5	10.5
CO2 BAG 3 (Bag 3 Carbon Dioxide)	639.5899	--
FE BAG 3 (Bag 3 Fuel Economy)	13.6	13.6
CO2 BAG 4 (Bag 4 Carbon Dioxide)	748.5303	--
FE BAG 4 (Bag 4 Fuel Economy)	11.7	11.7
METHANE (CH4 - Methane)	0.00359	--
CO (Carbon Monoxide)	0.5988	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.256	--
DT-EER (Drive Trace Energy Economy Rating)	-0.037	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-0.46	--
MFR FE (Manufacturer Fuel Economy)	10.9	10.9
NOX (Nitrogen Oxide)	0.00826	--
N2O (Nitrous Oxide)	0.00144	--
HC-NM (Non-methane Hydrocarbon)	0.00695	--
NMOG (Non-methane organic gases)	0.00723	--
HC-TOTAL (Total Hydrocarbon)	0.00983	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	798	798

Certification Summary Information Report

Test Group VBMXV04.4H9X **Evaporative/Refueling Family** VBMXR0170H09

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	796.9418	--

Manufacturer Test Comments 01_FTP_CR43501_03_FEDV_M5 Touring_A_ETW-6000_RG11_Sport+_Sport+_Hybrid_sustaining

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Other	CREE	798	--	--	--	0.3	--	798	--	--
Fed	120,000 miles	Other	METHANE	0.0036	--	--	--	0.0025	--	0.006	0.030	Pass
Fed	120,000 miles	Other	N2O	0.0014	--	--	--	0.0002	--	0.002	0.010	Pass
Fed	150,000 miles	Other	CO	0.60	--	--	--	0.19	--	0.8	1.7	Pass
Fed	150,000 miles	Other	NMOG	0.0072	--	1.10	--	0.0057	--	0.013	99.999	Pass
Fed	150,000 miles	Other	NMOG+NOX	0.0155	--	--	--	--	--	0.023	0.070	Pass
Fed	150,000 miles	Other	NOX	0.0083	--	--	--	0.0014	--	0.010	99.999	Pass

NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10088005**	**Test Procedure**	**3 - HWFE**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	08/27/2024	**Fuel**	Gasoline
Fuel Batch ID	T2/E0	**Fuel Calibration Number**	54
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2872	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
METHANE (CH4 - Methane)	0.00587	--
CO (Carbon Monoxide)	0.3271	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-1.733	--
DT-EER (Drive Trace Energy Economy Rating)	-0.335	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-2.125	--
MFR FE (Manufacturer Fuel Economy)	19.3	19.3
NOX (Nitrogen Oxide)	0.00387	--
HC-NM (Non-methane Hydrocarbon)	0.00514	--
NMOG (Non-methane organic gases)	0.00529	--
HC-TOTAL (Total Hydrocarbon)	0.01077	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	454	454

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	452.9676	--

Manufacturer Test Comments 02_HWFET_CR43501_03_FEDV_M5 Touring_A_ETW-6000_RG11_Sport+_Sport+_Hybrid_sustaining

Certification Summary Information Report

Test Group VBMXV04.4H9X **Evaporative/Refueling Family** VBMXR0170H09

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Other	CREE	454	--	--	--	0.3	--	454	--	--
Fed	150,000 miles	Other	NMOG	0.0053	--	1.03	--	0.0057	--	0.011	99.999	Pass
Fed	150,000 miles	Other	NMOG+NOX	0.0092	--	--	--	--	--	0.016	0.070	Pass
Fed	150,000 miles	Other	NOX	0.0039	--	--	--	0.0014	--	0.005	99.999	Pass

NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087991**	**Test Procedure**	**81 - Charge Depleting UDDS**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	09/04/2024	**Fuel**	N/A
Fuel Batch ID	T2/E0	**Fuel Calibration Number**	54
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	3120	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

PHEV/EV Charge Depleting Test Information

Recharge Event Voltage	230	**Recharge Event Energy (kiloWatt-hours)**	16.766
Charge Depleting Range (Calculated miles)	32.952	**Charge Depleting Range (Actual miles)**	36.451
Charge Depleting Range Highway (Calculated miles)	--	**Derived 5-Cycle Coefficient Model Year**	2017
All Electric Range Unadjusted (miles)	32.952	**Equivalent All Electric Range (miles)**	36.451
Number of Charge Depleting Bags/Phases Conducted	8	**Transition Bag/Phase Number**	5

