



Application for Certification - Part 1

Test Group (FOI)

- **Model Year:** 2027
- **Manufacturer Name:** Kia Corporation
- **Test Group:** VKMXT02.5YP3
- **Test Group Description:** 2.5 Liter / I4 Turbo GDPI / Otto-cycle
- **Durability Group:** VKMXGPGNNYP3
- **Durability Group Description:** Monolith, TWC
- **Vehicle Class:** LDT2
- **Applicable Standards:** FED: Interim Tier-4 Bin 30 / Tier-4 Evap
CAL: LEV-IV SULEV30/ LEV-IV Evap
- **Vehicle Tested:** EDV-MQ4U4H5TD162A/0 (Exh)
MQ4U1H5GA042A/0 (Evap)
FEDV- MQ4U4H5TD198A/0, MQ4U4H5TD190F/0
- **Carlines Covered by Certificate:** Sorento AWD, Sorento FWD
- **EPA Response Requested by:** June 15, 2026
- **For Questions, Contact:** Stephanie Wright
734-273-1904
E-mail: swright@hatci.com

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01.00 Correspondence and Communications

Please refer to Common Section 01.00.

For questions, call Stephanie Wright (734-273-1904).

02.00 Durability Group Description

- | | | |
|---|---|--------------------------|
| 1. Durability Group Name | : | VKMXGPGNNYP3 |
| 2. Combustion Cycle | : | Otto cycle / four stroke |
| 3. Engine Type | : | Piston / Water cooled |
| 4. Fuel Used | : | Gasoline |
| 5. Basic Fuel Metering System | : | Direct & Port Injection |
| 6. Catalyst Construction and location | : | See Section 02.02 |
| 7. Precious Metals in Catalyst | : | See Section 02.02 |
| 8. Precious Metal Loading for all Catalysts in the Durability Group | : | See Section 02.02 |
| 9. Range of Catalyst Grouping Statistics | : | See Section 02.02 |
| 10. Type of particulate filter | : | None |

02.01 List of Vehicles in Durability Groups

Please refer to Common Section 02.01.

03.00 Evaporative/Refueling Family Description

03.00.01 Evaporative/Refueling Family Name: VKMXR0144JPG
(C/O 21MY Sorento 2.5T)

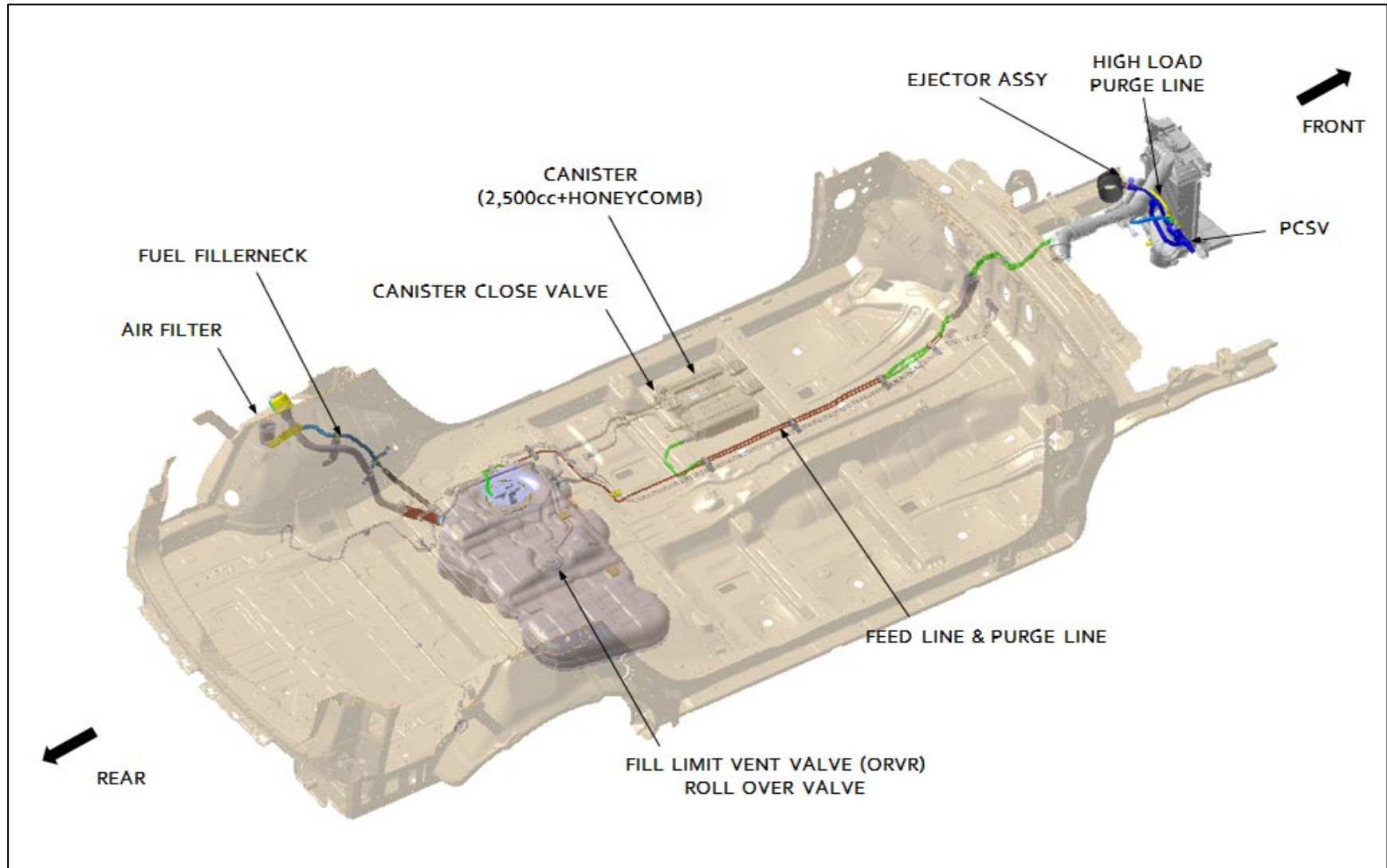
03.00.01.01 Evaporative/Refueling Family Parameters

