

MOBILE SOURCE CERTIFICATION AND COMPLIANCE FEE PAYMENT FORM FOR ON-ROAD APPLICATIONS ONLY

CARB USE ONLY

Invoice Name	MSF250703-1
Invoice Date	Feb 09, 2026

COMPANY INFORMATION

Company Name	Volvo Car USA LLC
Address	270 THREE POINT DRIVE
City	RIDGEVILLE
State	SC
Zip	29472
Country	United States
Contact Name	Bryant Lowry
Contact Telephone Number	8432763791
Contact Email	bryant.lowry@volvocars.com
CARB Customer Number	CCAM000086

APPLICATION INFORMATION

Row Number	Previous Unique Application Identifier	Previously Selected Category Type	Previously Selected Fee Type	Paid Amount	Corrected Unique Application Identifier	Corrected Category Type	Corrected Fee Type	Corrected Amount	Amount Due
1	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	\$ 0.00
2	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	\$ 0.00
3	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Carry-Over	\$ 12,577.00	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	\$ 37,732.00
4	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
5	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
6	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
		Light-duty vehicle test group and				Light-duty vehicle test group and			

7	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
8	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
9	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00

Total Invoice (MSF250703) Paid	\$ 188,657.00
--------------------------------	---------------

Total Corrected	\$ 226,389.00
-----------------	---------------

Total Due	\$ 37,732.00
-----------	--------------

Notes

Changed fee type for UID VVXT02.0S30 from Carry-Over to Base Fee.

I, Bryant Lowry
Bryant Lowry (Feb 9, 2025 08:16:50 EST)

_, attest that any information provided is true, accurate, and complete.

(Responsible Party Signature Here)

Application for Certification – Part 1

2027 Model Year

Test Group	Applicable Standards	Certification Summary Information
VVVXT02.0S30	Calif: Exhaust: LEV III – SULEV30 Evap: LEV III Fed: Exhaust: Interim Tier 4 Bin 30 Evap: Tier 4	VVVXT02.0S30- VVVXR0142E50 (XC90 AWD)

Durability Group:
VVVXGPGNNN05

Evap. Families:
VVVXR0142E50 (XC90 AWD)

Durability Group Description:
Four Stroke, Otto cycle, Gasoline Fueled, DFI
Ceramic Monolith Pd/Rh Closed Coupled Catalyst

Test Group Description:
2.0 Liter, I-4, LDT

Carlines Covered:
XC90

Emission Data Vehicles Tested:

Vehicle ID 202317 Configuration 00

Test number: PVVX10074003 (UDDS), PVVX10074004 (HWF),
PVVX10074005 (US06), PVVX10074006 (SC03),
PVVX10074007 (Cold CO), PVVX10074008 (50F)

Vehicle ID 202216 Configuration 00 (NVVXR0142E54)

Test number: NVVX10069710 (3-D Evap), NVVX10069713 (R/L)
NVVX10069712 (ORVR), NVVX10069709 (2-D Evap), NVVX10069711 (BETP)

EPA Response Requested By:
April 20, 2026

For Questions, Contact:
Bruno DiGennaro, Phone 201-218-7106

		Cover page
		Table of Contents
01		CORRESPONDENCE & COMMUNICATIONS
01.01	Common Application	Correspondence & Communications
02		DURABILITY GROUP DESCRIPTION
02.01	Test Group Application	Durability Group Description
03		EVAPORATIVE / REFUELING FAMILY DESCRIPTION
03.01	Common Application	ORVR Safety Information
03.02.01	Test Group Application	Evaporative Family Description
03.02.02	Test Group Application	Evaporative Code Characteristics
03.02.03	Test Group Application	Evaporative Test Vehicle Connections
03.02.04	Test Group Application	Evaporative System General Features
04		DURABILITY PROCEDURE DESCRIPTION
04.01	Common Application	Evaporative Bench Aging Procedure description
04.02.01	Test Group Application	Evap Deterioration Factors & Ozone Statement Evaporative family VVVXR0142EP6 Evaporative family VVVXR0142E50 Evaporative family VVVXR0142E58
04.02.02		Statement Ozone resistance
04.03	Common Application	Exhaust Emissions Durability Test Procedure
04.03.01		Volvo Customized Bench Aging Procedure (VCBAP)
04.03.02		Volvo Customized Bench Aging Procedure (VCBAP2)
04.03.03		Volvo Customized Bench Aging Procedure (VCBAP3)
04.03.04		Alternative Durability Procedures Approval
04.04		Exhaust Emission Deterioration Factors
04.04.01	Test Group Application	Test Group Deterioration Factors (incl. CREE)
04.05	Test Group Application	Battery Aging Procedure Description
04.06	Test Group Application	Battery Aging Simulation Data
05.01	Test Group Application	Test Group Description
05.02	Test Group Application	Engine Codes Summary
06		TEST VEHICLE DESCRIPTION
06.01	Test Group Application	Statement (Refer to Section 12)

07		TEST RESULTS
07.01	Test Group Application	VERIFY Certification Summary Information Report
07.02	Test Group Application	Evaporative Emission Test Results Log Evaporative family VVVXR0142EP6 Evaporative family VVVXR0142E50 Evaporative family VVVXR0142E58
07.03	Test Group Application	Exhaust Emission Test Results Log
07.03.01		Emission & Fuel Economy Data Vehicles
07.03.02		SFTP Test Results
07.03.03		Determining procedure for FE label calculation. (Litmus Test)
07.03.04		Cycle specific and combined cycle energy data (PHEV&BEV)
08		EMISSION TESTING WAIVER STATEMENT
08.01	Common Application	Statement of Compliance
09		OBD SYSTEM
09.01	Test Group Application	Federal OBD compliance statement & referral to separate OBD Application
09.02	Test Group Application	Approval Letters
10	Test Group Application	DESCRIPTION OF ALTERNATE FUELED VEHICLES
10.01		Description of Alternate-fueled vehicles
10.02.01		High Voltage Battery Charging Information (PHEV&BEV)
10.02.02		Charger inlet including adapters (PHEV&BEV)
10.03		Vehicle Safe Operation (PHEV&BEV)
10.04		Method for determining battery SOC (PHEV&BEV)
10.05		Instruction for safe operation (PHEV&BEV)
10.06		Description of the Charging system (PHEV&BEV)
10.07		Description of the Propulsion system (PHEV&BEV)
10.08		Description of the Energy Storage system (PHEV&BEV)
10.09		Description of the climate control system (PHEV&BEV)
11		AECD DESCRIPTIONS
11.01.01	Test Group Application	List of AECD Hardware
11.01.02	Test Group Application	List of AECD Software
11.02.01	Test Group Application	AECD Descriptions Hardware
11.02.02	Test Group Application	AECD Descriptions Software
11.03	Common Application	Engineering Evaluation of Cold NMHC @ High Altitude
11.04	Common Application	LBT (Lean Best Torque)
11.05	Common Application	“Alternative Maps” Calibration Description

12		DESCRIPTIONS OF VEHICLES COVERED BY CERTIFICATE AND TEST PARAMETERS
12.01	Test Group Application	Transmission Description
12.02		Test Vehicle Selection & Information
12.02.01	Test Group Application	EDV / DDV Selection
12.02.02	Test Group Application	FE Label Test Selection
12.02.03		VERIFY Test Vehicle Information
12.02.03.01	Test Group Application	Exhaust / FE (see VERIFY info)
12.02.03.02	Test Group Application	Evaporative family VVVXR0142EP6
		Evaporative family VVVXR0142E50
		Evaporative family VVVXR0142E58
12.02.04	Test Group Application	Test Vehicle Description
12.02.05	Common Application	Test Vehicle Maintenance and break-in period
12.02.06	Test Group Application	Test Vehicles Generating Data
12.03		Label Format
12.03.01	Test Group Application	Vehicle Emission Control Label
12.03.02	Common Application	Fuel Economy & Environment Label Information
12.04		Vehicle Test Parameters & Related Descriptions
12.04.01	Test Group Application	List of vehicle parameters
12.04.02	Common Application	Description of Road Load Determination
12.04.03	Common Application	Active Aerodynamic Device Description
12.04.04	Test Group Application	Active Aerodynamic Device DATA
12.04.05	Common Application	Description of Dyno Mode used for Dyno testing
12.05	Test Group Application	List of Certified Vehicles
12.06	Common Application	Adjustable Parameters on ERC
12.07	Common Application	California Evaporative Supplemental Information
12.07.01		Data for Generation of Temperature and Pressure Profiles
12.07.02		Measured Temperature and Pressure Profiles
12.07.03		Ambient Conditions
12.07.04		Corrected Temperature Profiles
12.08	Common Application	Catalyst Configuration Description
12.09	Test Group Application	Drive Modes Description
12.10	Common Application	Stop-Start Disable Criteria
12.11	Test Group Application	Description of DCF (BEV only)
12.12	Test Group Application	Climate settings for Certification Testing

13		<i>PROJECTED SALES & EPA COMPLIANCE</i>
13.01.01	<i>Common Application</i>	<i>Test Group & Durability Group Sales</i>
13.01.02		<i>Evaporative Family Sales</i>
13.02		<i>Tier4 Phase-In</i>
13.03		<i>Tier4 NMOG+NOx FTP & SFTP compliance</i>
13.04		<i>Tier4 Cold NMHC compliance</i>
13.05		<i>Tier3 Evaporative compliance</i>
14		<i>REQUEST FOR CERTIFICATION</i>
14.01	<i>Test Group Application</i>	<i>Request for Certificate</i>
15		<i>OTHER INFORMATION</i>
15.01	<i>Test Group Application</i>	<i>Fee Filing Form EPA</i>
15.02		<i>Fee Filing Form EPA (Receipt)</i>
15.03		<i>Compliance Invoice Adjustment Form (CARB)</i>
16		<i>CONFIDENTIAL INFORMATION</i>
16.01	<i>Test Group & common Application</i>	<i>Statement of Confidentiality</i>
17		<i>CALIFORNIA ARB INFORMATION</i>
17.01	<i>Test Group Application</i>	<i>Fill pipes and Openings of Fuel Tank</i>
17.02		<i>Fill pipe and Opening Specifications</i>
17.03	<i>Common Application</i>	<i>Compliance Plan / Phase in / Fleet average</i>
17.03.01		<i>LEV III FTP & SFTP NMOG+NOx compliance</i>
17.03.02		<i>LEV III Evaporative compliance</i>
17.03.03		<i>LEV III FTP & US06 PM compliance</i>
17.03.04		<i>LEV III Bench Leak Rate compliance</i>
17.03.05		<i>LEV III PZEV Anti-backsliding compliance</i>
17.04	<i>Test Group Application</i>	<i>California Emission Test Results</i>
17.04.01		<i>50F Test Results</i>
17.05	<i>Common Application</i>	<i>California & EPA warranty</i>
17.06	<i>Test Group Application</i>	<i>California High Priced Parts List</i>
17.07	<i>Test Group Application</i>	<i>California Compliance Statements & summary information</i>
17.08	<i>Test Group Application</i>	<i>CARB Certification Review Sheet</i>
17.09	<i>Test Group Application</i>	<i>Warranty Booklet Reference</i>

18	<i>Common Application</i>	<i>CANADIAN INFORMATION</i>
18.01		<i>Projected Sales</i>
18.01.01		<i>Test Group and Durability Group sales</i>
18.01.02		<i>Evap Family sales</i>
18.02		<i>Emission Compliance & Sales Information</i>
18.03		<i>Canada FE Label Selection</i>
18.04		<i>Canada Compliance Plan / Fleet average</i>
19		<i>APPLICATION REVISIONS</i>
19.01	<i>Common Application</i>	<i>Application Revisions</i>
20	<i>Test Group Application</i>	<i>INFORMATION FROM AUTHORITIES</i>
20.01		<i>EPA Certificate of Conformity</i>
20.02		<i>CARB executive order</i>

Section 03.02.01**EVAP FAMILY DESCRIPTION**

Test Group VVVXT02.0S30 contains one evaporative family:
VVVXR0142E50

- Family VVVXR0142E50 contains light-duty trucks. This evaporative family includes a 71-liter plastic tank. This evaporative family is certified to 150K useful life evaporative standards for light-duty trucks. This evaporative family was introduced for the first time in MY 2016. The deterioration factors for this evaporative were derived during MY 2016 family GVVXR0140EV4 using Volvo's bench aging test procedure for evaporative systems subject to 150K useful life. A description of this procedure can be found under Section 04.01 in Volvo's Common Application, Part 1.

Volvo requests carryover of evaporative durability data vehicle results for this evaporative family from 2026MY family TVVXR0142E50.

Section 03.02.02**Evap code characteristics****Test Group: VVVXT02.0S30**

EVAP FAMILY	FUEL TANK MATERIAL	EVAP CODE	FUEL TANK VOLUME [litres]	CANISTER WORKING CAPACITY [Grams]	PURGE CONTROL	VEHICLE MODELS
VVVXR0142E50	Plastic	69:71	71	142	Electronic	XC90 B6 AWD

Note: For GVWR and Vehicle Class, see sections 12.04 and 12.05 in Test Group Applications

Section 03.02.03**Evap Test Vehicle Connections:****Test Group: VVVXT02.0S30**

Evap Family	DF Method	Test Group information							Cert Status vs. 2026 MY
		DDV	DDV ID	MY		EDV	EDV ID	MY	
VVVXR0142E50	Bench Aging	GVVXT02.0U3T	2016EB	2016		NVVXJ02.0U73	202216	2022	C/O DDV C/O EDV

Section 03.02.04**Evap system general features****Test Group: VVVXT02.0S30**

Evap family	VVVXR0142E50		
Leak family	VVVXR0142E50-001		
Evap codes	69:71		
Vapor storage device	Carbon Canister		
Canister Configuration Housing	Plastic (3 chambers)		
Working Capacity	142g N-Butane		
Load Rate	17.8 g/h		
Storage medium	<i>Chamber 1</i>	<i>Chamber 2</i>	<i>Chamber 3</i>
Material	Activated Carbon	Activated Carbon	Activated Carbon
Configuration	Pellets	Pellets	Honeycomb Monolith
Density	0.29 g/cm3	0.36 g/cm3	n.a.
Bed volume	1700 cm3	830 cm3	n.a.
Max Vapor Volume at 40% fill (liters)	69:71 - 42,6		

Section 04.02.01

Deterioration Factors

EVAP Family: VVVXR0142E50 (Carry Over from 2026MY TVVXR0142E50)

Vehicle ID: 2016EB (Bench Aged)

The Vehicles 2016EB & 2016EA (slave vehicle) were bench-aged according to the procedure described under section 04.01 in this application

3-Day + Hot Soak test								
Test Number	Test Date	Mileage Point	Hot soak	Diurnal			Diurnal + Hot soak	Note
			HC (g/test)	1 HC (g/test)	2 HC (g/test)	3 HC (g/test)	HC (g/test)	
140619c3dd	06 19 2014	4000	0.0194	0,1793	0,1501	0,1436		4K 3-Day Set 1
140613c3dd	06 13 2014	4000	0.0259	0,1706	0,1458	0,1415		4K 3-Day Set 2
N/A		4000	0.0226	0,1750			0.1976	4K 3-Day average Data
00511_20141114_0719	11 14 2014	150000	0.0043	0.1739	0,1631	0.2157		150K 3-Day Set 1
00527_20141212_0758	12 12 2014	150000	0.0313	0.1271	0,1153	0.1483		150K 3-Day Set 2
N/A		150000	0.0178	0.1820			0.1998	150K 3-Day average Data
DF's 3-Day Hot soak + Diurnal: 0,1998 – 0,1976 = 0,0022								