Charge Depleting Bag/Phase #1

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.432
Average System Voltage	394.5
CH4 - Methane	0.00016
Carbon Monoxide	0.0008
Carbon dioxide	0.192
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.859
Drive Trace Energy Economy Rating	-0.503
Drive Trace Inertia Work Ratio Rating	-1.507
Integrated Amp-hours	7.97
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Nitrous Oxide	0.0002
Non-methane Hydrocarbon	0.00007
Non-methane organic gases	0.0001
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	0
System End State of Charge Watt-hours	7.97
System Start State of Charge Watt-hours	0
Total Hydrocarbon	0.00022

Charge Depleting Bag/Phase #2

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.442
Average System Voltage	384.38
CH4 - Methane	0.00056
Carbon Monoxide	0
Carbon dioxide	0.1877
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.616
Drive Trace Energy Economy Rating	-0.292
Drive Trace Inertia Work Ratio Rating	-1.272
Integrated Amp-hours	15.773
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Nitrous Oxide	0.00015
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	0
System End State of Charge Watt-hours	15.773
System Start State of Charge Watt-hours	7.97
Total Hydrocarbon	0

Charge Depleting Bag/Phase #3

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.448
Average System Voltage	373
CH4 - Methane	0.00046
Carbon Monoxide	0.0013
Carbon dioxide	0.2203
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.404
Drive Trace Energy Economy Rating	-0.381
Drive Trace Inertia Work Ratio Rating	-0.742
Integrated Amp-hours	23.7
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Nitrous Oxide	0
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	0
System End State of Charge Watt-hours	23.7
System Start State of Charge Watt-hours	15.773
Total Hydrocarbon	0

Charge Depleting Bag/Phase #4

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.436
Average System Voltage	361.63
CH4 - Methane	0.00044
Carbon Monoxide	0
Carbon dioxide	0.1352
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.825
Drive Trace Energy Economy Rating	-0.369
Drive Trace Inertia Work Ratio Rating	-1.313
Integrated Amp-hours	31.82
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Nitrous Oxide	0
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	0
System End State of Charge Watt-hours	31.82
System Start State of Charge Watt-hours	23.7
Total Hydrocarbon	0

Charge Depleting Bag/Phase #5

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.437
Average System Voltage	351.25
CH4 - Methane	0.00648
Carbon Monoxide	0.3038
Carbon dioxide	88.5368
Carbon-Related Exhaust Emissions	90
Drive Trace Absolute Speed Change Rating	-1.394
Drive Trace Energy Economy Rating	-0.583
Drive Trace Inertia Work Ratio Rating	-2.1
Integrated Amp-hours	39.126
Manufacturer Fuel Economy	98.1
Nitrogen Oxide	0.00162
Nitrous Oxide	0.00059
Non-methane Hydrocarbon	0.02255
Non-methane organic gases	0.0234
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	90
System End State of Charge Watt-hours	39.126
System Start State of Charge Watt-hours	31.82
Total Hydrocarbon	0.02886

Charge Depleting Bag/Phase #6

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.443
Average System Voltage	348.38
CH4 - Methane	0.00208
Carbon Monoxide	0.1993
Carbon dioxide	378.0899
Carbon-Related Exhaust Emissions	378
Drive Trace Absolute Speed Change Rating	-0.609
Drive Trace Energy Economy Rating	-0.178
Drive Trace Inertia Work Ratio Rating	-1.222
Integrated Amp-hours	38.595
Manufacturer Fuel Economy	23.1
Nitrogen Oxide	0.00604
Nitrous Oxide	0.00014
Non-methane Hydrocarbon	0.00249
Non-methane organic gases	0.0026
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	378
System End State of Charge Watt-hours	38.595
System Start State of Charge Watt-hours	39.126
Total Hydrocarbon	0.00452

Charge Depleting Bag/Phase #7

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.442
Average System Voltage	349.63
CH4 - Methane	0.00094
Carbon Monoxide	0.2544
Carbon dioxide	395.3207
Carbon-Related Exhaust Emissions	395
Drive Trace Absolute Speed Change Rating	-0.894
Drive Trace Energy Economy Rating	-0.703
Drive Trace Inertia Work Ratio Rating	-1.441
Integrated Amp-hours	37.595
Manufacturer Fuel Economy	22.1
Nitrogen Oxide	0.00824
Nitrous Oxide	0
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	395
System End State of Charge Watt-hours	37.595
System Start State of Charge Watt-hours	38.595
Total Hydrocarbon	0