1. Type of Vapor Storage Device: Canister(1EA), Air cleaner(1EA)
2. Basic canister design

Evap. Code	Absorption Flow Rate (g/hr)	Nominal Working Capacity(g)	Size (cc)	Material	Medium	Nominal Fuel Tank Capacity (gal)
144JPG	15	144	2500	Plastic	Activated Carbon	17.7

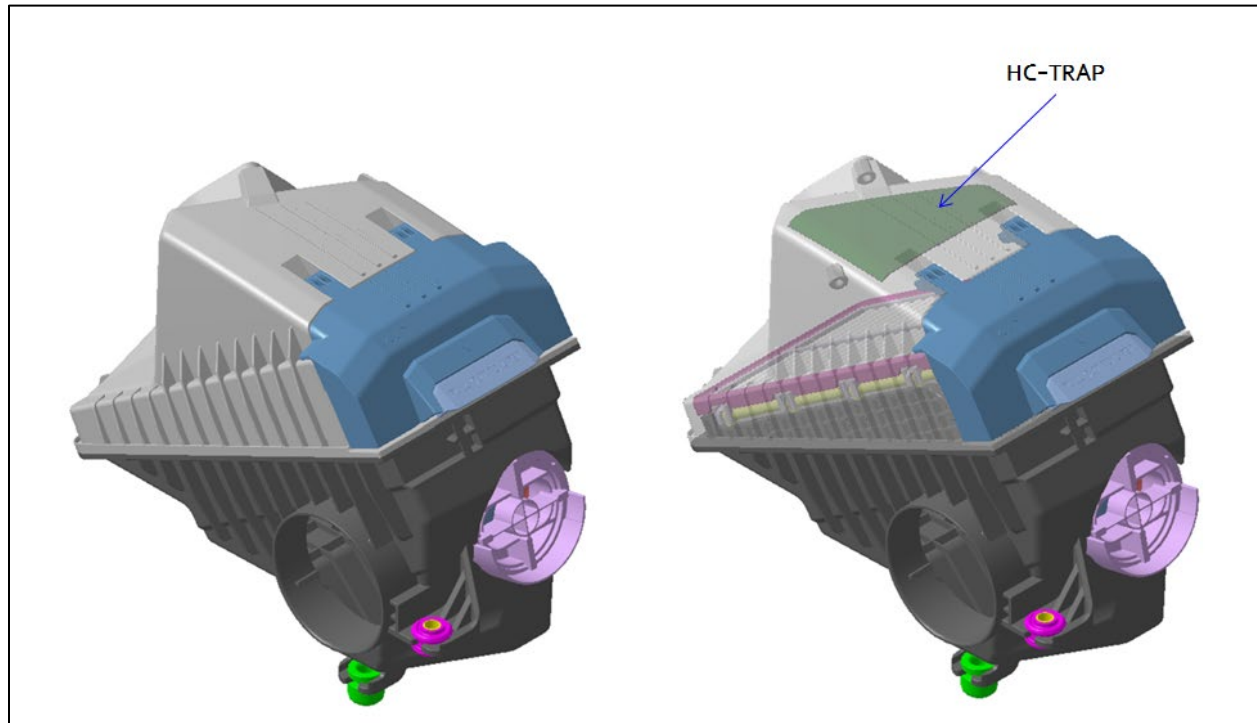
3. Fuel system: Returnless fuel system
4. Type of refueling emission control system: Integrated type
5. Fillpipe seal mechanism: Liquid seal type
6. Vapor control system or method of vapor line to the canister:
 - a. Fill limit vent valve (ORVR)
 - b. Overfill Limiter (2Way valve)
 - c. Canister close valve
7. Purge control system
 - a. Type of valve: Duty
 - b. Purge control strategy: Controlled by ECU
 - c. High load purge system : Yes
 - d. Active purge system : No
8. Vapor hose material: Rubber
9. Fuel tank material: Plastic
10. HC-Trap
 - a. Media : PAPER containing Activated Carbon
 - b. Working capacity: 0.5g