2-Day + Hot Soak test								
Test Number	Test Date	Mileage Point	Hot soak	Diurnal			Diurnal + Hot soak	Note
			HC (g/test)	1 HC (g/test)	2 HC (g/test)		HC (g/test)	
00456_20140627_0708	06 27 2014	4000	0.0235	0.1900	0.1604			4K 2-Day Set 1
00448_20140604_0744	06 04 2014	4000	0.0241	0.1957	0.1651			4K 2-Day Set 2
N/A		4000	0.0238	0.1928			0.2166	4K 2-Day average Data
141127c2dd	11 27 2014	150000	0.0302	0.1804	0.2268			150K 2-Day Set 1
141206c2dd	12 06 2014	150000	0.0259	0.1717	0.1588			150K 2-Day Set 2
N/A		150000	0.0280	0.1992			0.2272	150K 2-Day average Data
DF's 2-Day Hot soak + Diurnal: 0,2272 – 0,2166 = 0,0106								

On-Board Refueling Vapor Recovery test				
Test Number	Test Date	Mileage Point	ORVR HC (g/gallon)	Note
C724	06 25 2014	4000	0.058	4K ORVR Set1
C722	06 11 2014	4000	0.004	4K ORVR Set2
N/A		4000	0.031	4K ORVR average Data
C738	10 22 2014	150000	0.004	150K ORVR Set1
C742	12 03 2014	150000	0.004	150K ORVR Set2
N/A		150000	0.004	150K ORVR average Data
DF's On-Board Refueling Vapor Recovery: 0,004 – 0,031 = 0,000				

Running Loss Test				
Test Number	Test Date	Mileage Point	Running Loss HC (g/mile)	Note
RLE_140618_03	06 18 2014	4000	0.006	4K RL Set1
RLE_140612_01	06 12 2014	4000	0.005	4K RL Set2
N/A		4000	0.006	4K RL average Data
RLE_141113_01	11 13 2014	150000	0.001	150K RL Set1
RLE_141211_01	12 11 2014	150000	0.006	150K RL Set2
N/A		150000	0.004	150K RL average Data
DF's Running Loss: 0,004 – 0,006 = 0,000				

Section 04.04.01

EXHAUST EMISSIONS DETERIORATION FACTORS

Test Group: VVVXT02.0S30
Durability Group: VVVXGPGNNN05

Equivalency Factor:
1.000

R-Factor:
17800

DDV Original Test Group:
NVVXJ02.0S33

DDV Original Durability Group:
NVVXGPGNNN05

DDV original Model Year:
2022

The Deterioration Factors were derived according to Standard Whole Vehicle Durability Procedure as described in § 86.1823-08

Durability Data Type: Carry Over Data

Drive Mode: COMFORT MODE (Default Mode)

Exhaust Emission Test Results															
Vehicle ID: 2022B															
mileage [miles]	Test no.	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	CH4 [g/mile]	PM [g/mile]	N2O [g/mile]	Remarks	Calculation	CO2 [g/mile]	CREE unrounded [g/mile]	CREE w/o CO2 [g/mile]	CREE (round) [g/mile]
5000	E1_200909_002	0.006	0.0044	0.0048	0.37	0.004	0.0018	0.0007	0.0001	5K test 1		350	350.5995	0.5995	351
5000	E1_200913_003	0.005	0.0033	0.0036	0.32	0.006	0.0018	0.0006	0.0000	5K test 2		353	353.5179	0.5179	354
5000	E1_200916_004	0.004	0.0028	0.0031	0.28	0.004	0.0016	0.0011	0.0001	5K test 3		352	352.4521	0.4521	352
5000		0.00500	0.003500	0.003833	0.3233	0.00467	0.001733	0.000800	0.000067	5K average	DF Point 1	351.67		0.523167	352.33
20,000	E1_201006_007	0.006	0.0042	0.0046	0.27	0.006	0.0018	0.0010	0.0005	20K test 1		346	346.4424	0.4424	346
20,000	E1_201007_008	0.005	0.0036	0.0040	0.32	0.006	0.0020	0.0009	0.0002	20K test 2		355	355.5179	0.5179	356
20,000	E1_201007_013	0.005	0.0034	0.0037	0.28	0.006	0.0018	0.0003	0.0000	20K test 3		349	349.4551	0.4551	349
20,000		0.00533	0.003733	0.004100	0.2900	0.00600	0.001867	0.000733	0.000233	20K average	DF Point 2	350.00		0.471800	350.33
50,000	E1_201111_004	0.005	0.0037	0.0041	0.28	0.005	0.0023	0.0006	0.0001	50K test 1		352	352.4551	0.4551	352
50,000	E1_201112_005	0.006	0.0041	0.0045	0.30	0.007	0.0020	0.0005	0.0002	50K test 2		355	355.4896	0.4896	355
50,000	E1_201113_006	0.007	0.0051	0.0056	0.28	0.007	0.0026	0.0009	0.0000	50K test 3		356	356.4612	0.4612	356
50,000	E1_201117_009	0.007	0.0059	0.0065	0.25	0.006	0.0019	0.0006	0.0001	50K test 4		348	348.4141	0.4141	348
50,000	E1_201118_007	0.008	0.0057	0.0063	0.28	0.007	0.0026	0.0008	0.0000	50K test 5		357	357.4641	0.4641	357
50,000		0.00660	0.004900	0.005400	0.2780	0.00640	0.002280	0.000680	0.000080	50K average	DF Point 3	353.60		0.456820	353.60
90,000	E1_210108_004	0.005	0.0036	0.0040	0.33	0.005	0.0021	0.0008	0.0000	90K test 1		357	357.5336	0.5336	358
90,000	E1_210110_004	0.007	0.0047	0.0052	0.33	0.006	0.0026	0.0006	0.0000	90K test 2		347	347.5397	0.5397	348
90,000	E1_210113_004	0.005	0.0038	0.0042	0.34	0.006	0.0020	0.0004	0.0002	90K test 3		348	348.5493	0.5493	349
90,000		0.00567	0.004033	0.004467	0.3333	0.00567	0.002233	0.000600	0.000067	90K average	DF Point 4	350.67		0.540867	351.67
120,000	E1_210216_004	0.005	0.0033	0.0036	0.33	0.007	0.0027	0.0009	0.0000	120K test 1		345	345.5336	0.5336	346
120,000	E1_210217_021	0.006	0.0043	0.0047	0.32	0.008	0.0023	0.0008	0.0000	120K test 2		355	355.5209	0.5209	356
120,000	E1_210218_014	0.007	0.0053	0.0058	0.34	0.007	0.0024	0.0007	0.0000	120K test 3		351	351.5554	0.5554	352
120,000		0.00600	0.004300	0.004700	0.3300	0.00733	0.002467	0.000800	0.000000	120K average	DF Point 5	350.33		0.536633	351.33
150,000	E1_210410_003	0.007	0.0046	0.0051	0.36	0.006	0.0024	0.0012	0.0000	150K test 1		347	347.5868	0.5868	348
150,000	E1_210411_004	0.008	0.0063	0.0069	0.42	0.007	0.0023	0.0006	0.0000	150K test 2		347	347.6841	0.6841	348
150,000	E1_210412_004	0.007	0.0051	0.0056	0.28	0.009	0.0028	0.0005	0.0000	150K test 3		348	348.4611	0.4611	348
150,000		0.00733	0.005333	0.005867	0.3533	0.00733	0.002500	0.000767	0.000000	150K average	DF Point 6	347.33		0.577333	348.00

Values from calculated mean regression line rounded to four decimal places											
mileage [miles]	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	CH4 [g/mile]	PM [g/mile]	N2O [g/mile]	CO2 [g/mile]	CREE [g/mile]	
4000	0.0052	0.0037	0.0041	0.2946	0.0052	0.0018	0.0007	0.0007	352.1578	0.4787	
50,000	0.0057	0.0041	0.0045	0.3103	0.0059	0.0021	0.0007	0.0007	351.1117	0.5050	
120,000	0.0065	0.0047	0.0052	0.3342	0.0069	0.0024	0.0007	0.0007	349.5198	0.5448	
150,000	0.0069	0.0050	0.0055	0.3444	0.0074	0.0026	0.0007	0.0007	348.8376	0.5619	

Calculated Additive DFs	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	CH4 [g/mile]	PM [g/mile]	N2O [g/mile]	CO2 [g/mile]	CREE [g/mile]	NMOG+NOx [g/mile]
4K-50K	n.a.	n.a.	n.a.	0.0157	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4K-120K	0.0013	0.0010	n.a.	0.0396	n.a.	0.0006	n.a.	0.0000	-2.6380	0.0661	n.a.
4K-150K	n.a.	n.a.	0.0014	0.0498	0.0022	n.a.	0.0000	n.a.	n.a.	n.a.	0.0036

Rounded Additive DFs	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	CH4 [g/mile]	PM [g/mile]	N2O [g/mile]	CO2 [g/mile]	CREE [g/mile]	NMOG+NOx [g/mile]
4K-50K	n.a.	n.a.	n.a.	0.02	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4K-120K	0.001	0.0010	n.a.	0.04	n.a.	0.0006	n.a.	0.0000	0	0.07	n.a.
4K-150K	n.a.	n.a.	0.0014	0.05	0.002	n.a.	0.0000	n.a.	n.a.	n.a.	0.0034 (*)

(*) Note: Rounded DF for NMOG+NOx is 0.0014+0.002 according to EPA EV-CIS even though mathematic rounding results in 0.0036

Section 05.01**Test Group Description****Test group: VVVXT02.0S30**

Vehicle Class:	LDT
Certification Summary Information:	CSI- VVVXT02.0S30- VVVXR0142E50 (XC90 B6 AWD)
Applicable Emission Standards:	See Certification Summary Information in section 07
Emission standard class:	LEV III SULEV30 / Interim Tier4 Bin30
Engine Type:	4-stroke, Otto cycle
Engine Configuration:	Inline, 4 cylinder
Engine displacement:	1969 cm ³ , 120 cuin
Cylinder head design:	OHV, DOHC, 4 valves / cylinder
Method of aspiration:	Turbocharged & Supercharged
Rated power:	295 hp @ 5400-5700 rpm
Rated torque:	310 ftlb @ 2100-4800 rpm
Fuel & Ignition System: (Manufacturer and type):	Denso / DFI / Electronic microprocessor controlled
Knock sensor:	Yes
Oil Viscosity / Classification:	0W20 – API SP & ILSAC GF-6A

Section 06.**Test vehicle description**

For test vehicle description, please refer to section 12

Certification Summary Information Report

Manufacturer	Volvo Car USA, LLC	Manufacturer Code	VVX
Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Certificate Number	--	CARB Executive Order #	--
Certificate Issue Date	--	Certificate Revision Date	--
Certificate Effective Date	--	Conditional Certificate	--
CSI Revision #	--	CSI Submission/Revision Date	03/17/2026 04:44:59 AM
Model Year	2027		

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
-------------------	--------------	-------------------------------------	--------------

Test Group Information

CSI Type	New	Running Change Reference Number	--
GHG Exempt Status	Not Exempt		

Drive Sources and Fuel(s)

Drive Source #1: Electric Motor

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Electricity	--	No

Drive Source #2: Combustion Engine

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

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	Rechargeable Energy Storage System Indicator	Yes
Multiple Fuel Combustion	--	Off-board Charge Capable Indicator	No
Fuel Cell Indicator	No	EPA Vehicle Class	LDT3
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	VVVXGPGNNN05	Durability Group Equivalency Factor	1.0
Reduced Fee Test Group	No	Certification Region Code(s)	FA, CA
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	VVVXT02.0P34
Test Group OBD Compliance Level	Partial - with deficiencies and penalty	Number of Test Group OBD Deficiencies	10
OBD Deficiencies Comments	TBD Pending OBD approval		
Mfr Test Group Comments	2.0 L direct injection engine with Carry-Over durability, EDV and Carry-over evaporative testing. . All HCHO satisfied with a compliance statement.		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50				
Evaporative/Refueling Family Information							
Evaporative Summary Information Type	New	Submission/Correction Date	03/16/2026 09:03:10 AM				
Integrated ORVR?	Yes	Fuel(s)	Gasoline				
Multiple Fuel Storage	--						
Bladder Fuel Tank?	No						
Fuel Tank Material	Plastic	Fuel Tank Material Description	Coextruded 6 layer				
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)	142	Number of Primary Canisters	1				
Number of Bleed Canisters	0	Bleed Canister Total Working Capacity (grams)	0				
Mfr Evaporative/Refueling Family Comments	Carryover durability and emission data. Tier 3 ORVR and LEV III. XC90 B6 only. LDT3. Bleed device integrated in canister.						
Leak Family Details							
Leak Family Indicator	Yes						
Canister Bleed Test Indicator	Yes	Applicability of Evaporative Canister Bleed Test	50 State				
Evaporative Canister Bleed Test Comments	Bleed emission std of 0.020						
CARB Fuel Only (Rig) Test Indicator	No	Applicability of CARB Fuel Only (Rig) Test	--				
CARB Fuel Only (Rig) Test Comments	--						
Leak Family Name	Applicability of Leak Family Requirements	Leak Family Standard (inches)	Leak Family Description				
VVVXR0142E50-001	50 State	0.02	--				
Models Covered by this Certificate							
Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	- # of Gears	Trans - Lockup
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	243 - XC90 B6 AWD	California + CAA Section 177 states	All Wheel Drive	Semi-Automatic	8	Yes
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	243 - XC90 B6 AWD	Federal	All Wheel Drive	Semi-Automatic	8	Yes
Engine Description							
Hybrid Type	IC Engine/Electric Motor			Hybrid Description	--		
Engine Type	4-Stroke Spark Ignition			Mfr Engine Description	gasoline direct injection		
Engine Block Arrangement	Inline			Mfr Engine Block Arrangement Description	--		
Camless Valvetrain Indicator	No			Oil Viscosity/Classification	0W-20 / C6 (API SP)		
Number of Cylinders/Rotors	4			Mechanically Variable Compression Ratio Indicator	N		

Certification Summary Information Report

Test Group		VVVXT02.0S30		Evaporative/Refueling Family		VVVXR0142E50					
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			
Mfr After Treatment Device (ATD) Comments		There are 2 catalyst units but only 1 TWC part number. 3 oxygen sensors monitor unit.									
Direct Ozone Reduction (DOR) Device		Not Equipped									
Mfr Emission Control Device Comments		--									
Engine Configuration Number 1											
Engine Displacement (liters)		2.0		Engine Rated Horsepower		295					
Number of Inlet Valves Per Cylinder		2		Number of Exhaust Valves Per Cylinder		2					
Air Aspiration Method		Turbocharged+Supercharged		Number of Air Aspiration Devices		2					
Air Aspiration Device Configuration		Series		Charge Air Cooler Type		Liquid					
Air Aspiration Drive Method(s)		Mechanical, Electric									
Cylinder Deactivation		No									
Cylinder Deactivation Description		--									
Variable Valve Timing		Yes									
Variable Valve Timing System Description		Timing on both intake and exhaust side.									
Variable Valve Lift?		No									
Variable Valve Lift System Description		--									
Number of Knock Sensors		1		Number of Air/Fuel Sensors		3					
Air/Fuel Sensor # 1 Type		Heated oxygen		Air/Fuel Sensor # 1 Description		--					
Air/Fuel Sensor # 2 Type		Heated oxygen		Air/Fuel Sensor # 2 Description		--					
Air/Fuel Sensor # 3 Type		Heated air fuel		Air/Fuel Sensor # 3 Description		--					
Mfr Air/Fuel Sensor Comments		--									
Exhaust Gas Recirculation		Yes		Cooled Exhaust Gas Recirculation		Yes					
EGR Type		Electronic/Electric		Exhaust Gas Recirculation Description if 'Other'		--					
Closed Loop Air Injection System		No									
Air Injection Type		Not Applicable		Air Injection Type if 'Other'		--					
Mfr Engine Configuration Comments		Mechanical Turbo and Electric supercharger									
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
Gasoline	PVVX10074003	PVVX10074005	PVVX10074006	PVVX10074007	PVVX10074004	25.8	228.2	18.2	286.1	--	
Electricity	--	--	--	--	--	--	--	--	--	--	