Charge Depleting Bag/Phase #8

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.452
Average System Voltage	348.75
CH4 - Methane	0.00064
Carbon Monoxide	0.1
Carbon dioxide	295.66
Carbon-Related Exhaust Emissions	296
Drive Trace Absolute Speed Change Rating	-0.149
Drive Trace Energy Economy Rating	-0.091
Drive Trace Inertia Work Ratio Rating	-0.439
Integrated Amp-hours	39.356
Manufacturer Fuel Economy	29.6
Nitrogen Oxide	0.01204
Nitrous Oxide	0.00162
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
Optional Carbon-Related Exhaust Emissions	296
System End State of Charge Watt-hours	39.356
System Start State of Charge Watt-hours	37.595
Total Hydrocarbon	0

Manufacturer Test Comments 01_FTP_CR43501_03_FEDV_M5 Touring_A_ETW-6000_RG11_D1_Comfort_Hybrid_depleting, Cycle 1-4 in CD mode, cycle 5 in transition mode, cycle 6-8 in CS mode based on 1% NEC tolerance

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test #	**SBMX10087992**	**Test Procedure**	**84 - Charge Depleting Highway**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	09/06/2024	**Fuel**	N/A
Fuel Batch ID	T2/E0	**Fuel Calibration Number**	54
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	EETZ Emissions Lab		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	3179	**Odometer Units**	M
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

PHEV/EV Charge Depleting Test Information

Recharge Event Voltage	230	**Recharge Event Energy (kiloWatt-hours)**	14.849
Charge Depleting Range (Calculated miles)	36.163	**Charge Depleting Range (Actual miles)**	35.858
Charge Depleting Range Highway (Calculated miles)	--	**Derived 5-Cycle Coefficient Model Year**	2017
All Electric Range Unadjusted (miles)	36.163	**Equivalent All Electric Range (miles)**	35.858
Number of Charge Depleting Bags/Phases Conducted	5	**Transition Bag/Phase Number**	4

Charge Depleting Bag/Phase #1

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.258
Average System Voltage	392.38
CH4 - Methane	0.00011
Carbon Monoxide	0
Carbon dioxide	0.0328
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-10.171
Drive Trace Energy Economy Rating	-1.396
Drive Trace Inertia Work Ratio Rating	-12.31
Integrated Amp-hours	10.127
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Non-methane Hydrocarbon	0.00007
Non-methane organic gases	0.0001
Non-methane organic gases plus Nitrogen Oxides	999.999
System End State of Charge Watt-hours	10.127
System Start State of Charge Watt-hours	0
Total Hydrocarbon	0.00018

Charge Depleting Bag/Phase #2

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.275
Average System Voltage	378.63
CH4 - Methane	0.0002
Carbon Monoxide	0.0007
Carbon dioxide	0.0451
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-7.081
Drive Trace Energy Economy Rating	-1.075
Drive Trace Inertia Work Ratio Rating	-8.409
Integrated Amp-hours	19.914
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
System End State of Charge Watt-hours	19.914
System Start State of Charge Watt-hours	10.127
Total Hydrocarbon	0

Charge Depleting Bag/Phase #3

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.249
Average System Voltage	364.25
CH4 - Methane	0.00007
Carbon Monoxide	0.0003
Carbon dioxide	0.0507
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-6.542
Drive Trace Energy Economy Rating	-1.266
Drive Trace Inertia Work Ratio Rating	-7.758
Integrated Amp-hours	29.862
Manufacturer Fuel Economy	0
Nitrogen Oxide	0
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
System End State of Charge Watt-hours	29.862
System Start State of Charge Watt-hours	19.914
Total Hydrocarbon	0