03.00.01.02 Evaporative/Refueling Schematic



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03.00.01.03 HC-Trap Schematic



03.01 Evaporative/Refueling General Description

Please refer to Common Section 03.01.

03.02 List of Vehicles in Evaporative Families

Please refer to Common Section 03.02.

05.00 Test Group Description

Test Group Name	:	VKMXT02.5YP3
Engine Displacement (L) Covered	:	2.5L
Arrangement/Number of Cylinders	:	I4
Vehicle Class(s) Covered	:	LDT2
Sales Location/Emission Standard	:	FED: Interim Tier-4 Bin 30 CAL: LEV-IV SULEV30 See CSI report for emission standard levels

06.00 Test Vehicle Description

1. Exhaust Durability Data Vehicle

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.

TestVehicleInformationSubmission

TestVehicleInformationDetails

InformationProcessCode : N

EPAManufacturerCode : KMX

VehicleIdentificationText : KNARGBLF8B1P98227

VehicleConfigurationNumber : 0

VehicleConfigurationDetails

VehicleDescriptionDetails

ManufacturerVehicleConfigurationNumber : 0

TestGroupName : RKMXT02.5JP3

EvaporativeRefuelingFamilyName : RKMXR0144JPG

LeakFamilyIdentifier : MQ4

LeakFamilyName : RKMXR0144JPG-MQ4

ModelYear : 2024

ActualTestVehicleMakeText : Kia

ActualTestVehicleModelText : Sorento

DriveSourceDetails

DriveSourceIdentifier : C

FuelIdentifier : G

TestDriveCode : F

ShiftIndicatorLightUsageIdentifier : 1

AgedComponentUsageIdentifier : 4

OdometerCorrectionDetails

CorrectionInitialValue : 0

CorrectionFactorValue : 1.0163

CorrectionSignIdentifier : -

CorrectionUnitsCode : M

EngineCodeText : G4KP-AMC

EngineRatedHorsepowerValue : 281

EngineDisplacementValue : 2.5

AirAspirationDetails

AirAspirationMethodIdentifier : TC

AirAspirationDeviceCount : 1

AirAspirationConfigurationIdentifier : N

ChargeAirCoolerIdentifier : A

VehicleSpecificationsDetails

CurbWeightValue : 4213

EquivalentTestWeightValue : 4500

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GrossVehicleWeightRatingValue : 5401
NVRatioValue : 26.0
AxleRatioValue : 3.32

TransmissionSpecificationsDetails

LightDutyTransmissionTypeIdentifier : AMS
TransmissionLockupIndicator : N
TransmissionCreeperGearIndicator : N
TransmissionGearCount : 8