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
SFTP LEV-III Official Test Numbers			
Test Group Fuel	FTP	US06	SC03
Gasoline	PVVX10074003	PVVX10074005	PVVX10074006
Official Charge Depleting Test Numbers			
Test Group Fuel	UDDS	Highway	
Electricity	--	--	
Hybrid Electric Vehicle And Fuel Cell Information			
Rechargeable Energy Storage System	Battery(s)	Rechargeable Energy Storage System, if Other	--
Battery Type	Lithium Ion	Number of Battery Packs	1
Total Voltage of Battery Packs	44	Battery Energy Capacity	8.4
Battery Specific Energy	56	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	No
Mfr Regenerative Braking Description	--		
Drive Motor(s)/Generator(s)	1		
Motor/Generator Type 1	DC Permanent Magnet, brushless	Rated Motor/Generator Power	10
Mfr Fuel Cell Description	--		
Fuel Cell On-Board H2 Storage Capacity (kg)	--	Usable H2 Fill Capacity (kg)	--
Mfr Hybrid Electric/ Electric Vehicle Comments	--		

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50									
Emission Data Vehicle Information												
Vehicle ID / Configuration	202216 / 0	Manufacturer Vehicle Configuration Number	0									
Original Test Group Name	NVVXJ02.0U73	Original Evaporative/Refueling Family	NVVXR0142E54									
Original Test Vehicle Model Year	2022											
Vehicle Model												
Represented Test Vehicle Make	Volvo	Represented Test Vehicle Model	XC60 B5 AWD									
Leak Family Details												
Leak Family Identifier	001	Leak Family Name	NVVXR0142E54-001									
Drive Sources and Fuel System Details												
<table border="1"> <thead> <tr> <th>Drive Source and Fuel#</th> <th>Drive Source</th> <th>Fuel</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Electric Motor</td> <td>Electricity</td> </tr> <tr> <td>2</td> <td>Combustion Engine</td> <td>Gasoline</td> </tr> </tbody> </table>				Drive Source and Fuel#	Drive Source	Fuel	1	Electric Motor	Electricity	2	Combustion Engine	Gasoline
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	No											
Odometer Correction -- Initial	0	Odometer Correction Factor	0.994									
Odometer Correction Sign	- = System Miles is equal to (Test odometer reading - Initial system miles) * Correction factor											
Odometer Correction Units	Miles											
Engine Code	L1_2	Rated Horsepower	247									
Displacement (liters)	1.969											
Air Aspiration Method	Turbocharged	Air Aspiration Method, if 'Other'										
Number of Air Aspiration Devices	1	Air Aspiration Device Configuration	Single									
Charge Air Cooler Type	Air	Drive Mode While Testing	2-Wheel Drive, Front									
Shift Indicator Light Usage	Not equipped	Aged Emission Components	4,000 (mi)									
Curb Weight (lbs)	4204	Equivalent Test Weight (pounds)	4500									
GVWR (lbs)	5400	N/V Ratio	26									
Axle Ratio	3.33											
Transmission Type	Semi-Automatic	# of Transmission Gears	8									
Transmission Lockup	Yes	Creeper Gear	No									

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
-------------------	--------------	-------------------------------------	--------------

Dynamometer Coefficients:

Coefficient Category	Target Coefficients			Set Coefficients			EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	
City/Highway/Evap	45.72	0.1502	0.02442	24.842	0.08098	0.024629	15.2
Cold CO	50.8	0.16689	0.027133	29.403	0.1103	0.026769	N/A
US06	45.72	0.1502	0.02442	24.842	0.08098	0.024629	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments EDV Worst Case Dyno Setting. TRLHP 15.2, coast down target 18,53, XC60 B5 AWD.

Test #	NVVX10069709	Test Procedure	27 - California fuel 2-day evap
Exhaust Test # for this Evap Test	NVVX10069673	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	02/24/2021	Fuel	Gasoline
Fuel Batch ID	IGT455	Fuel Calibration Number	1
Vehicle Class	N/A	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	4099	Odometer Units	M
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
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.1698	--

Manufacturer Test Comments 2-Day CARB Evaporative Test for evaporative families NVVXR0142E50.NVVXR0142E53,NVVXR0142E54. XC60 B5 AWD EDV worst case

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	0.1698	0.0106	0.180	0.500	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.1698	0.0106	0.180	0.500	Pass

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	NVVX10069710	Test Procedure	38 - CA fuel 3-day evap.
Exhaust Test # for this Evap Test	NVVX10069675	Test Fuel Type	47 - CARB LEV3 E10 Premium
Test Date	03/17/2021	Fuel	Gasoline
Fuel Batch ID	IGT455	Fuel Calibration Number	1
Vehicle Class	N/A	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	4201	Odometer Units	M
4WD Test Dyno	No	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
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.1704	--

Manufacturer Test Comments

3-Day CARB Evaporative Test for evaporative families NVVXR0142E50,NVVXR0142E53,NVVXR0142E54 XC60 B5 AWD EDV worst case

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	0.1704	0.0022	0.173	0.500	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.1704	0.0022	0.173	0.500	Pass

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50						
Test #	NVVX10069712	Test Procedure	24 - Federal fuel refueling test (ORVR)						
Exhaust Test # for this Evap Test	NVVX10069702	Test Fuel Type	49 - Tier 3 E10 Premium Gasoline (9 RVP @Low Alt.)						
Test Date	02/17/2021	Fuel	Gasoline						
Fuel Batch ID	HAKK02	Fuel Calibration Number	1						
Vehicle Class	N/A	DF Type	Mfr. Determined						
Verify Test Lab ID	Volvo Car Corporation								
E10 Evaporative Test Measurement Method	Actual Total Hydrocarbon Equivalent Measurement (with speciation)								
Test Start Odometer Reading	4063	Odometer Units	M						
4WD Test Dyno	No	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									
<table border="1"> <thead> <tr> <th>Test Result Name</th> <th>Unrounded Test Result</th> <th>Verify Calculated FE Equivalent Value</th> </tr> </thead> <tbody> <tr> <td>HC (Hydrocarbon for Running Loss and ORVR)</td> <td>0.004</td> <td>--</td> </tr> </tbody> </table>				Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value	HC (Hydrocarbon for Running Loss and ORVR)	0.004	--
Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value							
HC (Hydrocarbon for Running Loss and ORVR)	0.004	--							
Manufacturer Test Comments									
ORVR EPA Test for evaporative families NVVXR0142E50.NVVXR0142E53.NVVXR0142E54 XC60 B5 AWD. Tier3 E10 Fuel EDV worst case									
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	0.0040	0	0.004	0.200	Pass	
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC	0.0040	0	0.004	0.200	Pass	

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50						
Test #	NVVX10069713	Test Procedure	37 - California Fuel Running Loss						
Exhaust Test # for this Evap Test	NVVX10069675	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline						
Test Date	03/17/2021	Fuel	Gasoline						
Fuel Batch ID	IGT455	Fuel Calibration Number	1						
Vehicle Class	N/A	DF Type	Mfr. Determined						
Verify Test Lab ID	Volvo Car Corporation								
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)								
Test Start Odometer Reading	4173	Odometer Units	M						
4WD Test Dyno	No	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									
<table border="1"> <tr> <td>Test Result Name</td> <td>Unrounded Test Result</td> <td>Verify Calculated FE Equivalent Value</td> </tr> <tr> <td>HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)</td> <td>0.001</td> <td>--</td> </tr> </table>				Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value	HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.001	--
Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value							
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.001	--							
Manufacturer Test Comments									
Running Loss (R/L) CARB Evaporative Test for evaporative families NVVXR0142E50.NVVXR0142E50.NVVXR0142E50 XC60 B5 AWD EDV worst case									
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	0.0010	0	0.001	0.050	Pass	
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.0010	0	0.001	0.010	Pass	

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	NVVX10069711	Test Procedure	65 - Evap Canister Bleed Test
Exhaust Test # for this Evap Test	--	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	04/09/2021	Fuel	Gasoline
Fuel Batch ID	IGT455	Fuel Calibration Number	1
Vehicle Class	N/A	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Actual Total Hydrocarbon Equivalent Measurement (with speciation)		
Test Start Odometer Reading	4227	Odometer Units	M
4WD Test Dyno	No	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
HC-TOTAL (Total Hydrocarbon)	0.0099	--

Manufacturer Test Comments

Evap Canister Bleed Test for evaporative families NVVXR0142E50.NVVXR0142E53.NVVXR0142E54 XC60 B5 AWD EDV Worst case

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	0.0099	0	0.010	0.020	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL	0.0099	0	0.010	0.020	Pass

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
-------------------	--------------	-------------------------------------	--------------

Emission Data Vehicle Information

Vehicle ID / Configuration	202317 / 0	Manufacturer Vehicle Configuration Number	0
Original Test Group Name	PVVXJ02.0S30	Original Evaporative/Refueling Family	PVVXR0142E50
Original Test Vehicle Model Year	2023		

Vehicle Model

Represented Test Vehicle Make	Volvo	Represented Test Vehicle Model	XC90 B6 AWD
--------------------------------------	-------	---------------------------------------	-------------

Leak Family Details

Leak Family Identifier	001	Leak Family Name	PVVXR0142E50-001
-------------------------------	-----	-------------------------	------------------

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	No		
Odometer Correction -- Initial	0	Odometer Correction Factor	1.0114
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Kilometers		
Engine Code	06_1	Rated Horsepower	295
Displacement (liters)	1.969		
Air Aspiration Method	Turbocharged+Supercharged	Air Aspiration Method, if 'Other'	
Number of Air Aspiration Devices	2	Air Aspiration Device Configuration	Series
Charge Air Cooler Type	Air	Drive Mode While Testing	2-Wheel Drive, Front
Shift Indicator Light Usage	Not equipped	Aged Emission Components	4,000 (mi)
Curb Weight (lbs)	4764	Equivalent Test Weight (pounds)	5000
GVWR (lbs)	6150	N/V Ratio	25.7
Axle Ratio	3.33		
Transmission Type	Semi-Automatic	# of Transmission Gears	8
Transmission Lockup	Yes	Creeper Gear	No

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family		VVVXR0142E50	
Dynamometer Coefficients:								
Target Coefficients				Set Coefficients			EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients	
Coefficient Category	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	A (lbf)	B (lbf/mph)	C (lbf/mph**2)		
City/Highway/Evap	39.79	0.2239	0.02715	18.996	0.22718	0.026398	15.8	
Cold CO	44.211	0.2488	0.03017	21.36	0.35781	0.028174	N/A	
US06	39.79	0.2239	0.02715	18.996	0.22718	0.026398	N/A	
Emission Control Device Comments		--						
Manufacturer Test Vehicle Comments		EDV Worst Case Dyno Setting. TRLHP 15.8, coast down target 19,52, XC90 B6 AWD.						

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	PVVX10074003	Test Procedure	35 - California fuel 3-day exhaust
Exhaust Test # for this Evap Test	--	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	02/01/2022	Fuel	Gasoline
Fuel Batch ID	IJT455	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6435	Odometer Units	K
4WD Test Dyno	No	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)	342	--
FE BAG 1 (Bag 1 Fuel Economy)	25.5139	25.5139
CO2 BAG 2 (Bag 2 Carbon Dioxide)	341	--
FE BAG 2 (Bag 2 Fuel Economy)	25.5958	25.5958
CO2 BAG 3 (Bag 3 Carbon Dioxide)	304	--
FE BAG 3 (Bag 3 Fuel Economy)	28.6671	28.6671
CO2 BAG 4 (Bag 4 Carbon Dioxide)	351	--
FE BAG 4 (Bag 4 Fuel Economy)	24.8539	24.8539
METHANE (CH4 - Methane)	0.0012	--
CO (Carbon Monoxide)	0.21	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.97	--
DT-EER (Drive Trace Energy Economy Rating)	-1.24	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-1.6	--
MFR FE (Manufacturer Fuel Economy)	26.1066	26.1066
NOX (Nitrogen Oxide)	0.009	--
N2O (Nitrous Oxide)	0.0002	--
HC-NM (Non-methane Hydrocarbon)	0.0035	--
NMOG (Non-methane organic gases)	0.0038	--
PM (Particulate Matter)	0.0006	--
HC-TOTAL (Total Hydrocarbon)	0.004	--

Page 15 of 39 CSI Submission/Revision Date: 03/17/2026 04:44:59 AM

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family					VVVXR0142E50		
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	Federal Tier 3 Bin 30	HC-TOTAL	0.0040	--	--	--	0.001	--	0.005	0.410	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	CREE	999	--	--	--	0.07	--	999	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.0012	--	--	--	0.0006	--	0.002	0.030	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	N2O	0.0002	--	--	--	0.00	--	0.000	0.010	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.210	--	--	--	0.05	--	0.26	1.00	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO-COMP	0.40	--	--	--	0	--	0.4	4.2	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0038	--	1.101	--	0.0014	--	0.005	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0128	--	--	--	--	--	0.016	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX-COMP	0.0107	--	--	--	0	--	0.011	0.060	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0090	--	--	--	0.002	--	0.011	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0006	--	--	--	0.00	--	0.001	0.003	Pass
CA	120,000 miles	California LEV-III SULEV30	CREE	999	--	--	--	0.07	--	999	--	--
CA	120,000 miles	California LEV-III SULEV30	METHANE	0.0012	--	--	--	0.0006	--	0.002	0.030	Pass
CA	120,000 miles	California LEV-III SULEV30	N2O	0.0002	--	--	--	0.000	--	0.000	0.010	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.210	--	--	--	0.05	--	0.26	1.00	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0038	--	1.101	--	0.0014	--	0.005	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0128	--	--	--	--	--	0.016	0.030	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.0090	--	--	--	0.002	--	0.011	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	PM	0.0006	--	--	--	0.00	--	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	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	PVVX10074007	Test Procedure	11 - Cold CO
Exhaust Test # for this Evap Test	--	Test Fuel Type	29 - Cold CO E10 Premium Gasoline (Tier 3)
Test Date	02/10/2022	Fuel	Gasoline
Fuel Batch ID	FHTW10	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6629	Odometer Units	K
4WD Test Dyno	No	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 (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	490	--
FE BAG 1 (Bag 1 Fuel Economy)	17.8108	17.8108
CO2 BAG 2 (Bag 2 Carbon Dioxide)	410	--
FE BAG 2 (Bag 2 Fuel Economy)	21.2668	21.2668
CO2 BAG 3 (Bag 3 Carbon Dioxide)	361	--
FE BAG 3 (Bag 3 Fuel Economy)	24.2021	24.2021
METHANE (CH4 - Methane)	0.0042	--
CO (Carbon Monoxide)	0.37	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-1.54	--
DT-EER (Drive Trace Energy Economy Rating)	-1.87	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-3.01	--
MFR FE (Manufacturer Fuel Economy)	21.1262	21.1262
NOX (Nitrogen Oxide)	0.014	--
N2O (Nitrous Oxide)	0.0002	--
HC-NM (Non-methane Hydrocarbon)	0.0142	--
NMOG (Non-methane organic gases)	0.0148	--
PM (Particulate Matter)	0	--
HC-TOTAL (Total Hydrocarbon)	0.017	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	413.6328	--

Test Group		VVVXT02.0S30				Evaporative/Refueling Family				VVVXR0142E50			
		Test Result Name		Unrounded Test Result				Verify Calculated CO2					
		Carbon dioxide		413				--					
Manufacturer Test Comments		MY23 EDV XC90 B5 AWD											
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	Federal Tier 3 Bin 30	CO	0.37	--	--	--	0.02	--	0.4	12.5	Pass	
Fed	120,000 miles	Federal Tier 3 Bin 30	HC-NM	0.014	--	--	--	0.0010	--	0.02	0.30	Pass	
CA	50,000 miles	California LEV-III SULEV30	CO	0.37	--	--	--	0.02	--	0.4	12.5	Pass	