Charge Depleting Bag/Phase #4

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.254
Average System Voltage	355.5
CH4 - Methane	0.00254
Carbon Monoxide	0.1825
Carbon dioxide	172.8386
Carbon-Related Exhaust Emissions	173
Drive Trace Absolute Speed Change Rating	-1.608
Drive Trace Energy Economy Rating	-0.523
Drive Trace Inertia Work Ratio Rating	-1.862
Integrated Amp-hours	34.786
Manufacturer Fuel Economy	50.5
Nitrogen Oxide	0.00198
Non-methane Hydrocarbon	0.00987
Non-methane organic gases	0.0102
Non-methane organic gases plus Nitrogen Oxides	999.999
System End State of Charge Watt-hours	34.786
System Start State of Charge Watt-hours	29.862
Total Hydrocarbon	0.01234

Charge Depleting Bag/Phase #5

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.25
Average System Voltage	353.38
CH4 - Methane	0
Carbon Monoxide	0.0368
Carbon dioxide	286.2821
Carbon-Related Exhaust Emissions	286
Drive Trace Absolute Speed Change Rating	-3.069
Drive Trace Energy Economy Rating	-0.249
Drive Trace Inertia Work Ratio Rating	-3.861
Integrated Amp-hours	34.651
Manufacturer Fuel Economy	30.5
Nitrogen Oxide	0.00461
Non-methane Hydrocarbon	0
Non-methane organic gases	0
Non-methane organic gases plus Nitrogen Oxides	999.999
System End State of Charge Watt-hours	34.651
System Start State of Charge Watt-hours	34.786
Total Hydrocarbon	0

Manufacturer Test Comments 02_HWFET_CR43501_03_FEDV_M5 Touring_A_ETW-6000_RG11_Comfort_Comfort_Hybrid_depleting, Cycle 1-3 in CD mode, Cycle 4 in transition mode, Cycle 5 in CS mode based on 1% NEC tolerance

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Fuel Properties

Fuel Batch ID	**T10/87**	**Fuel Calibration Number**	**43**
Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)	**Fuel Batch Calibration Date**	11/27/2023
Fuel Batch Calibration Effective Date	02/27/2024	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	0.827	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.746
Fuel Ethanol Volume Percent (%)	9.8	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	17962
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	**Fuel Carbon Mass Fraction (E10)**	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.827	**Weight Fraction CO2**	--

Fuel Batch ID	**COE10**	**Fuel Calibration Number**	**56**
Test Fuel Type	28 - Cold CO E10 Regular Gasoline (Tier 3)	**Fuel Batch Calibration Date**	05/17/2024
Fuel Batch Calibration Effective Date	07/30/2024	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	0.826	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.744
Fuel Ethanol Volume Percent (%)	9.8	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	18001
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	**Fuel Carbon Mass Fraction (E10)**	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.826	**Weight Fraction CO2**	--

Fuel Batch ID	**T2/E0**	**Fuel Calibration Number**	**54**
Test Fuel Type	61 - Tier 2 Cert Gasoline	**Fuel Batch Calibration Date**	05/14/2024
Fuel Batch Calibration Effective Date	05/06/2024	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	0.861	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.736
Fuel Ethanol Volume Percent (%)	--	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	18736
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	**Fuel Carbon Mass Fraction (E10)**	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.861	**Weight Fraction CO2**	--

Fuel Batch ID	**T10/87**	**Fuel Calibration Number**	**39**
Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)	**Fuel Batch Calibration Date**	08/25/2023
Fuel Batch Calibration Effective Date	11/09/2023	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09
Exhaust Carbon Weight Fraction	0.826	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.742
Fuel Ethanol Volume Percent (%)	9.6	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	18000
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	**Fuel Carbon Mass Fraction (E10)**	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.826	**Weight Fraction CO2**	--

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Consolidated List of Standards

Exhaust Standards

Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDV/Passenger Car	**Standard Level**	Other
Fuel	Gasoline	**Test Procedure**	Federal fuel 2-day exhaust (w/can load)

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	--	0.3	999
120,000 miles	METHANE	--	--	--	--	--	--	0.0025	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.0002	0.010
150,000 miles	CO	--	--	--	--	--	--	0.19	1.7
150,000 miles	CO-COMP	--	--	--	--	--	--	--	4.2
150,000 miles	HCHO	--	--	--	--	--	--	--	0.004
150,000 miles	NMOG	--	--	1.10	--	--	--	0.0057	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	1	--	0.070
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	--	0.070
150,000 miles	NOX	--	--	--	--	--	--	0.0014	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0004	0.003

Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDV/Passenger Car	**Standard Level**	Other
Fuel	Gasoline	**Test Procedure**	HWFE