TargetSetCoefficientDetails

TestProcedureDynamometerCoefficientsCategory : Cold-CO
TargetCoefficientAValue : 39.912
TargetCoefficientBValue : 0.31686
TargetCoefficientCValue : 0.028248
SetCoefficientAValue : 9.658
SetCoefficientBValue : -0.02044
SetCoefficientCValue : 0.029485

TargetSetCoefficientDetails

TestProcedureDynamometerCoefficientsCategory : C-H-E
TargetCoefficientAValue : 36.284
TargetCoefficientBValue : 0.28805
TargetCoefficientCValue : 0.025680
SetCoefficientAValue : 15.321
SetCoefficientBValue : 0.11330
SetCoefficientCValue : 0.025968

TargetSetCoefficientDetails

TestProcedureDynamometerCoefficientsCategory : US06
TargetCoefficientAValue : 36.284
TargetCoefficientBValue : 0.28805
TargetCoefficientCValue : 0.025680
SetCoefficientAValue : 15.321
SetCoefficientBValue : 0.11330
SetCoefficientCValue : 0.025968

ManufacturerCommentText : MQ4a PE 2.5T AWD DCT8 17in X-PRO EXH DDV

EPAGeneratedTestVehicleDetails

OriginalReceiptDate : 20230904
HybridVehicleIndicator : N
AdjustedLoadedVehicleWeightValue : 4807
LoadedVehicleWeightValue : 4513
TotalRoadLoadHorsepowerValue : 15.3

TransactionStatusDetails

TransactionStatusIdentifier : ACCEPTED

2. Exhaust & Evaporative Emission Data Vehicle

Please refer to CSI report in 07.00

07.00 Test Results

07.01 EV-CIS Certification Summary Information

Certification Summary Information Report submitted to EV-CIS.
See 18.00.00.

07.02 Litmus Test Sheet

Litmus Test of EDV

EDV	FTP(75°F)	Cold FTP (20°F)	HFET	US06	SC03
BAG1	22.9	19.7	37.7	15.0	19.2
BAG2	24.5	23.1		27.7	
BAG3	27.7	27.3			
TOTAL	24.9			23.3	

(1) Determining the City FE Method

5 Cycle City Criteria (Specific 5 cycle City FE $\geq$ 0.96 Mpg Based City FE)	Passed
---	--------

		UNROUNDED	ADJ. ROUNDED	Examination	Decision
CITY FE	MPG BASED	19.73111952	18.9	Applicable	Selected
	5-CYCLE	19.63340495	19.6	Applicable	
	Ratio of 5CYCLE to 0.96 MPG-BASED		103.70		

CRITERIA : 100%

(2) Determining the Hwy FE Method

5 Cycle Highway Criteria (Specific 5 cycle HWY FE $\geq$ 0.95 Mpg Based HWY FE)	Passed
--	--------

		UNROUNDED	ADJ. ROUNDED	Examination	Decision
HWY FE	MPG BASED	26.6469	25.3	Select This	Selected
	5-CYCLE	25.6964	25.7	Not Applicable	
	MODIFIED	25.7892	25.8	Not Applicable	
	Ratio of 5CYCLE to 0.95 MPG-BASED		101.58		

CRITERIA : 100%

08.00 Emission Compliance Statement

Please refer to Common Section 08.00.

09.00 OBD System Description

The on-board diagnostic (OBD) system complies with 40 CFR 86.1806-17, 86.1806-27 per the compliance option allowing demonstration of compliance with California OBD II requirements in Title 13 California Code of Regulation 1968.2 (13 CCR 1968.2) approved on November 30, 2022.

Please refer to OBD application uploaded in EV-CIS system.

10.00 Description of Alternate-Fueled Vehicles: Not Applicable

12.00 Description of Vehicles Covered by Certificate and Test Parameters

12.01 Vehicle Parameters

Model Name		Sorento	
Vehicle Classification		LDT2	
Carline		828 (AWD)	829 (FWD)
Emission control System description	Type, number and configuration of	See Sec. 02.02	
	EGR Type	N/A	
	Air pump type	N/A	
	Fuel system type	DFI, SFI	
	Intake air aspiration method	Turbocharger, Charge Air Cooler	
	Other	-	
Engine Code		G4KP-AMC	
Number of valves per cylinder		4	
Engine displacement (L)		2.5	
Sales area		50-State	
Transmission and overdrive		AMS8 (Overdrive)	
SIL		N/A	
Tire size		235/65R17 (BF Goodrich) 255/45R20 (Continental)	
N/V Ratios		26.0 (17inch) / 25.8 (20inch)	
ETW(lb)		4500	4500
Elec. Dyno. Target Coefficient	A	Please refer to 12.02.01.	
	B		
	C		
Fuel tank volume(gal)		17.7	

12.02.02 Engine Starting Procedures

Please refer to Common Section 12.02.02.