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	PVVX10074008	Test Procedure	51 - CA fuel 50 Deg(F) exhaust test
Exhaust Test # for this Evap Test	--	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	02/03/2022	Fuel	Gasoline
Fuel Batch ID	IJT455	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6551	Odometer Units	K
4WD Test Dyno	No	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)	373	--
FE BAG 1 (Bag 1 Fuel Economy)	23.3535	23.3535
CO2 BAG 2 (Bag 2 Carbon Dioxide)	359	--
FE BAG 2 (Bag 2 Fuel Economy)	24.3007	24.3007
CO2 BAG 3 (Bag 3 Carbon Dioxide)	314	--
FE BAG 3 (Bag 3 Fuel Economy)	27.7721	27.7721
CO2 BAG 4 (Bag 4 Carbon Dioxide)	351	--
FE BAG 4 (Bag 4 Fuel Economy)	24.8584	24.8584
METHANE (CH4 - Methane)	0.0019	--
CO (Carbon Monoxide)	0.25	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.98	--
DT-EER (Drive Trace Energy Economy Rating)	-0.35	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.44	--
MFR FE (Manufacturer Fuel Economy)	25.1248	25.1248
NOX (Nitrogen Oxide)	0.008	--
N2O (Nitrous Oxide)	0.0003	--
HC-NM (Non-methane Hydrocarbon)	0.0037	--
NMOG (Non-methane organic gases)	0.0041	--
PM (Particulate Matter)	0.0016	--
HC-TOTAL (Total Hydrocarbon)	0.005	--

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family				VVVXR0142E50			
		Test Result Name		Unrounded Test Result			Verify Calculated CREE/OPT-CREE					
		Carbon-Related Exhaust Emissions		347.4079			--					
		Test Result Name		Unrounded Test Result			Verify Calculated CO2					
		Carbon dioxide		347			--					
Manufacturer Test Comments		MY23 EDV XC90 B5 AWD -50F										
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
CA	4,000 miles	California LEV-III SULEV30	CO	0.25	--	--	--	0.00	--	0.2	1.0	Pass
CA	4,000 miles	California LEV-III SULEV30	NMOG	0.0041	--	1.101	--	0.00	--	0.004	999.999	Pass
CA	4,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0121	--	--	--	--	--	0.012	0.060	Pass
CA	4,000 miles	California LEV-III SULEV30	NOX	0.0080	--	--	--	0.00	--	0.008	999.999	Pass

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	PVVX10074004	Test Procedure	3 - HWFE
Exhaust Test # for this Evap Test	--	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	02/01/2022	Fuel	Gasoline
Fuel Batch ID	IJT455	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6458	Odometer Units	K
4WD Test Dyno	No	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)	0.0001	--	
CO (Carbon Monoxide)	0.29	--	
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-5.74	--	
DT-EER (Drive Trace Energy Economy Rating)	-0.85	--	
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-7.23	--	
MFR FE (Manufacturer Fuel Economy)	37.0708	37.0708	
NOX (Nitrogen Oxide)	0.001	--	
N2O (Nitrous Oxide)	0	--	
HC-NM (Non-methane Hydrocarbon)	0	--	
NMOG (Non-methane organic gases)	0	--	
PM (Particulate Matter)	0.0001	--	
HC-TOTAL (Total Hydrocarbon)	0	--	
Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE	
Carbon-Related Exhaust Emissions	235.4556	999	
Test Result Name	Unrounded Test Result	Verify Calculated CO2	
Carbon dioxide	235	--	
Manufacturer Test Comments	MY23 EDV XC90 B5 AWD		

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family					VVVXR0142E50		
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	Federal Tier 3 Bin 30	CREE	999	--	--	--	0.07	--	999	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.0001	--	--	--	0.0006	--	0.001	0.030	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	N2O	0.0000	--	--	--	0.00	--	0.000	0.010	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.29	--	--	--	0.05	--	0.3	1.0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0000	--	1.03	--	0.0014	--	0.001	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0010	--	--	--	--	--	0.004	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0010	--	--	--	0.002	--	0.003	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0001	--	--	--	0.00	--	0.000	0.003	Pass
CA	120,000 miles	California LEV-III SULEV30	CREE	999	--	--	--	0.07	--	999	--	--
CA	120,000 miles	California LEV-III SULEV30	METHANE	0.0001	--	--	--	0.0006	--	0.001	0.030	Pass
CA	120,000 miles	California LEV-III SULEV30	N2O	0.0000	--	--	--	0.00	--	0.000	0.010	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.29	--	--	--	0.05	--	0.3	1.0	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0000	--	1.03	--	0.0014	--	0.001	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0010	--	--	--	--	--	0.004	0.030	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.0010	--	--	--	0.002	--	0.003	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	PM	0.0001	--	--	--	0.00	--	0.000	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	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	PVVX10074005	Test Procedure	90 - US06
Exhaust Test # for this Evap Test	--	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	02/01/2022	Fuel	Gasoline
Fuel Batch ID	IJT455	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6503	Odometer Units	K
4WD Test Dyno	No	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 (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	314	--
FE BAG 1 (Bag 1 Fuel Economy)	27.7655	27.7655
CO2 BAG 2 (Bag 2 Carbon Dioxide)	560	--
FE BAG 2 (Bag 2 Fuel Economy)	15.5474	15.5474
METHANE (CH4 - Methane)	0.0014	--
CO (Carbon Monoxide)	0.56	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-6.11	--
DT-EER (Drive Trace Energy Economy Rating)	-2.19	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-11.03	--
MFR FE (Manufacturer Fuel Economy)	23.6617	23.6617
NOX (Nitrogen Oxide)	0.003	--
N2O (Nitrous Oxide)	0	--
HC-NM (Non-methane Hydrocarbon)	0.0014	--
NMOG (Non-methane organic gases)	0.0014	--
PM (Particulate Matter)	0.0017	--
HC-NM+NOX (SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03)	0.0044	--
HC-TOTAL (Total Hydrocarbon)	0.003	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	368.8889	--

Certification Summary Information Report

Test Group		VVVXT02.0S30				Evaporative/Refueling Family				VVVXR0142E50		
		Test Result Name		Unrounded Test Result		Verify Calculated CO2						
		Carbon dioxide		368		--						
Manufacturer Test Comments		MY23 EDV XC90 B5 AWD										
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	Federal Tier 3 Bin 30	CO	0.5600	--	--	--	0.05	--	0.610	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0014	--	1.030	--	0.0014	--	0.003	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0030	--	--	--	0.002	--	0.005	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0017	--	--	--	0.00	--	0.002	0.006	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.56	--	--	--	0.05	--	0.6	9.6	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0014	--	1.030	--	0.0014	--	0.003	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0044	--	--	--	--	--	0.008	0.030	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.0030	--	--	--	0.002	--	0.005	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	PM	0.0017	--	--	--	0.00	--	0.002	0.006	Pass

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Test #	PVVX10074006	Test Procedure	95 - SC03
Exhaust Test # for this Evap Test	--	Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline
Test Date	02/14/2022	Fuel	Gasoline
Fuel Batch ID	IJT455	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6646	Odometer Units	K
4WD Test Dyno	No	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 (miles per gallon)	
METHANE (CH4 - Methane)	0.0017	--	
CO (Carbon Monoxide)	0.32	--	
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.52	--	
DT-EER (Drive Trace Energy Economy Rating)	-1.02	--	
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	0.09	--	
MFR FE (Manufacturer Fuel Economy)	25.7853	25.7853	
NOX (Nitrogen Oxide)	0.004	--	
N2O (Nitrous Oxide)	0.0008	--	
HC-NM (Non-methane Hydrocarbon)	0.0002	--	
NMOG (Non-methane organic gases)	0.0002	--	
PM (Particulate Matter)	0.0026	--	
HC-NM+NOX (SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03)	0.0042	--	
HC-TOTAL (Total Hydrocarbon)	0.002	--	
Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE	
Carbon-Related Exhaust Emissions	338.5088	--	
Test Result Name	Unrounded Test Result	Verify Calculated CO2	
Carbon dioxide	338	--	
Manufacturer Test Comments	MY23 EDV XC90 B5 AWD		

Certification Summary Information Report

Test Group		VVVXT02.0S30				Evaporative/Refueling Family				VVVXR0142E50		
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	Federal Tier 3 Bin 30	CO	0.3200	--	--	--	0.05	--	0.370	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0002	--	1.030	--	0.0014	--	0.002	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0040	--	--	--	0.002	--	0.006	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0026	--	--	--	0.00	--	0.003	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.32	--	--	--	0.05	--	0.4	1.0	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0002	--	1.030	--	0.0014	--	0.002	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0042	--	--	--	--	--	0.008	0.030	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.0040	--	--	--	0.002	--	0.006	999.999	Pass

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Fuel Properties			
Fuel Batch ID	IGT455	Fuel Calibration Number	1
Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline	Fuel Batch Calibration Date	07/13/2020
Fuel Batch Calibration Effective Date	10/21/2020	Fuel Batch Calibration Ineffective Date	--
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.749
Fuel Ethanol Volume Percent (%)	10	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17770
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	Fuel Carbon Mass Fraction (E10)	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.828	Weight Fraction CO2	--
Fuel Batch ID	IJT455	Fuel Calibration Number	1
Test Fuel Type	47 - CARB LEV3 E10 Premium Gasoline	Fuel Batch Calibration Date	10/21/2020
Fuel Batch Calibration Effective Date	05/27/2021	Fuel Batch Calibration Ineffective Date	--
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.748
Fuel Ethanol Volume Percent (%)	9.6	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17810
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	Fuel Carbon Mass Fraction (E10)	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.828	Weight Fraction CO2	--
Fuel Batch ID	HAKK02	Fuel Calibration Number	1
Test Fuel Type	49 - Tier 3 E10 Premium Gasoline (9 RVP @Low Alt.)	Fuel Batch Calibration Date	10/25/2020
Fuel Batch Calibration Effective Date	05/10/2020	Fuel Batch Calibration Ineffective Date	--
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.752
Fuel Ethanol Volume Percent (%)	9.7	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	18052
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	FHTW10	Fuel Calibration Number	1
Test Fuel Type	29 - Cold CO E10 Premium Gasoline (Tier 3)	Fuel Batch Calibration Date	10/17/2017
Fuel Batch Calibration Effective Date	01/01/2019	Fuel Batch Calibration Ineffective Date	--
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.749
Fuel Ethanol Volume Percent (%)	10.1	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17756
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	Fuel Carbon Mass Fraction (E10)	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.828	Weight Fraction CO2	--

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family			VVVXR0142E50	
Consolidated List of Standards									
Exhaust Standards									
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			California LEV-III SULEV30	
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	--	--	--	--	--	--	0.05	1.0
150,000 miles	NMOG	--	--	1.030	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0034	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
Cert Region		Federal			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			Federal Tier 3 Bin 30	
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	--	--	--	--	--	--	0.05	999.999
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	NMOG	--	--	1.030	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.060
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	0.006

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family			VVVXR0142E50	
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			California LEV-III SULEV30	
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	--	--	--	--	--	--	0.07	999.999
120,000 miles	METHANE	--	--	--	--	--	--	0.0006	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.00	0.010
150,000 miles	CO	--	--	--	--	--	--	0.05	1.0
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0034	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	0.003
Cert Region		Federal			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			Federal Tier 3 Bin 30	
Fuel		Gasoline			Test Procedure			California 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
50,000 miles	HC-TOTAL	--	--	--	--	--	--	0.001	0.410
120,000 miles	CREE	--	--	--	--	--	--	0.07	999.999
120,000 miles	METHANE	--	--	--	--	--	--	0.0006	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.00	0.010
150,000 miles	CO	--	--	--	--	--	--	0.05	1.00
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	NMOG	--	--	1.101	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0034	0.030
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.060
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	0.003

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family			VVVXR0142E50	
Cert Region		Federal			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			Federal Tier 3 Bin 30	
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	--	--	--	--	--	--	0.07	999.999
120,000 miles	METHANE	--	--	--	--	--	--	0.0006	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.00	0.010
150,000 miles	CO	--	--	--	--	--	--	0.05	1.0
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0034	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	0.003
Cert Region		Federal			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			Federal Tier 3 Bin 30	
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	--	--	--	--	--	--	0.05	999.999
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	NMOG	--	--	1.030	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.060
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	999.999

Certification Summary Information Report

Test Group		VVVXT02.0S30			Evaporative/Refueling Family			VVVXR0142E50	
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Both	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			California LEV-III SULEV30	
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	--	--	--	--	--	--	0.05	9.6
150,000 miles	NMOG	--	--	1.030	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0034	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	0.006
Cert Region		Federal			Cert/In-Use Code			Cert	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			Federal Tier 3 Bin 30	
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	--	--	--	--	--	--	0.02	12.5
120,000 miles	HC-NM	--	--	--	--	--	--	0.0010	0.30
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Cert	
Vehicle Class		LDT2 (LVW 3751-5750, GVW 0-6000)			Standard Level			California LEV-III SULEV30	
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	--	--	--	--	--	--	0.02	12.5

Certification Summary Information Report

Test Group	VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
Cert Region	California + CAA Section 177 states	Cert/In-Use Code	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	Standard Level	California LEV-III SULEV30
Fuel	Gasoline	Test Procedure	California 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	--	--	--	--	--	--	0.07	999.999
120,000 miles	METHANE	--	--	--	--	--	--	0.0006	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.000	0.010
150,000 miles	CO	--	--	--	--	--	--	0.05	1.00
150,000 miles	NMOG	--	--	1.101	--	--	--	0.0014	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0034	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.002	999.999
150,000 miles	PM	--	--	--	--	--	--	0.00	0.003

Cert Region	California + CAA Section 177 states	Cert/In-Use Code	Cert
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	Standard Level	California LEV-III SULEV30
Fuel	Gasoline	Test Procedure	CA fuel 50 Deg(F) exhaust test

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
4,000 miles	CO	--	--	--	--	--	--	0.00	1.0
4,000 miles	NMOG	--	--	1.101	--	--	--	0.00	999.999
4,000 miles	NMOG+NOX	--	--	--	--	--	--	0.000	0.060
4,000 miles	NOX	--	--	--	--	--	--	0.00	999.999

Evaporative/Refueling Standards			
Evaporative/Refueling Family	VVVXR0142E50	Cert Region	Federal
Cert/In-Use Code	Both	Standard Level	Federal Tier 3 Evap
Test Procedure	California fuel 2-day evap		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.500	0.0106

Certification Summary Information Report

Test Group		VVVXT02.0S30		Evaporative/Refueling Family		VVVXR0142E50	
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Both		Standard Level		California LEV-III Zero Evap (Option 2)	
Test Procedure		Federal fuel refueling test (ORVR)					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC	--	0.200	0		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Both		Standard Level		California LEV-III Zero Evap (Option 2)	
Test Procedure		Evap Canister Bleed Test					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL	--	0.020	0		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Both		Standard Level		California LEV-III Zero Evap (Option 2)	
Test Procedure		CA fuel 3-day evap.					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.500	0.0022		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Both		Standard Level		California LEV-III Zero Evap (Option 2)	
Test Procedure		California Fuel Running Loss					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.010	0		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		Federal	
Cert/In-Use Code		Both		Standard Level		Federal Tier 3 Evap	
Test Procedure		California Fuel Running Loss					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.050	0		

Certification Summary Information Report

Test Group		VVVXT02.0S30		Evaporative/Refueling Family		VVVXR0142E50	
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		Federal	
Cert/In-Use Code		Both		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	--	0.200	0		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		Federal	
Cert/In-Use Code		Both		Standard Level		Federal Tier 3 Evap	
Test Procedure		CA fuel 3-day evap.					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.500	0.0022		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		Federal	
Cert/In-Use Code		Both		Standard Level		Federal Tier 3 Evap	
Test Procedure		Evap Canister Bleed Test					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL	--	0.020	0		
Evaporative/Refueling Family		VVVXR0142E50		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Both		Standard Level		California LEV-III Zero Evap (Option 2)	
Test Procedure		California fuel 2-day evap					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.500	0.0106		