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	--	0.3	99.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0057	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	1	--	0.070
150,000 miles	NOX	--	--	--	--	--	--	0.0014	99.999

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09

Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDV/Passenger Car	**Standard Level**	Other
Fuel	Gasoline	**Test Procedure**	US06

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.19	999.9
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0057	99.999
150,000 miles	NOX	--	--	--	--	--	--	0.0014	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0004	0.006

Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDV/Passenger Car	**Standard Level**	Other
Fuel	Gasoline	**Test Procedure**	Federal fuel 3-day exhaust

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	--	0.3	999
120,000 miles	METHANE	--	--	--	--	--	--	0.0025	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.0002	0.010
150,000 miles	CO	--	--	--	--	--	--	0.19	1.7
150,000 miles	CO-COMP	--	--	--	--	--	--	--	4.2
150,000 miles	HCHO	--	--	--	--	--	--	--	0.004
150,000 miles	NMOG	--	--	1.10	--	--	--	0.0057	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	1	--	0.070
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	--	0.070
150,000 miles	NOX	--	--	--	--	--	--	0.0014	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0004	0.003

Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDV/Passenger Car	**Standard Level**	Other
Fuel	Gasoline	**Test Procedure**	Cold CO

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
50,000 miles	CO	--	--	--	--	--	--	0.06	10.0
120,000 miles	HC-NM	--	--	--	--	--	--	0.00	0.3

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09
Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDV/Passenger Car	**Standard Level**	Other
Fuel	Gasoline	**Test Procedure**	SC03

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.19	999.9
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0057	999.999
150,000 miles	NOX	--	--	--	--	--	--	0.0014	999.999

Evaporative/Refueling Standards

Evaporative/Refueling Family	VBMXR0170H09	**Cert Region**	Federal
Cert/In-Use Code	Cert	**Standard Level**	Federal Tier 3 Evap
Test Procedure	Federal fuel refueling test (ORVR)		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC	--	0.20	0.028

Evaporative/Refueling Family	VBMXR0170H09	**Cert Region**	Federal
Cert/In-Use Code	Cert	**Standard Level**	Federal Tier 3 Evap
Test Procedure	2-day evap		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.500	0.0150

Evaporative/Refueling Family	VBMXR0170H09	**Cert Region**	Federal
Cert/In-Use Code	Cert	**Standard Level**	Federal Tier 3 Evap
Test Procedure	Federal Fuel Running Loss		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.05	0.000

Evaporative/Refueling Family	VBMXR0170H09	**Cert Region**	Federal
Cert/In-Use Code	Cert	**Standard Level**	Federal Tier 3 Evap
Test Procedure	Federal fuel 3-day evap		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.500	0.0150

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09
Evaporative/Refueling Family	VBMXR0170H09	**Cert Region**	Federal
Cert/In-Use Code	Cert	**Standard Level**	Federal Tier 3 Evap
Test Procedure	Leak Test - Port Near Canister		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	LEAK-DIA	--	0.02	0.0000

Certification Summary Information Report

Test Group	VBMXV04.4H9X	Evaporative/Refueling Family	VBMXR0170H09

Glossary

Useful Life

4	4,000 miles	120	120,000 miles
50	50,000 miles	150	150,000 miles
100	100,000 miles		