12.02.03 Shift Schedules

Automatic transmission: Please refer to Common Section 12.02.03.01

12.02.04 Transmission / Advanced Technology System Test Modes

Please refer to Common Section 12.02.04

13.00 Projected Sales

Please refer to Common Section 13.00.

14.00 Request for Certification



Ms. Kathryn Kochunas
Certification Division
Mobile Source Pollution Control
U.S. Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, Michigan

Subject: Request for Certificate of Conformity for 2027 Model Year Test Group
VKMXT02.5YP3 / Evaporative Family VKMXR0144JPG

Dear Ms. Kathryn Kochunas:

Kia Corporation requests that EPA issue a Certificate of Conformity for the test group subjected above.

All vehicles within the test group mentioned above comply with the applicable regulations contained in 40 CFR 86.188-01(d), (14) including the provisions of 40 CFR Parts 85, 86 and 600. This test group also complies with California Air Resources Board, Final Regulation Order, Sections 1961.4 and 1961.3 (1962.4 and 1962.3 for zero-emission vehicles) Title 13, California Code of Regulations.

The Part 1 Application for Certification has been prepared in accordance with the standardized format recommended by EPA via its guidance document CD-14-19 (LDV/LDT/OCO/LIMO) Subject: Certification Application Reporting Guidance, dated November 24, 2014.

If you have any questions regarding the Certificate of Conformity, do not hesitate to contact Stephanie Wright at swright@haci.com or (734) 273-1904.

Sincerely,

A handwritten signature in black ink, appearing to read "C. H. Ji".

C. H. Ji
General Manager
Regulation & Certification Team2
Kia Corporation

VKMXT02.5YP3– Kia Sorento 2.5 T-GDPI Non-GPF - Part 1
Issued : 05-18-2026
Revised:



Ms. Robin U. Lang, Chief
Emissions Certification and Compliance Division
California Air Resources Board
4001 Iowa Ave.
Riverside, California 92507

Subject: Request for an Executive Order for 2027 Model Year Test Group
VKMXT02.5YP3 / Evaporative Family VKMXR0144JPG

Dear Ms. Robin U. Lang:

Kia Corporation requests that California Air Resources Board (CARB) issue an Executive Order for test group subjected above.

All vehicles within the test group mentioned above comply with the applicable regulations contained in 40 CFR 86.188-01(d), (14) including the provisions of 40 CFR Parts 85, 86 and 600. This test group also complies with California Air Resources Board, Final Regulation Order, Sections 1961.4 and 1961.3 (1962.4 and 1962.3 for zero-emission vehicles) Title 13, California Code of Regulations.

The Part 1 Application for Certification has been prepared in accordance with the standardized format recommended by EPA via its guidance document CD-14-19 (LDV/LDT/OCO/LIMO) Subject: Certification Application Reporting Guidance, dated November 24, 2014.

If you have any questions regarding the Executive Order, do not hesitate to contact Stephanie Wright at swright@haci.com or (734) 273-1904.

Sincerely,

C. H. Ji
General Manager
Regulation & Certification Team2
Kia Corporation

VKMXT02.5YP3– Kia Sorento 2.5 T-GDPI Non-GPF - Part 1
Issued : 05-18-2026
Revised:

15.00	Other Information
15.01	Certification Fee Filing Form

15.02 Vehicle Emission Control Information (VECI) Label

	KIA CORPORATION VEHICLE EMISSION CONTROL INFORMATION		
Conforms to regulations :		2027 MY	
U.S.EPA : Interim T4B30 LDT		OBD : CA II	Fuel : Gasoline
California : LEV IV SULEV30 LDT		OBD : CA II	Fuel : Gasoline
No adjustments needed.		DFI, SFI, WR-HO2S, HO2S, TWC, TC, CAC	
Group : VKMXT02.5YP3 Evap. : VKMXR0144JPG	ALC	32450-2S406	

15.03 ORVR Safety Statement

Kia uses standard technology in all ORVR systems for 2027 model year vehicles. In accordance with EPA Guidance Letter CISC-06-06, ORVR applications will not be submitted.