Certification Summary Information Report

Test Group		VVVXT02.0S30	Evaporative/Refueling Family	VVVXR0142E50
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	COMB-CREE	Combined Carbon-Related Exhaust Emissions	
CO	Carbon Monoxide	COMB-OPT-CREE	Combined Optional Carbon-Related Exhaust Emissions	
CO2	Carbon dioxide	HC-TOTAL-EQUIV	Total Hydrocarbon equivalent - Evap only	
CREE	Carbon-Related Exhaust Emissions	METHANE-COMB	Combined CH4 for HD 2b/3 vehicles only	
OPT-CREE	Optional Carbon-Related Exhaust Emissions	N2O-COMB	Combined Nitrous Oxide for HD 2b/3 vehicles only	
NOX	Nitrogen Oxide	LEAK-DIA	Effective Leak Diameter (inches)	
PM	Particulate Matter	LEAK-GAS CAP	Gas Cap Leakage (cc/min)	
PM-COMP	SFTP Composite Particulate Matter	CO2-COMB	Combined Carbon Dioxide for HD 2b/3 Vehicles Only	
HC-NM	Non-methane Hydrocarbon	KW-HRS	Integrated DC KW-HRS	
OMHCE	Organic material Hydrocarbon Equivalent	CH4 BAG 1	Bag 1 Methane	
OMNMHCE	Organic material non-methane HC equivalent	CH4 BAG 2	Bag 2 Methane	
NMOG	Non-methane organic gases	CH4 BAG 3	Bag 3 Methane	
HCHO	Formaldehyde	CH4 BAG 4	Bag 4 Methane	
H3C2HO	Acetaldehyde	CO BAG 1	Bag 1 Carbon Monoxide	
HC-NM+NOX	SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03	CO BAG 2	Bag 2 Carbon Monoxide	
HC-NM+NOX-COMP	SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides	CO BAG 3	Bag 3 Carbon Monoxide	
CO-COMP	SFTP Composite Carbon Monoxide	CO BAG 4	Bag 4 Carbon Monoxide	
ETHANOL	C2H5OH - Ethanol	NMOG BAG 1	Bag 1 Non-methane organic gases	
FE BAG 1	Bag 1 Fuel Economy	NMOG BAG 2	Bag 2 Non-methane organic gases	
FE BAG 2	Bag 2 Fuel Economy	NMOG BAG 3	Bag 3 Non-methane organic gases	
FE BAG 3	Bag 3 Fuel Economy	NMOG BAG 4	Bag 4 Non-methane organic gases	
FE BAG 4	Bag 4 Fuel Economy	ACT-DISTANCE BAG 1	Bag 1 Actual Distance	
MFR FE	Manufacturer Fuel Economy	ACT-DISTANCE BAG 2	Bag 2 Actual Distance	
HC	Hydrocarbon for Running Loss and ORVR	ACT-DISTANCE BAG 3	Bag 3 Actual Distance	
METHANE	CH4 - Methane	ACT-DISTANCE BAG 4	Bag 4 Actual Distance	
METHANOL	CH3OH - Methanol	HC-TOTAL BAG 1	Bag 1 Total Hydrocarbon	
N2O	Nitrous Oxide	HC-TOTAL BAG 2	Bag 2 Total Hydrocarbon	
SPITBACK	Spitback Hydrocarbon in grams	HC-TOTAL BAG 3	Bag 3 Total Hydrocarbon	
AMP-HRS	Integrated Amp-hours	HC-TOTAL BAG 4	Bag 4 Total Hydrocarbon	
START-SOC	System Start State of Charge Watt-hours	WATT-HRS BAG 1	Bag 1 Watt Hours	
END-SOC	System End State of Charge Watt-hours	WATT-HRS BAG 2	Bag 2 Watt Hours	

Certification Summary Information Report

Test Group		VVVXT02.0S30	Evaporative/Refueling Family		VVVXR0142E50
ACT-DISTANCE	Actual Distance Driven (miles)		WATT-HRS BAG 3	Bag 3 Watt Hours	
AS-VOLT	Average System Voltage		WATT-HRS BAG 4	Bag 4 Watt Hours	
CO2 BAG 1	Bag 1 Carbon Dioxide		WATT-HRS	Watt Hours	
CO2 BAG 2	Bag 2 Carbon Dioxide		HC-NM BAG 1	Bag 1 Non-methane Hydrocarbon	
CO2 BAG 3	Bag 3 Carbon Dioxide		HC-NM BAG 2	Bag 2 Non-methane Hydrocarbon	
CO2 BAG 4	Bag 4 Carbon Dioxide		HC-NM BAG 3	Bag 3 Non-methane Hydrocarbon	
NMOG+NOX	Non-methane organic gases plus Nitrogen Oxides		HC-NM BAG 4	Bag 4 Non-methane Hydrocarbon	
NMOG+NOX-COMP	SFTP Composite Non-methane Organic Gases + Nitrogen Oxides		N2O BAG 1	Bag 1 Nitrous Oxide	
DT-IWRR	Drive Trace Inertia Work Ratio Rating		N2O BAG 2	Bag 2 Nitrous Oxide	
DT-ASCR	Drive Trace Absolute Speed Change Rating		N2O BAG 3	Bag 3 Nitrous Oxide	
DT-EER	Drive Trace Energy Economy Rating		N2O BAG 4	Bag 4 Nitrous Oxide	
Certification Region					
CA	California + CAA Section 177 states		FA	Federal	
Exhaust Emission Standard Level					
B1	Federal Tier 2 Bin 1		HDV2B340	Federal Tier 3 HD Class 2b Transitional Bin 340	
B2	Federal Tier 2 Bin 2		HDV2B250	Federal Tier 3 HD Class 2b Bin 250	
B3	Federal Tier 2 Bin 3		HDV2B200	Federal Tier 3 HD Class 2b Bin 200	
B4	Federal Tier 2 Bin 4		HDV2B170	Federal Tier 3 HD Class 2b Bin 170	
B5	Federal Tier 2 Bin 5		HDV2B150	Federal Tier 3 HD Class 2b Bin 150	
B6	Federal Tier 2 Bin 6		HDV2B0	Federal Tier 3 HD Class 2b Bin 0	
B7	Federal Tier 2 Bin 7		HDV3B630	Federal Tier 3 HD Class 3 Transitional Bin 630	
B8	Federal Tier 2 Bin 8		HDV3B570	Federal Tier 3 HD Class 3 Transitional Bin 570	
B9	Federal Tier 2 Bin 9		HDV3B400	Federal Tier 3 HD Class 3 Bin 400	
B10	Federal Tier 2 Bin 10		HDV3B270	Federal Tier 3 HD Class 3 Bin 270	
B11	Federal Tier 2 Bin 11		HDV3B230	Federal Tier 3 HD Class 3 Bin 230	
HDV1	HDV1 (Federal HD chassis Class 2b GVW 8501-10000)		HDV3B200	Federal Tier 3 HD Class 3 Bin 200	
HDV2	HDV2 (Federal HD chassis Class 3 GVW 10001-14000)		HDV3B0	Federal Tier 3 HD Class 3 Bin 0	
L2	California LEV-II LEV		L4SULEV100	California LEV-IV SULEV100	
L2OP	California LEV-II LEV Optional		L4SULEV125	California LEV-IV SULEV125	
U2	California LEV-II ULEV		L4SULEV15	California LEV-IV SULEV15	
S2	California LEV-II SULEV		L4SULEV150	California LEV-IV SULEV150	
ZEV	California ZEV		L4SULEV170	California LEV-IV SULEV170	
OT	Other		L4SULEV175	California LEV-IV SULEV175	
T1	Federal Tier 1		L4SULEV20	California LEV-IV SULEV20	
PZEV	California PZEV		L4SULEV200	California LEV-IV SULEV200	
L2LEV160	California LEV-II LEV160		L4SULEV230	California LEV-IV SULEV230	
L2ULEV125	California LEV-II ULEV125		L4SULEV25	California LEV-IV SULEV25	
L2SULEV30	California LEV-II SULEV30		L4SULEV30	California LEV-IV SULEV30	
L2LEV395	California LEV-II LEV395		L4SULEV75	California LEV-IV SULEV75	

Certification Summary Information Report

Test Group		VVVXT02.0S30	Evaporative/Refueling Family		VVVXR0142E50
L2ULEV340	California LEV-II ULEV340		L4SULEV85	California LEV-IV SULEV85	
L2LEV630	California LEV-II LEV630		L4ULEV125	California LEV-IV ULEV125	
L2ULEV570	California LEV-II ULEV570		L4ULEV200	California LEV-IV ULEV200	
L3LEV160	California LEV-III LEV160		L4ULEV250	California LEV-IV ULEV250	
L3ULEV125	California LEV-III ULEV125		L4ULEV270	California LEV-IV ULEV270	
L3ULEV70	California LEV-III ULEV70		L4ULEV40	California LEV-IV ULEV40	
L3ULEV50	California LEV-III ULEV50		L4ULEV400	California LEV-IV ULEV400	
L3SULEV30	California LEV-III SULEV30		L4ULEV50	California LEV-IV ULEV50	
L3SULEV20	California LEV-III SULEV20		L4ULEV60	California LEV-IV ULEV60	
L3LEV395	California LEV-III LEV395		L4ULEV70	California LEV-IV ULEV70	
L3ULEV340	California LEV-III ULEV340		T4B170	Federal Tier 4 MDV Bin 170	
L3ULEV250	California LEV-III ULEV250		T4B150	Federal Tier 4 MDV Bin 150	
L3ULEV200	California LEV-III ULEV200		T4B125	Federal Tier 4 MDV Bin 125	
L3SULEV170	California LEV-III SULEV170		T4B100	Federal Tier 4 MDV Bin 100	
L3SULEV150	California LEV-III SULEV150		T4B85	Federal Tier 4 MDV Bin 85	
L3LEV630	California LEV-III LEV630		T4B75	Federal Tier 4 MDV Bin 75	
L3ULEV570	California LEV-III ULEV570		T4B70	Federal Tier 4 Bin 70	
L3ULEV400	California LEV-III ULEV400		T4B65	Federal Tier 4 Bin 65	
L3ULEV270	California LEV-III ULEV270		T4B60	Federal Tier 4 Bin 60	
L3SULEV230	California LEV-III SULEV230		T4B55	Federal Tier 4 Bin 55	
L3SULEV200	California LEV-III SULEV200		T4B50	Federal Tier 4 Bin 50	
T3B160	Federal Tier 3 Bin 160		T4B45	Federal Tier 4 Bin 45	
T3B125	Federal Tier 3 Bin 125		T4B40	Federal Tier 4 Bin 40	
T3B110	Federal Tier 3 Transitional Bin 110		T4B35	Federal Tier 4 Bin 35	
T3B85	Federal Tier 3 Transitional Bin 85		T4B30	Federal Tier 4 Bin 30	
T3SULEV30	Federal Tier 3 Transitional LEV-II SULEV30 Carryover		T4B25	Federal Tier 4 Bin 25	
T3B70	Federal Tier 3 Bin 70		T4B20	Federal Tier 4 Bin 20	
T3B50	Federal Tier 3 Bin 50		T4B15	Federal Tier 4 Bin 15	
T3B30	Federal Tier 3 Bin 30		T4B10	Federal Tier 4 Bin 10	
T3B20	Federal Tier 3 Bin 20		T4B5	Federal Tier 4 Bin 5	
T3B0	Federal Tier 3 Bin 0		T4B0	Federal Tier 4 Bin 0	
HDV2B395	Federal Tier 3 HD Class 2b Transitional Bin 395				
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		

Certification Summary Information Report

Test Group		VVVXT02.0S30	Evaporative/Refueling Family		VVVXR0142E50
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	

Section 07.02**Evaporative emission test results log****Section 07.02****Evaporative Family VVVXR0142E50 (Carry-Over 2026MY)**

Evaporative Emission Test Log Vehicle ID: 202216											
Date	Test #	Odometer Mileage	System Mileage	Running Loss	Hot Soak	Diurnal			Total HS + Di	ORVR	Comment
		[miles]	[miles]	[g/mile]	[g]	0-24 h [g]	24-48 h [g]	48-72 h [g]	[g]	[g/gallon]	
02 24 2021	HS: 00745 Di: 00657	4099	4074	n.a	0.0198	0.1500	0.0835	n.a	0.1698	n.a	2-day CARB V00*
02 17 2021	ORVR: C-340	4063	4039	n.a	n.a	n.a	n.a	n.a	n.a	0.004	ORVR V00
03 17 2021	S1_210317_004	4173	4148	0.001	n.a	n.a	n.a	n.a	n.a	n.a	Running Losses* (Point Source)
03 17 2021	HS: 00684 Di: 00685	4201	4176	n.a	0.0576	0.1129	0.0623	0.0480	0.1704	n.a	3-day CARB V00*

* Compensated for ethanol fuel by multiplying results with 1,08

Bleed Emission Test Log Evaporative Family: VVVXR0142E50 Vehicle ID: 202216		
Test Options	Chosen Method	Reference California Test Procedures
Carbon Canister Stabilization Method	Carbon Canister System Purge/Load Cycling with Fuel Vapor	Part III D.12.1.2
Worst Case Fuel Tank System	XC60 Fuel Tank	Part III D.12.2
Carbon Canister System Purge	Attached to vehicle and driven on dynamometer	Part III D.12.5.1
Two-Day Diurnal Temperature Cycling	Environmental Chamber	Part III D.12.7.1
Hydrocarbon Capture Method	FID and integrated with continuous flow measurements	Part III D.12.8.3 (Method C)
Test Result		
Date	2021-04-09	
Odometer Mileage	4227	
Test Number	BETP_Report101	
Test Results	Diurnal 1: 0,0078 Gram, Diurnal 2: 0,0099 Gram	
Final Result	0,0099 Grams per Test	

Test Group:		Original: PVVXJ02.0S30, Actual VVVXT02.0S30																																			
Vehicle ID: 202317		Vehicle Model: XC90 B6 AWD					Emissions and Fuel Economy														Fuel Economy MPG by Phase				Fuel Economy CO2 by Phase				Dyno Load Coefficients			Drive Trace Evaluation			Test Data Details		
Date	Test No. VCC	Test No. Verify	Fuel Batch ID	Odo Reading	System Mileage	Odometer Correction Factor	PM [g/mile]	HC [g/mile]	CH4 [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	NO2 [g/mile]	NMOG+NOx [g/mile]	CO2 [g/mile]	FE Unrounded VCC [MPG]	FE Unrounded Verify [MPG]	FE Rounded Verify [MPG]	CREE Unrounded 4K [g/mile]	CREE Rounded 4K [g/mile]	FE FTP/UDS Phase1 SC03/US06 HWY [MPG]	FE FTP/UDS Phase2 US06 City [MPG]	FE FTP/UDS Phase3 [MPG]	FE UDDS Phase4 [MPG]	CO2 FTP/UDS Phase1 SC03/US06 HWY [g/mile]	CO2 FTP/UDS Phase2 US06 City [g/mile]	CO2 FTP/UDS Phase3 [g/mile]	CO2 UDDS Phase4 [g/mile]	DL F0	DL F1	DL F2	DT-4WR [%]	DT-ASCR [%]	DT-EER [%]	Test Comments	
20220201	E1_220201_011	PVVX10074003	UT455	6435	6508	1.0114	0.0006	0.004	0.0012	0.0035	0.0038	0.21	0.009	0.0002	0.0128	334	26.1148	26.1066	26.1	334.3421	334	25.5139	25.5968	28.6671	24.8539	342	341	304	351	18.996	0.22718	0.026398	-1.60	-0.97	-1.24	4K CS UDDS V00 LEVII E10	
20220201	E1_220201_012	PVVX10074004	UT455	6458	6532	1.0114	0.0001	0.000	0.0001	0.0000	0.0000	0.29	0.001	0.0000	0.0010	235	37.1273	37.0708	37.1	235.4556	235		37.1273				235				18.996	0.22718	0.026398	-7.23	-5.74	-0.85	4K CS 2HFEDS V00 LEVII E10 fuel
20220201	E1_220201_013	PVVX10074005	UT455	6503	6577	1.0114	0.0017	0.003	0.0014	0.0014	0.0014	0.56	0.003	0.0000	0.0044	368	23.6675	23.6617	23.7	368.8889	369	27.7655	15.5474			314	560			18.996	0.22718	0.026398	-11.03	-6.11	-2.19	4K CS 2US06 V00 LEVII E10 fuel	
20220214	E1_220214_003	PVVX10074006	UT455	6646	6722	1.0114	0.0026	0.002	0.0017	0.0002	0.0002	0.32	0.004	0.0008	0.0042	338	25.7890	25.7853	25.8	338.5088	339		25.7890				338				18.996	0.22718	0.026398	0.09	-0.52	-1.02	4K CS 2SC03 V00 LEVII E10 fuel
20220210	K2_220210_002	PVVX10074007	FHTW10	6629	6705	1.0114		0.017	0.0042	0.0142	0.0148	0.37	0.014	0.0002	0.0288	413	21.1205	21.1262	21.1	413.8328	414	17.8108	21.2668	24.2021		490	410	361		21.360	0.35781	0.028174	-3.01	-1.54	-1.87	4K CS FTP 20F V00 TIER3 E10 fuel	
20220203	E1_220203_007	PVVX10074008	UT455	6551	6626	1.0114	0.0016	0.005	0.0019	0.0037	0.0041	0.25	0.008	0.0003	0.0121	347	25.1188	25.1248	25.1	347.4079	347	23.3535	24.3007	27.7721	24.8584	373	359	314	351	18.996	0.22718	0.026398	1.44	0.98	-0.35	4K CS UDDS 50F V00 LEVII E10 fuel	