Emission Name

HC-TOTAL	Total Hydrocarbon	AS-VOLT	Average System Voltage
CO	Carbon Monoxide	CO2 BAG 1	Bag 1 Carbon Dioxide
CO2	Carbon dioxide	CO2 BAG 2	Bag 2 Carbon Dioxide
CREE	Carbon-Related Exhaust Emissions	CO2 BAG 3	Bag 3 Carbon Dioxide
OPT-CREE	Optional Carbon-Related Exhaust Emissions	CO2 BAG 4	Bag 4 Carbon Dioxide
NOX	Nitrogen Oxide	NMOG+NOX	Non-methane organic gases plus Nitrogen Oxides
PM	Particulate Matter	NMOG+NOX-COMP	SFTP Composite Non-methane Organic Gases + Nitrogen Oxides
PM-COMP	SFTP Composite Particulate Matter	DT-IWRR	Drive Trace Inertia Work Ratio Rating
HC-NM	Non-methane Hydrocarbon	DT-ASCR	Drive Trace Absolute Speed Change Rating
OMHCE	Organic material Hydrocarbon Equivalent	DT-EER	Drive Trace Energy Economy Rating
OMNMHCE	Organic material non-methane HC equivalent	COMB-CREE	Combined Carbon-Related Exhaust Emissions
NMOG	Non-methane organic gases	COMB-OPT-CREE	Combined Optional Carbon-Related Exhaust Emissions
HCHO	Formaldehyde	HC-TOTAL-EQUIV	Total Hydrocarbon equivalent - Evap only
H3C2HO	Acetaldehyde	METHANE-COMB	Combined CH4 for HD 2b/3 vehicles only
HC-NM+NOX	SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03	N2O-COMB	Combined Nitrous Oxide for HD 2b/3 vehicles only
HC-NM+NOX-COMP	SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides	LEAK-DIA	Effective Leak Diameter (inches)
CO-COMP	SFTP Composite Carbon Monoxide	LEAK-GAS CAP	Gas Cap Leakage (cc/min)
ETHANOL	C2H5OH - Ethanol	CO2-COMB	Combined Carbon Dioxide for HD 2b/3 Vehicles Only
FE BAG 1	Bag 1 Fuel Economy	KW-HRS	Integrated DC KW-HRS
FE BAG 2	Bag 2 Fuel Economy	CH4 BAG 1	Bag 1 Methane
FE BAG 3	Bag 3 Fuel Economy	CH4 BAG 2	Bag 2 Methane
FE BAG 4	Bag 4 Fuel Economy	CH4 BAG 3	Bag 3 Methane
MFR FE	Manufacturer Fuel Economy	CH4 BAG 4	Bag 4 Methane
HC	Hydrocarbon for Running Loss and ORVR	CO BAG 1	Bag 1 Carbon Monoxide
METHANE	CH4 - Methane	CO BAG 2	Bag 2 Carbon Monoxide
METHANOL	CH3OH - Methanol	CO BAG 3	Bag 3 Carbon Monoxide
N2O	Nitrous Oxide	CO BAG 4	Bag 4 Carbon Monoxide
SPITBACK	Spitback Hydrocarbon in grams	NMOG BAG 1	Bag 1 Non-methane organic gases
AMP-HRS	Integrated Amp-hours	NMOG BAG 2	Bag 2 Non-methane organic gases
START-SOC	System Start State of Charge Watt-hours	NMOG BAG 3	Bag 3 Non-methane organic gases
END-SOC	System End State of Charge Watt-hours	NMOG BAG 4	Bag 4 Non-methane organic gases
ACT-DISTANCE	Actual Distance Driven (miles)		