Test Group:		Original: PVVXJ02.0S30, Actual VVVXT02.0S30																																				
Vehicle ID: 202421		Vehicle Model: XC90 B6 AWD						Emissions and Fuel Economy														Fuel Economy MPG by Phase						Fuel Economy CO2 by Phase				Dyno Load Coefficients			Drive Trace Evaluation			Test Data Details
Date	Test No. VCC	Test No. Verify	Fuel Batch ID	Odo Reading	System Mileage	Odometer Correction Factor	PM [g/mile]	HC [g/mile]	CH4 [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	N2O [g/mile]	NMOG+NOx [g/mile]	CO2 [g/mile]	FE Unrounded VCC [MPG]	FE Unrounded Verify [MPG]	FE Rounded Verify [MPG]	CREE Unrounded 4K [g/mile]	CREE Rounded 4K [g/mile]	FE FTP/UDS Phase1 SC03/US06 HWY [MPG]	FE FTP/UDS Phase2 US06 City [MPG]	FE FTP/UDS Phase3 HWY [MPG]	FE UD05 Phase4 [MPG]	CO2 FTP/UDS Phase1 SC03/US06 HWY [g/mile]	CO2 FTP/UDS Phase2 US06 City [g/mile]	CO2 FTP/UDS Phase3 [g/mile]	CO2 UD05 Phase4 [g/mile]	DL F0	DL F1	DL F2	DT-IWR [%]	DT-ASCR [%]	DT-EER [%]	Test Comments		
02142023	E1_230214_005	RVVX10079324	004800	6671	6694	1.0034	0.0002	0.004	0.0027	0.0021	0.0022	0.18	0.001	0.0000	0.0032	234	37.7188	37.6859	37.7	234.2954	234		37.7188				234					15.011	0.23898	0.026168	-5.34	-4.35	-0.78	Will be replaced by confirmatory test 4K CS 2HPEDS V00 TIER 2 fuel
02142023	E1_230214_004	RVVX10079323	004800	6647	6670	1.0034	0.0007	0.006	0.0024	0.0043	0.0045	0.39	0.004	0.0000	0.0085	334	26.3564	26.3861	26.4	334.6317	335	25.3292	25.5700	28.6973	25.7319	348	345	307	342	15.011	0.23898	0.026168	1.61	1.25	-0.75	Will be replaced by confirmatory test 4K CS UD05 V00 TIER 2 fuel		

Section 07.03.02

SFTP Test Results

Vehicle ID / Version: 202317 V00
Durability Group: VVVXGPGNNN05
Test Group: VVVXT02.0S30 (Carry-Over 2026MY)
Emission Standards: Exhaust: Interim TIER4 Bin30 (EPA)
SFTP: NMOG+NOx and CO Composite Exhaust Emission Standards (EPA)
Selected Particulate Certification Level FTP: 0,003 g/mile (EPA)
Fuel: LEVIII E10
A/C Equipped: Yes
Full Useful Life: 150 k

Test Results [G/mile]				
	NMOG	NOx	CO	PM
UDDS	0.0038	0.009	0.21	0.0006
US06	0.0014	0.003	0.56	0.0017
SC03	0.0002	0.004	0.32	0.0026

DF'S (all cycles)			
	NMOG+NOx	CO	PM
Full Useful Life	0.0034	0.05	0.0000

Test Results incl DF's			
	Composite NMOG+NOx	Composite CO	US06 PM
Full Useful Life	0.0107	0.40	0.0017

Standards 150k			
	Composite NMOG+NOx	Composite CO	US06 PM
Cert	0.060	4.2	0.006
In-Use	0.060	4.2	0.006

S 07.03.03

Determining of procedure for FE label calculation (Litmus Test) according to CISD-15-15
Test Group VVVXT02.0S30 (Carry-Over 2026MY)

Model Year	Manufacturer	Division or Make	Model Name	Original EDV Test Group	EDV ID	EDV Vehicle	Carry Over EDV	Specific 5-cycle results CITY	Specific 5-cycle results HWY	Derived 5-cycle results CITY	Derived 5-cycle results HWY	Derived 5-cycle results CITY * 0.96	Derived 5-cycle results HWY * 0.95	Pass Criteria CITY	Pass Criteria HWY	Manufacturer request to use Litmus test data for FE label until EPA Confirmatory Testing is performed
2027	Volvo Car Corp.	Volvo	XC90 B6 AWD	PVVXJ02.0S30	202317 V00	XC90 B6 AWD	No	20.9	26.2	20.6	26.3	19.8	25.0	PASS	PASS	Yes

Section 10.01**DESCRIPTION OF ALTERNATE-FUELED VEHICLES**

For 2027MY, Volvo does offer alternate fueled vehicle (Mild Hybrid) technology in this Test Group **VVVXT02.0S30** using:

Drive unit

Internal combustion gasoline engine with Belt driven integrated starter generator:

30 ftlb @ 2250rpm

40 Nm @ 2250rpm

10kW @ 3000rpm

13 hp @ 3000rpm

Working Voltage: 36-52 Volt

Note! No electric drive, only ICE support (ICE cannot be disengaged from gearbox / wheels)

Medium voltage battery Module (MVBM)

- Lithium-Ion battery pack
- Anode: Graphite
- Cathode: NCM 532 (Nickel, Cobalt, Manganese)
- 220 Wh useable energy
- 370 Wh Stored energy
- -11 kW Discharge Power for ≤ 10 s (at 25 °C, 50 % SOC)
- 13 kW Charge Power for ≤ 10 s (at 25 °C, 50 % SOC,
- 44 Volt (Nominal Voltage)
- 8.4 Ah Battery Energy Capacity

Regenerative braking system

During coasting and braking the integrated starter generator is used to recuperate kinetic energy. The amount of electric power during regeneration will vary during normal operation depending on battery state of charge and temperature.

Section 12.01 Transmission Description

For description of Vehicle Drive Modes / Transmission modes: See section 12.09

Gearbox	Transmission type	Transmission Gear Ratios								Engine Code	Vehicle Model	Transmission Multimode (yes/no)
		1	2	3	4	5	6	7	8			
AWF8G55	SA	5.06	3.07	2.05	1.52	1.26	1.00	0.79	0.66	06_1	XC90 B6 AWD	Yes

Section 12.02.01

VVVXT02.0S30 EDV & DDV Selection & Carry-Over Justification**Exhaust DDV Justification:****Vehicles in 2027MY:**

Vehicle	XC90 B6 AWD
Engine displacement	2.0 liter
Transmission	AWD
Total Catalyst Loading	10.3 g
Precious Metal Composition	PdRh / PdRh
ETW	5000
TRLHP - worst case	15.8
Drive Modes available	Standard (See S12.09)

Exhaust DDV covering all 2027MY vehicles:

	Exhaust DDV Info
Original Test Group	NVVXJ02.0S33
Vehicle	XC60 B6 AWD
Engine displacement	2.0 liter
Transmission	AWD
Total Catalyst Loading	10.3
Precious Metal Composition	PdRh / PdRh
ETW	5250
TRLHP -worst case	16.1
Drive Mode used for test	Standard (Stop / Start Active)

Exhaust DDV Carry-Over Justification:

- Exhaust DDV data for 2027MY is carry-over from 2026MY.
- Test from XC60 B6 AWD (DDV) with Stop/Start active has the worst case combination of ETW and TRLHP. A unique XC60 B6 AWD DDV road load has been created to cover all variants.
- No hardware or software that affect exhaust emissions has been changed from previous year.

Exhaust EDV Justification:**Vehicles in 2027MY:**

Vehicle	XC90 B6 AWD
Engine displacement	2.0 liter
Transmission	AWD
Total Catalyst Loading	10.3 g
Precious Metal Composition	PdRh / PdRh
ETW	5000
TRLHP - worst case	15.8
Drive Modes available	Standard (See S12.09)

Exhaust EDV covering all 2027MY vehicles:

	Exhaust EDV Info
Original Test Group	PVVXJ02.0S30
Vehicle	XC90 B6 AWD
Engine displacement	2.0 liter
Transmission	AWD
Total Catalyst Loading	10.3 g
Precious Metal Composition	PdRh / PdRh
ETW	5000
TRLHP - worst case	15.8
Drive Mode used for test	Standard (Stop / Start Active)

Exhaust EDV Carry-Over Justification:

- Exhaust EDV data for 2027MY is carry-over from 2026MY.
- Test from XC90 B6 AWD (EDV) with Stop/Start active has the worst case combination of ETW and TRLHP.
- No hardware or software that affect exhaust emissions has been changed from previous year.

2027MY EVAP Family Description

EVAP family name	VVVXR0142E50
Vehicle	XC90 B6 AWD
Certification Vehicle class	LDT3
Canister Capacity g	142g
Canister configuration	3 chamber
Fuel tank material	Plastic
Fuel tank volume litres	71
Purge control	Electric
Drive Mode available	Standard (Stop / Start Active)

EVAP EDV Carry-Over Justification:

- EVAP EDV data for 2027MY is carry-over from 2026MY.
- Using development test data and engineering judgment, test from XC60 B5 AWD 2022MY has been determined to represent same or worst case for this EVAP Families.
- No hardware or software that affect EVAP emissions has been changed from previous year.

Judgement for using XC60 B5 AWD as EVAP EDV:

Volvo consider XC60 and XC90 to be equivalent for all EVAP emissions. Therefor Volvo carry over the XC60 EDV from 2022MY when XC90 was introduced in 2023MY.

The XC60 and XC90 share the same 71-liter fuel tank.

The XC60 and XC90 share the same Canister, Purge Valve, Fuel Injectors, Leakage detection pump.

The XC60 and XC90 share the same ECM Software Purge calibration.

The XC60 and XC90 have the same purge levels.

The XC60 share the same fuel tank profile “CERTV526MY16” as XC90.

	EDV Info
EVAP family name	NVVXR0142E54
Vehicle	XC60 B5 AWD
Certification Vehicle class	PC
Canister Capacity g	142g
Canister configuration	3 chamber
Fuel tank material	Plastic
Fuel tank volume litres	71
Purge control	Electric
Drive Mode used for test	Standard (Stop / Start Active)

	DDV Info
EVAP family name	GVVXR0140EV4
Vehicle	XC90 T6 AWD
Certification Vehicle class	PC
Canister Capacity g	140 g*
Canister configuration	3 chamber
Fuel tank material	Plastic
Fuel tank volume litres	71
Purge control	Electric
Drive Mode used for test	Standard (Stop / Start Active)

*Canister on DDV variant (140gram) is the worst case compared to current (142gram) canister regarding ageing attributes.

EVAP DDV Carry-Over Justification:

- EVAP DDV data for 2027MY is carry-over from 2026MY.
- Using development test data and engineering judgment, test from XC90 T6 AWD has been determined to represent same or worst case for this EVAP Family.
- No hardware or software that affect EVAP emissions has been changed from previous year.

Verify Processing Report**Total Datasets Submitted:** 1**Accepted Datasets:** 1**Rejected Datasets:** 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission**Test Vehicle Information Details****Information Process Code :** C**EPA Manufacturer Code :** VVX**Vehicle Identification Text :** 202216**Vehicle Configuration Number :** 0**Vehicle Configuration Details****Vehicle Description Details****Manufacturer Vehicle Configuration Number :** 0**Test Group Name :** NVVXJ02.0U73**Evaporative Refueling Family Name :** NVVXR0142E54**Leak Family Identifier :** 001**Leak Family Name :** NVVXR0142E54-001**Model Year :** 2022**Actual Test Vehicle Make Text :** Volvo**Actual Test Vehicle Model Text :** XC60 B5 AWD**Drive Source Details****Drive Source Identifier :** C**Fuel Identifier :** G**Drive Source Details****Drive Source Identifier :** E**Fuel Identifier :** EL**Fuel Cell Indicator :** N**Rechargeable Energy Storage System Indicator :** Y**Rechargeable Energy Storage Device Identifier :** B**Off Board Charge Capability Indicator :** N**Test Drive Code :** F**Shift Indicator Light Usage Identifier :** 1**Aged Component Usage Identifier :** 4**Odometer Correction Details****Correction Initial Value :** 0.0**Correction Factor Value :** 0.9940**Correction Sign Identifier :** -**Correction Units Code :** M**Engine Code Text :** L1_2

Engine Rated Horsepower Value : 247
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 1
Air Aspiration Configuration Identifier : N

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 4204
Equivalent Test Weight Value : 4500
Gross Vehicle Weight Rating Value : 5400
NV Ratio Value : 26.0
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 45.720
Target CoefficientB Value : 0.15020
Target CoefficientC Value : 0.024420
Set CoefficientA Value : 24.842
Set CoefficientB Value : 0.08098
Set CoefficientC Value : 0.024629

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 50.800
Target CoefficientB Value : 0.16689
Target CoefficientC Value : 0.027133
Set CoefficientA Value : 29.403
Set CoefficientB Value : 0.11030
Set CoefficientC Value : 0.026769

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 45.720
Target CoefficientB Value : 0.15020
Target CoefficientC Value : 0.024420
Set CoefficientA Value : 24.842
Set CoefficientB Value : 0.08098
Set CoefficientC Value : 0.024629

Manufacturer Comment Text : EDV Worst Case Dyno Setting. TRLHP 15.2, coast down target 18,53, XC60 B5 AWD.

EPA Generated Test Vehicle Details

Original Receipt Date : 20220615
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 4802
Loaded Vehicle Weight Value : 4504
Total Road Load Horsepower Value : 15.2

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report**Total Datasets Submitted:** 1**Accepted Datasets:** 1**Rejected Datasets:** 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission**Test Vehicle Information Details****Information Process Code :** C**EPA Manufacturer Code :** VVX**Vehicle Identification Text :** 202317**Vehicle Configuration Number :** 0**Vehicle Configuration Details****Vehicle Description Details****Manufacturer Vehicle Configuration Number :** 0**Test Group Name :** PVVXJ02.0S30**Evaporative Refueling Family Name :** PVVXR0142E50**Leak Family Identifier :** 001**Leak Family Name :** PVVXR0142E50-001**Model Year :** 2023**Actual Test Vehicle Make Text :** Volvo**Actual Test Vehicle Model Text :** XC90 B6 AWD**Drive Source Details****Drive Source Identifier :** C**Fuel Identifier :** G**Drive Source Details****Drive Source Identifier :** E**Fuel Identifier :** EL**Fuel Cell Indicator :** N**Rechargeable Energy Storage System Indicator :** Y**Rechargeable Energy Storage Device Identifier :** B**Off Board Charge Capability Indicator :** N**Test Drive Code :** F**Shift Indicator Light Usage Identifier :** 1**Aged Component Usage Identifier :** 4**Odometer Correction Details****Correction Initial Value :** 0.0**Correction Factor Value :** 1.0114**Correction Sign Identifier :** +**Correction Units Code :** K**Engine Code Text :** 06_1

Engine Rated Horsepower Value : 295
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TS
Air Aspiration Device Count : 2
Air Aspiration Configuration Identifier : S

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 4764
Equivalent Test Weight Value : 5000
Gross Vehicle Weight Rating Value : 6150
NV Ratio Value : 25.7
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 44.211
Target CoefficientB Value : 0.2488
Target CoefficientC Value : 0.030170
Set CoefficientA Value : 21.360
Set CoefficientB Value : 0.35781
Set CoefficientC Value : 0.028174

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 39.790
Target CoefficientB Value : 0.22390
Target CoefficientC Value : 0.027150
Set CoefficientA Value : 18.996
Set CoefficientB Value : 0.22718
Set CoefficientC Value : 0.026398

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 39.790
Target CoefficientB Value : 0.22390
Target CoefficientC Value : 0.027150
Set CoefficientA Value : 18.996
Set CoefficientB Value : 0.22718
Set CoefficientC Value : 0.026398

Manufacturer Comment Text : EDV Worst Case Dyno Setting. TRLHP 15.8, coast down target 19,52, XC90 B6 AWD.

EPA Generated Test Vehicle Details

Original Receipt Date : 20220615
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 5457
Loaded Vehicle Weight Value : 5064
Total Road Load Horsepower Value : 15.8

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report

Total Datasets Submitted: 1
Accepted Datasets: 1
Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N
EPA Manufacturer Code : VVX
Vehicle Identification Text : 202421
Vehicle Configuration Number : 0

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 0
Test Group Name : RVVXJ02.0S30
Evaporative Refueling Family Name : RVVXR0142E50
Leak Family Identifier : 001
Leak Family Name : RVVXR0142E50-001
Model Year : 2024
Actual Test Vehicle Make Text : Volvo
Actual Test Vehicle Model Text : XC90 B6 AWD

Drive Source Details

Drive Source Identifier : E
Fuel Identifier : EL

Drive Source Details

Drive Source Identifier : C
Fuel Identifier : G

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : Y
Rechargeable Energy Storage Device Identifier : B
Off Board Charge Capability Indicator : N
Test Drive Code : F
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0
Correction Factor Value : 1.0034
Correction Sign Identifier : +
Correction Units Code : K

Engine Code Text : 06_1

Engine Rated Horsepower Value : 295
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TS
Air Aspiration Device Count : 2
Air Aspiration Configuration Identifier : S

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 4750
Equivalent Test Weight Value : 5000
Gross Vehicle Weight Rating Value : 6150
NV Ratio Value : 25.7
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 39.790
Target CoefficientB Value : 0.22390
Target CoefficientC Value : 0.027150
Set CoefficientA Value : 15.011
Set CoefficientB Value : 0.23898
Set CoefficientC Value : 0.026168

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 39.790
Target CoefficientB Value : 0.22390
Target CoefficientC Value : 0.027150
Set CoefficientA Value : 15.011
Set CoefficientB Value : 0.23898
Set CoefficientC Value : 0.026168

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 44.211
Target CoefficientB Value : 0.2488
Target CoefficientC Value : 0.030170
Set CoefficientA Value : 1.0
Set CoefficientB Value : 0.1
Set CoefficientC Value : 0.01

Manufacturer Comment Text : XC90 B6 AWD - TRLHP 15.8.

EPA Generated Test Vehicle Details

Original Receipt Date : 20230321
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 5450
Loaded Vehicle Weight Value : 5050
Total Road Load Horsepower Value : 15.8

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report**Total Datasets Submitted:** 1**Accepted Datasets:** 1**Rejected Datasets:** 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission**Test Vehicle Information Details****Information Process Code :** C**EPA Manufacturer Code :** VVX**Vehicle Identification Text :** 202216**Vehicle Configuration Number :** 0**Vehicle Configuration Details****Vehicle Description Details****Manufacturer Vehicle Configuration Number :** 0**Test Group Name :** NVVXJ02.0U73**Evaporative Refueling Family Name :** NVVXR0142E54**Leak Family Identifier :** 001**Leak Family Name :** NVVXR0142E54-001**Model Year :** 2022**Actual Test Vehicle Make Text :** Volvo**Actual Test Vehicle Model Text :** XC60 B5 AWD**Drive Source Details****Drive Source Identifier :** C**Fuel Identifier :** G**Fuel Cell Indicator :** N**Rechargeable Energy Storage System Indicator :** N**Off Board Charge Capability Indicator :** N**Test Drive Code :** F**Shift Indicator Light Usage Identifier :** 1**Aged Component Usage Identifier :** 4**Odometer Correction Details****Correction Initial Value :** 0.0**Correction Factor Value :** 0.9940**Correction Sign Identifier :** -**Correction Units Code :** M

Engine Code Text : L1_2
Engine Rated Horsepower Value : 247
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 1
Air Aspiration Configuration Identifier : N

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 4204
Equivalent Test Weight Value : 4500
Gross Vehicle Weight Rating Value : 5400
NV Ratio Value : 26.0
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 45.720
Target CoefficientB Value : 0.15020
Target CoefficientC Value : 0.024420
Set CoefficientA Value : 11.9
Set CoefficientB Value : 0.018
Set CoefficientC Value : 0.0243

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 50.800
Target CoefficientB Value : 0.16689
Target CoefficientC Value : 0.027133
Set CoefficientA Value : 1.0
Set CoefficientB Value : 0.001
Set CoefficientC Value : 0.0001

Target Set Coefficient Details**Test Procedure Dynamometer Coefficients Category :** C-H-E**Target CoefficientA Value :** 45.720**Target CoefficientB Value :** 0.15020**Target CoefficientC Value :** 0.024420**Set CoefficientA Value :** 11.9**Set CoefficientB Value :** 0.018**Set CoefficientC Value :** 0.0243**Manufacturer Comment Text :** EDV Worst Case Dyno Setting. TRLHP 15.2, coast down target 18,53, XC60 B5 AWD.**EPA Generated Test Vehicle Details****Original Receipt Date :** 20210511**Hybrid Vehicle Indicator :** N**Adjusted Loaded Vehicle Weight Value :** 4802**Loaded Vehicle Weight Value :** 4504**Total Road Load Horsepower Value :** 15.2**Transaction Status Details****Transaction Status Identifier :** ACCEPTED

Section 12.02.04
TEST VEHICLE DESCRIPTION .

Please refer to VERIFY Vehicle Information in Section 12.02.03 &
VERIFY Certification Summary Information Report in Section 07.01

Test vehicles generating data for Test Group VVVXT02.0S30 2027MY								
	Certification purposes			Original				
Vehicle ID	Data	Emission	Aging Method	Test Group / Evap Family	Original MY	Engine	Transmission	
2016EB	DDV	EVAP	150K Bench Aging	Evap Family: HVVXR0142EV4 Evap Family: HVVXR0142EV5	2016	B4204TS	AWD	aut
202216	EDV	EVAP	4K SRC	Evap Family: NVVXR0142E54	2022	B4204TE	AWD	aut
2022B	DDV	EXHAUST	150K Mileage Accumulation	Test Group: NVVXJ02.0S33	2022	B4204TE	AWD	aut
202317	EDV	EXHAUST	4K SRC	Test Group: PVVXJ02.0S30	2023	B4204TE	AWD	aut
202421	FEDV	FE	4K SRC	Test Group: RVVXJ02.0S30	2024	B4204TE	AWD	aut

Section 12.03**LABEL FORMAT****Section 12.03.01****VEHICLE EMISSION CONTROL INFORMATION LABEL**

LABEL INFO: Label size: 103 x 41 mm
 Label location: Engine compartment, on the hood

Test Group: VVVXT02.0S30
Engine Code: 06_1
Vehicles: XC90 B6 AWD

Volvo Car Corporation	
VEHICLE EMISSION CONTROL INFORMATION	
Conforms to regulations	2027 MY
U.S. EPA/Canada: IT4B30 LDT	CA II OBD Fuel: Gasoline
California: SULEV 30 LDT	CA II OBD Fuel: Gasoline
No adjustment needed	DFI, TC, CAC, 2HO2S, WR-HO2S, TWC
Group: VVVXT02.0P34	Loaded I/M testing must be conducted on a 4WD speed synchronized dyno. Otherwise, a non-loaded test procedure must be performed.
EVAP: VVVXR0142EP6	
VOLVO	32462624

S12.05 List of Certified vehicles

Test Group: VVVXT02.0S30

Evap Families: VVVXR0142E50

Emission Fuel: CARB LEVIII E10 Gasoline (Carry over to LEV IV Certification allowed with reference to email "Volvo LEV III Fuel Carry-over Request" approved by CARB Oct30, 2024)

Fuel Economy Fuel: Tier2 Gasoline

Carline	Model Type	Vehicle Model	Vehicle Class	Sales Area	Engine Name	Engine Displ [liter]	Engine Code	Fuel tank volume [liter]	Evap Code	Emission Control System	Transm Type	Transm Class	ETW
XC90	XC90 B6 AWD	Wagon	Standard SUV 4WD	50 S	B4204TE	2.0	06_1	71	69:71	DFI, TC,SCE, CAC, 2HO2S, WR-HO2S, TWC, EGR, EGRC	SA	S8 AWD	5000

January 09, 2026

Mr. Byron Bunker, Director
Compliance Division
OTAQ
U.S. Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, Michigan 48105

Ms. Robin U. Lang, Division Chief
Emissions Certification and Compliance Division
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Dear Mr. Bunker and Ms. Lang:

Volvo Car USA, LLC (Volvo) herewith submits an Application for Certification for 2027MY gasoline powered light-duty trucks (LDT's) contained in Volvo's 50-State test group VVVXT02.0S30 and evaporative family VVVXR0142E50. This test group has a target sales start date of June, 2026. This test group complies with all applicable California and Federal regulations. The emission standards applicable to this test group are as follows:

Federal Certification Exhaust Emission Standards
(Interim) Tier 4 Bin 30 Standards 150K

Federal In-Use Exhaust Emission Standards
(Interim) Tier 4 Bin 30 Standards 150K

California Certification Exhaust Emission Standards
LEV III SULEV 30 Standards 150K

California In-Use Exhaust Emission Standards
LEV III SULEV 30 Standards 150K

Federal Certification Evaporative Standards
Tier 4 Standards 150K HLDT

Federal In-Use Evaporative Standards
Tier 4 Standards 150K HLDT

California Certification Evaporative Standards
LEV III Standards 150K LDT3

California In-Use Evaporative Standards
LEV III Standards 150K LDT3

Additionally, this LDV/LDT test group will be certified to the applicable running loss, spitback, SFTP, ORVR, high altitude, particulates and Cold CO / NMHC standards. Actual numerical emission standards can be found in the corresponding specific test group application.

As provided in 40 CFR 86.1848-10 (d), Volvo has elected to submit an Application for each test group. Therefore, certification is requested for the VVVXR0142E50 evaporative family contained in the VVVXT02.0S30 test group. This Part 1 Application has been prepared in accordance with the standardized format recommended by EPA via its Mail Out # CD-14-19, subject: "Certification Application Reporting Guidance" dated November 24, 2014.

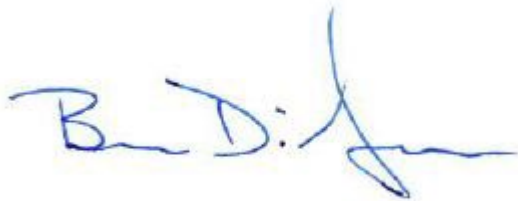
All other sections of the Application (e.g., The Common Section) not contained herein are hereby included in this Application by reference.

Therefore, in accordance with the provisions of 40 CFR 86.1844-01, Volvo requests that a U.S. EPA Certificate of Conformity and CARB executive order to be issued for the LDT's listed in this Application for Certification.

Please do not hesitate to contact me if you have any questions regarding this submission.

Sincerely,

VOLVO CAR USA, LLC
Certification, Regulatory & Compliance



Bruno DiGennaro
Senior Manager, Certification & Conformity

US EPA Fee Form

[Help and EPA Instructions](#)

* Required Field

General Information

Date: 01/15/2026

Process Code *

Submit New Fee Filing Form

Manufacturer Code *

VVX

Manufacturer Name *

Volvo Car USA, LLC

Contact Name *

Bryant Lowry

Contact Email Address *

BRYANT.LOWRY@VOLVOCARS.COM

Contact Phone *

18432763791

Calendar Year complete application submitted
to EPA *

2026

PLEASE NOTE: These fees apply to complete certification applications received by EPA from January 1, 2026, through December 31, 2026. The applicable fee is determined by the

calendar year in which the complete certification application is received, not the model year.

Engine Family / Evaporative Family / Test Group *

VVVXT02.0S30

Certificate Request Type (Industry Sector Code)

Certificate Request Type *

- ☒ On-Highway LDV, LTD, MDVPV, HDV Chassis Cert (Federal) (A, B, D, J, T, V)
- ☐ On-Highway HDE Dyno Cert (Federal) (E, H)
- ☐ On-Highway LD ICI, MDPV ICI, HDV ICI (A, B, D, J, T, V)
- ☐ On-Highway Motorcycle (C)
- ☐ On-Highway HDV Evap (F)
- ☐ On-Highway LDV, LTD, MDVPV, HDV Chassis Cert (California-Only) (A, B, D, J, T, V)
- ☐ On-Highway HDE Dyno Cert (California-Only) (E, H)
- ☐ Nonroad CI (L)
- ☐ Nonroad SI (B, S)
- ☐ Locomotive (G, K)
- ☐ All Nonroad Recreational, excluding Marine engines (X, Y)
- ☐ All Marine (Including IMO) (M, N, W)
- ☐ Component Certification for Evaporative Emissions (P)

IMO Name (Required for dual US/IMO Marine Only)

ICI VIN Number (Required for ICIs Only)

Do you qualify for a Reduced Fee? *

No

Payment Information

Amount Owed

\$32,317.00

Payment Type *

Offline Wire

Comments

Certification fees for:

XC90 B6 AWD

EPA Form Number 3520-29

OMB Control No. 2060-0545

Approval expires 7/31/2027

The public reporting and recordkeeping burden for this collection of information is estimated to average 12 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

The content of this document may contain Sensitive But Unclassified (SBU) data and/or Controlled Unclassified Information (CUI).

Confirmation of Certification Fees Payment

From fees@epa.gov <fees@epa.gov>

Date Tue 2026-01-27 08:48

To Lowry, Bryant <bryant.lowry@volvocars.com>

To the representative for Volvo Car USA, LLC:

Your certification Fee Filing Form(s) submitted for the following family or test group(s) and the associated financial documentation for your payment of \$323170.00 were received on 01/27/2026.

- VVVXT00.0ZPG

- VVVXT00.0ZPH

- VVVXT00.0ZVH

- VVVXT02.0P34

- VVVXT02.0S30

- VVVXT02.0S34

- VVVXV00.0ZVC

- VVVXV00.0ZVD

- VVVXV00.0ZVI

- VVVXV00.0ZVJ

This message indicates only that EPA has received record of your payment and form(s) for the above certification fee. It does not constitute the granting of a Certificate of Conformity by EPA or convey any information about the status of your certification application for the subject family or test group(s).

Please do not respond to this email. If you have any questions regarding certification of the family or test group(s), please contact your EPA Certification Representative; for questions on fees, contact Fees@epa.gov.