Certification Region

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09
CA	California + CAA Section 177 states	FA	Federal
Exhaust Emission Standard Level			
B1	Federal Tier 2 Bin 1	T3B160	Federal Tier 3 Bin 160
B2	Federal Tier 2 Bin 2	T3B125	Federal Tier 3 Bin 125
B3	Federal Tier 2 Bin 3	T3B110	Federal Tier 3 Transitional Bin 110
B4	Federal Tier 2 Bin 4	T3B85	Federal Tier 3 Transitional Bin 85
B5	Federal Tier 2 Bin 5	T3SULEV30	Federal Tier 3 Transitional LEV-II SULEV30 Carryover
B6	Federal Tier 2 Bin 6	T3B70	Federal Tier 3 Bin 70
B7	Federal Tier 2 Bin 7	T3B50	Federal Tier 3 Bin 50
B8	Federal Tier 2 Bin 8	T3B30	Federal Tier 3 Bin 30
B9	Federal Tier 2 Bin 9	T3B20	Federal Tier 3 Bin 20
B10	Federal Tier 2 Bin 10	T3B0	Federal Tier 3 Bin 0
B11	Federal Tier 2 Bin 11	HDV2B395	Federal Tier 3 HD Class 2b Transitional Bin 395
HDV1	HDV1 (Federal HD chassis Class 2b GVW 8501-10000)	HDV2B340	Federal Tier 3 HD Class 2b Transitional Bin 340
HDV2	HDV2 (Federal HD chassis Class 3 GVW 10001-14000)	HDV2B250	Federal Tier 3 HD Class 2b Bin 250
L2	California LEV-II LEV	HDV2B200	Federal Tier 3 HD Class 2b Bin 200
L2OP	California LEV-II LEV Optional	HDV2B170	Federal Tier 3 HD Class 2b Bin 170
U2	California LEV-II ULEV	HDV2B150	Federal Tier 3 HD Class 2b Bin 150
S2	California LEV-II SULEV	HDV2B0	Federal Tier 3 HD Class 2b Bin 0
ZEV	California ZEV	HDV3B630	Federal Tier 3 HD Class 3 Transitional Bin 630
OT	Other	HDV3B570	Federal Tier 3 HD Class 3 Transitional Bin 570
T1	Federal Tier 1	HDV3B400	Federal Tier 3 HD Class 3 Bin 400
PZEV	California PZEV	HDV3B270	Federal Tier 3 HD Class 3 Bin 270
L2LEV160	California LEV-II LEV160	HDV3B230	Federal Tier 3 HD Class 3 Bin 230
L2ULEV125	California LEV-II ULEV125	HDV3B200	Federal Tier 3 HD Class 3 Bin 200
L2SULEV30	California LEV-II SULEV30	HDV3B0	Federal Tier 3 HD Class 3 Bin 0
L2LEV395	California LEV-II LEV395	L4SULEV100	California LEV-IV SULEV100
L2ULEV340	California LEV-II ULEV340	L4SULEV125	California LEV-IV SULEV125
L2LEV630	California LEV-II LEV630	L4SULEV15	California LEV-IV SULEV15
L2ULEV570	California LEV-II ULEV570	L4SULEV150	California LEV-IV SULEV150
L3LEV160	California LEV-III LEV160	L4SULEV170	California LEV-IV SULEV170
L3ULEV125	California LEV-III ULEV125	L4SULEV175	California LEV-IV SULEV175
L3ULEV70	California LEV-III ULEV70	L4SULEV20	California LEV-IV SULEV20
L3ULEV50	California LEV-III ULEV50	L4SULEV200	California LEV-IV SULEV200
L3SULEV30	California LEV-III SULEV30	L4SULEV230	California LEV-IV SULEV230
L3SULEV20	California LEV-III SULEV20	L4SULEV25	California LEV-IV SULEV25
L3LEV395	California LEV-III LEV395	L4SULEV30	California LEV-IV SULEV30
L3ULEV340	California LEV-III ULEV340	L4SULEV75	California LEV-IV SULEV75
L3ULEV250	California LEV-III ULEV250	L4SULEV85	California LEV-IV SULEV85
L3ULEV200	California LEV-III ULEV200	L4ULEV125	California LEV-IV ULEV125

Certification Summary Information Report

Test Group	VBMXV04.4H9X	**Evaporative/Refueling Family**	VBMXR0170H09
L3SULEV170	California LEV-III SULEV170	L4ULEV200	California LEV-IV ULEV200
L3SULEV150	California LEV-III SULEV150	L4ULEV250	California LEV-IV ULEV250
L3LEV630	California LEV-III LEV630	L4ULEV270	California LEV-IV ULEV270
L3ULEV570	California LEV-III ULEV570	L4ULEV40	California LEV-IV ULEV40
L3ULEV400	California LEV-III ULEV400	L4ULEV400	California LEV-IV ULEV400
L3ULEV270	California LEV-III ULEV270	L4ULEV50	California LEV-IV ULEV50
L3SULEV230	California LEV-III SULEV230	L4ULEV60	California LEV-IV ULEV60
L3SULEV200	California LEV-III SULEV200	L4ULEV70	California LEV-IV ULEV70

Transmission Type Code			
AMS	Automated Manual- Selectable (e.g. Automated Manual with paddles)	M	Manual
A	Automatic	OT	Other
AM	Automated Manual	SA	Semi-Automatic
CVT	Continuously Variable	SCV	Selectable Continuously Variable (e.g. CVT with paddles)

Drive System Code			
4	4-Wheel Drive	P	Part-time 4-Wheel Drive
F	2-Wheel Drive, Front	A	All Wheel Drive
R	2-Wheel Drive, Rear		

Additional Terms and Acronyms			
AFC	Alternative Fuel Converter	ICI	Independent Commercial Importer
CSI	Certificate Summary Information	ORVR	Onboard Refueling Vapor Recovery
DF	Deterioration Factor	SIL	Shift Indicator Light
Evap	Evaporation, Evaporative	Trans	Transmission