MOBILE SOURCE CERTIFICATION AND COMPLIANCE FEE PAYMENT FORM FOR ON-ROAD APPLICATIONS ONLY

CARB USE ONLY

Invoice Name	MSF250703-1
Invoice Date	Feb 09, 2026

COMPANY INFORMATION

Company Name	Volvo Car USA LLC
Address	270 THREE POINT DRIVE
City	RIDGEVILLE
State	SC
Zip	29472
Country	United States
Contact Name	Bryant Lowry
Contact Telephone Number	8432763791
Contact Email	bryant.lowry@volvocars.com
CARB Customer Number	CCAM000086

APPLICATION INFORMATION

Row Number	Previous Unique Application Identifier	Previously Selected Category Type	Previously Selected Fee Type	Paid Amount	Corrected Unique Application Identifier	Corrected Category Type	Corrected Fee Type	Corrected Amount	Amount Due
1	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	\$ 0.00
2	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	\$ 0.00
3	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Carry-Over	\$ 12,577.00	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Base	\$ 50,309.00	\$ 37,732.00
4	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
5	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
6	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
		Light-duty vehicle test group and				Light-duty vehicle test group and			

7	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
8	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00
9	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,577.00	\$ 0.00

Total Invoice (MSF250703) Paid	\$ 188,657.00
--------------------------------	---------------

Total Corrected	\$ 226,389.00
-----------------	---------------

Total Due	\$ 37,732.00
-----------	--------------

Notes
Changed fee type for UID VVXT02.0S30 from Carry-Over to Base Fee.

I, Bryant Lowry
Bryant Lowry (Feb 9, 2025 08:16:50 EST) , attest that any information provided is true, accurate, and complete.
(Responsible Party Signature Here)

Section 16.01 STATEMENT OF CONFIDENTIALITY

According to Class determination 3-78, the following sections in the below listed Applications are determined by Volvo to be kept as confidential.

Test Group Applications:**Sections:**

02	Durability Group Description
04.02.02	Ozone resistance
04.05	Battery Aging Procedure Description
04.06	Battery Aging Simulation Data
05.02	Engine Code Summary
09	OBD System
10.03	Vehicle Safe Operation
10.06	Identification and description of the charging system
10.07	Identification and description of the propulsion system
10.08	Identification and description of energy storage system
10.09	Identification and description of climate control system
11	AECD Descriptions
12.02.02	FE Label Testing Selection
12.04	Vehicle Test Parameters
12.09	Drive Modes Description
12.11	Description of DCF (Disc Cleaning Function)
12.12	Climate settings for Certification Testing
17.06	California High Priced Parts List (Not Confidential for Final Application)
17.09	Warranty Booklet Reference (Not Confidential for Final Application)

Common Application:**Part 1 Sections:**

04.01	Evap Bench Aging procedure description & Approval
04.03	Exhaust Emissions Durability Test Procedures
11	AECD Descriptions
12.04	Vehicle Test Parameters
12.04.01	List of Test Vehicle Parameters (Not Confidential for Final Application)
12.07	California EVAP Supplemental Information
12.10	Stop-Start Disable Criteria
12.13	AC System Description
13	US Projected Sales / Phase in / Fleet average
17.03	Compliance Plan / Phase in / Fleet average
18.01	Canada Projected Sales
18.02	Canada Compliance & Sales Information
18.03	Canada FE Label Testing Selection
18.04	Canada Compliance Plan / Phase in / Fleet average

Part 2 Sections:

02	Calibration Information
04	Actual Sales
07	Actual Sales (Canada)

Section 17.01**FILL PIPES AND OPENINGS OF FUEL TANKS****Fill pipe access zones**

Volvo Car Corporation certifies that the fill pipe access zones for the models covered by this application are in full compliance with the requirements specified by the California Air Resources Boards "Specification for Fill Pipes and Openings of 2015 and subsequent Motor Vehicle Fuel Tanks" adopted March 22, 2012 (13 California Code of Regulations, Section 2235) and are not obstructed in any manner by bumpers, body parts, body trims or accessories that are either factory or dealer installed.

Fill Pipes

Volvo Car Corporation also certifies that the fill pipes installed on all production models covered by this application are in compliance with all of the requirements of the California Air Resources Boards "Specification for Fill Pipes and Openings of 2015 and subsequent Motor Vehicle Fuel Tanks" adopted March 22, 2012 & amended May 31, 2019.

On-Road Light-Duty Certification Section - FILL PIPE COMPLIANCE REVIEW

Manufacturer**Volvo****Model Year****2027**

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

General Specification**ARB Specification****ISO-13331 Reference****Manufacturer Specification***

			Section/Figure***			
					VOLVO Non PHEV#2	
1	Angle α in degrees	$-10^\circ < \alpha < 20^\circ$	2.8 & 3.4/Fig 2a & 3a		-1,25°	
2	Spill Prevention in degrees (angle between centerline of test spout in its resting position and the horizontal plane).	30° (MIN)	3.5		33,75°	
3	Test nozzle penetration of restrictor	2.25 cm or 22.5 mm(MIN)	3.4		24,1mm	
4	Angle β in degrees	none	2.9/Fig 2b & 3b		2°	

Fill Pipe Specification

1	Fill Pipe face surface in TIR	0.025 cm or 0.25 mm(MAX)	3.1/Fig 1		0,25 mm	
2a	Fill Pipe face outside diameter: unless meets criteria in 2b. Below	5.75 cm or 57.5 mm(MAX)	3.1/Fig 1			
		5.20 cm or 52.0 mm (MIN)	3.1/Fig 1			
2b	Fill Pipe face outside diameter: criteria: new fill pipe head design starting MY 2024	5.79 cm or 57.9 mm(MAX)	3.1/Fig 1			
		5.20 cm or 52.0 mm (MIN)	CARB Fill Pipe Spec.		56.2mm	
3	Internal locking lip in degrees of the inside circumference (a) degrees extending each side of reference plane	100° (MIN)	3.2/Fig 2 and 3		360°	
		35° (MIN) LS**	3.2/Fig 2 and 3		40°	
		each side RS**	3.2/Fig 2 and 3		40°	
4	Height of lip measured from fill pipe inside wall; or	0.25 cm or 2.5 mm(MIN)	3.2		2,5 mm	
	height of lip measured from fill pipe outside wall for outside diameters between 5.20 and 5.75 cm.	0.85 cm or 8.5 mm(MIN)	3.2		8,9 mm	
5a	Depth of lip (D) in centimeters: unless meets criteria in 5b. Below	$0.4 \leq D \leq 1.3$	3.2			
5b	Depth of lip (D) in centimeters: criteria: new fill pipe head design starting MY 2024	$0.4 \leq D \leq 1.1$	CARB Fill Pipe Spec.		0.57cm	

Offset

	Offset A	none	3.3.1/Fig 5 shown as "f"		0.93	
	Offset B	none	3.3.1/Fig 5 shown as "g"		0.8	
6a	Fill Pipe Face Clearance (Axial): unless meets criteria in 7b. Below	0.25 cm or 2.5 mm (MIN)	Fig 5 shown as "2.5"			
6b	Fill Pipe Face Clearance (Axial): criteria: new fill pipe head design starting MY 2024	40 degrees out to 12 mm depth	CARB Fill Pipe Spec.		29mm	
7a	Fill Pipe Face Clearance (Radial): unless meets criteria in 7b. Below	40 mm (MIN)	Fig 5 shown as "R40"			
7b	Fill Pipe Face Clearance (Radial): criteria: new fill pipe head design starting MY 2024	≥ 43 mm	CARB Fill Pipe Spec.		Yes	
8	Fill Pipe Face Inside Diameter	49.8 mm(MAX)	Fig 1		35 mm	
9	Capped or Capless				CL	
10	Open Vent or Holes				No	
11	Seal (Mechanical or Liquid)				L	
12	Disruption in the Fill Pipe Face				No	
13	ORVR Design (I / NI / NIRCO / NO)****				I	
14	Type (Threaded or Bayonet)		Fig 1		Capless	
15	Usage of Design (Models or Evaporative Family(s))					
					XC90 B6 AWD	
16	Total vehicle model year sales		(PROJECTED CALIF. SALES)		683	

* dimension should include adverse tolerance condition, **LS = Left side of reference plane, **RS = Right side of reference plane

*** For Figures 1 through 5, please click on the respective tabs in this sheet (Figures are from ISO 13331 with annotations added)

**** ORVR Design: Integrated (I)/Non-Integrated (NI)/Non-Integrated Refueling Canister Only (NIRCO)/Non-ORVR (NO)

Section 17.04.01
50F Compliance data

Test Group: VVVXT02.0S30 (Carry-over Test Data 2026MY)

50F tests tested for all Test Groups

Engine Information				Standards				Test Results									
Original Test Group	Engine designation	Vehicle ID / Version	Odom		HCHO	CO	NMOG+NOx	Test Date	Test no	HC	NMHC	NMOG	NMOG+NOx	HCHO	CO	NOx	CO2
PVVXJ02.0S30	B4204TE	202317 V00	6551	LEV III SULEV30	0.008	1.0	0.060	02 03 2022	PVVX10074008	0.005	0.0037	0.0041	0.0121	n.a*	0.25	0.008	347

* See statement in section 08.01 Common application



S 17.07 California Compliance Statements & summary information.

Test Group: VVVXT02.0S30

Certification Standard and Summary Matrix:

Engine Code Type:	50S
Exhaust Standard:	LEV III - SULEV30
Exhaust Useful Life:	150K
EVAP Useful Life:	150K
Fuel Type:	Gasoline
Exhaust Emission Test Fuel:	CARB LEV VIII E10 Gasoline
EVAP Test Procedure:	California
EVAP Emission Standard:	LEV III

FTP Emission Standards Statement:

Volvo's Light-Duty Trucks in 2027 MY Test Group VVVXT02.0S30 are certified and comply with the applicable LEV III SULEV30 FTP standards and test procedure.

SFTP Emission Standards Statement:

It is Volvo Car Corporation's intent to certify the Light-Duty Trucks in 2027 MY Test Group VVVXT02.0S30 to the applicable LEV VIII SFTP NMOG+NO_x and CO composite standards set forth in California Exhaust Emission Standards Section E.1.2.2.1.2.

Evaporative Emission Standards Statement:

Evaporative Families VVVXR0142E50:

Volvo's Light-Duty Trucks in 2027 MY Test Group VVVXT02.0S30 are certified and comply with the evaporative emission standards LEV III set forth in California Evaporative Emission Standards Section E.1(e)(i)(B) including Canister Bleed Emission Standards (option 2). Volvo choose to use fleet average option.

Emission Control Device Statement

In accordance with **CFR Section 86.1823 Durability Demonstration Procedures For Exhaust Emissions**, Volvo states that at the time of certification, based on good engineering judgment and available information, the emission control devices on our vehicles are durable and are designed and will be manufactured to operate properly and in compliance with all applicable requirements for the full useful life or allowable maintenance interval of the vehicles.

All vehicles tested for certification shall be, in all material respects, substantially the same as production vehicles.

Environmental Performance Label Information:

Volvo applies new EPA label in lieu of the CA EP label.

**VECI label durability statement (40 CFR 86.1807(a)(2)):**

The label shall be affixed by the vehicle manufacturer who has been issued the Certificate of Conformity for such vehicle, in such manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

Evaporative Emissions – 2 Day

In accordance with California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles, amended September 2, 2015, and the incorporated CFR 40 Subsection 86.1824-01 (c), Volvo Cars states that, based on our good engineering judgment and demonstration test results, all 2027 model year Volvo test groups being certified, comply with California's 2-Day evaporative emission standard.

Classification of ZEVs.**Test Group: VVVXT02.0S30**

Vehicles in this Test Group do not contain any ZEV vehicles.

California Supplementary Questions:**1. Do the test and production vehicles have a defeat device?**

- No, Volvo Cars never has and never will fit any device to its vehicles that manipulates emission performance during emission tests.
- Please see reference in section 08.01 "Statement of Compliance".
"Volvo Car Corporation certifies that all 2027MY Test Groups are free of defeat devices and strategies"

2. Have all AECDs been declared and described in the application?

- Yes, please see Sections 11 "AECD Description"

3. Do the test and production vehicles have alternate maps?

- Yes, there are alternative maps. Please see Section 11.05 "California Alternative Maps Calibration Description".

4. Is the transmission part of any AECD, for example, by receiving outputs from the ECU or providing inputs to the ECU, in any emission control strategy, for example, engine and/or catalyst warm-up?

- For the transmission, and as stated and described under sections 11, 12.01 and 12.09 of our application for certification, Transmission Description and Drive mode Description describes the default mode of operation. No other AECD operations are stated and/or used.

5. Does the transmission behave and perform the same as, or differently than, while on road versus on a dynamometer? Please explain any differences

- Please note that the transmission behaves the same on-road and on the dynamometer.

Certification review sheet

Model Year	Test Group	Vehicle Class(es)	Fuel Category	Fuel Type
2027	VVVXT02.0530	LDT3	Hybrid Electric Vehicle	Gasoline

Useful Life		Vehicle Emission Category		Interim / Intermediate In-Use STD	
Exh/ORVR	EVAP	FTP	SFTP	FTP	SFTP
150000	150000	LEV III Sulev30	LEVIII Composite	*	*

Exhaust Emission Control system		OBD status		Engine displacement
DFI, TC, SCE, CAC, 2HO2S, WR-HO2S, TWC, EGR, EGRC		Full	TBD	2.0
		Partial	TBD	
		Partial With fines	TBD	

EVAP/ORVR Family	EVAP STD Category	EVAP STD Class	Special Features
VVVXR0142E50	LEV III Option2 With FEL	LDT3	*

NMOG+NOx Fleet AVE.Credit For Extended	NMOG Credit for Non-PZEV Zero Evap	EVAP STD Class	Special Features
N	N	N	N

NMOG RAF	CH4 RAF	FTP NMOG/NMHC Ratio	HCHO/NMHC Ratio	NMOG+NOx Fleet STD PC	NMOG+NOx Fleet STD LDT
*	*	1.10	*	*	0.030

FTP		NMOG+NOx (g/mi)		CO (g/mi)		NOx (g/mi)		HCHO (mg/mi)		PM (g/mi)	
	Fuel	CERT	STD	CERT	STD	CERT	STD	CERT	STD	CERT	STD
FTP@UL	LEV3 E10 Prem	0.0162	0.030	0.26	1.0	*	*	*	4	0.0006	0.003
50F@UL	LEV3 E10 Prem	0.0121	0.060	0.25	1.0	*	*	*	8		

HWFET + 20F		NMOG+NOx (g/mi)		CO (g/mi)	
	Fuel	CERT	STD	CERT	STD
HWY@UL	LEV3 E10 Prem	0.0044	0.030		
20F@UL	Cold CO E10 PREM (TIER3)			0.39	12.5

SFTP			US06			SC03		Composite		
	Fuel		NMOG+NOx (g/mi)	CO (g/mi)	PM (mg/mi)	NMOG+NOx (g/mi)	CO (g/mi)	NMOG+NOx (g/mi)	CO (g/mi)	PM (mg/mi)
4K	*	Cert	*	*		*	*			
		STD	*	*		*	*			
UL	LEV3 E10 Prem	CERT	*	*	1.7	*	*	0.0107	0.40	*
		STD	*	*	6	*	*	0.050	4.2	*
		BIN						0.050		

EVAP Family		Fuel	3DHS (g/test) / UL			2DHS (g/test) / UL			RL (g/test) / UL	
			CERT	STD	FEL	CERT	STD	FEL	CERT	STD
	VVVXR0142E50	LEV3 E10 Prem	0.1726	0.500	0.500	0.1804	0.500	0.500	0.001	0.05

		ORVR (g/gallon) / UL		Bleed Canister Test	
EVAP Family	Fuel	CERT	STD	CERT	STD
VVVXR0142E50	TIER3 E10 Prem	0.004	0.20	0.0099	0.020

EVAP Family	Leak Family	CERT	STD
VVVXR0142E50	VVVXR0142E50-001	*	0.02

Make	Model	Veh Class	Engine	Trans Type	Evaporative family	EXH ECS	OBD
Volvo	XC90 B6 AWD	LDT3	2.0	SA8	VVVXR0142E50	1	Full