15.04 New Technology System Description

Please refer to Common Section 15.04.

15.05 Engine Oil Information

Please refer to Common Section 15.05

16.00 California ARB Information

16.01 Exhaust Emission Control System (Tune-up label)

Test Group Name	Model	Exhaust Emission Control System
VKMXT02.5YP3	Sorento AWD Sorento FWD	DFI, SFI, WR-HO2S, HO2S, TWC, TC, CAC, OBD II

Note) DFI : Direct Fuel Injection
SFI : Sequential multiport Fuel Injection
WR-HO2S : Wide Range Heated Oxygen Sensor
HO2S : Heated Oxygen Sensor
TWC : Three Way Catalyst System
TC : Turbo Charger
CAC : Charge Air Cooler
OBD II : On-Board Diagnostics II
(Use abbreviations per SAE J1930 October 08)

16.02 Test Procedures

Please refer to Common Section 16.02

16.03.00 Fill Pipe Access Zones Statement and Specifications

16.03.01 Fill Pipe Access Zones Statement

Please refer to Common Section 16.03.01.

16.04.00 Request for Certificate

Please refer to 14.00.

16.04.01 Statement of Compliance

Please refer to Common Section 16.04.01.

16.04.02 Supplemental Data Sheet

Please refer to E-cert data.

16.05.00 Emission Testing Waiver Statement

Please refer to Common Section 16.05.00.

16.06.00 Projected Sales

Please refer to Common Section 13.00.

16.07.00 OBD-II System Description

Please refer to section 09.00.

16.08.00 New Technology System Description

Please refer to Common Section 15.04.

16.09.00 Environmental Performance Label

Pursuant to CALIFORNIA ENVIRONMENTAL PERFORMANCE LABEL SPECIFICATIONS FOR 2009 AND SUBSEQUENT MODEL YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY PASSENGER VEHICLES (adopted May 2, 2008, last amended September 2, 2015), 2012, Hyundai Motor Group complies to the Environmental Performance Label requirement by affixing the Federal Fuel Economy and Environment Label in accordance to 40 CFR Parts 85, 86, and 600 as promulgated on July 6, 2011.

16.10.00

AECD General Statements

The vehicles contained in this test group are not equipped with a defeat device and are not equipped with alternative mapping strategies. Furthermore, all AECDs have been declared and described in the application.

As described in our application, the vehicle's transmission is not part of any AECD. However, the transmission gear is an input for the emissions control strategy, as described in that application. The ECU does not provide an output to the TCU to control emissions strategy.

When driving conditions on the road can be properly represented on the dynamometer, the transmission will perform in the same manner. However, there are some different driving conditions, such as an uphill or downhill grade, extreme heat or extreme cold conditions, heavy braking, and curved road driving conditions, which cannot be appropriately represented on the dynamometer. In these conditions where necessary to protect the transmission or to prevent an unnatural shift pattern, a different shift pattern may be executed. It is our understanding that this is commonly used throughout the industry.

The Hyundai-Kia American Technical Center and the Hyundai Motor Group Research and Development Center in Namyang, Korea have endeavored to respond based on our understanding of the regulatory definition of an AECD, the past certification reviews of AECDs conducted by ARB, existing guidance regarding AECDs issued by ARB, and, of course, EPA's and ARB's increased interest in this area. We will continue to monitor guidance issued by ARB regarding the level of information and detail desired in a certification application, and will continue to evaluate AECD issues to ensure transparency with respect to our vehicle and engine performance.

16.11.00 California warranty compliance

Please refer to Common Section 16.11.00.

16.12.00 Description of the Propulsion System: Not Applicable

16.13.00 ZEV Compliance: Not Applicable

17.00.00 Service of Process

Please refer to Common Section 01.00.

18.00.00 Attachment

1. CSI Report

Certification Summary Information Report

Manufacturer	Kia Corporation	Manufacturer Code	KMX
Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Certificate Number	--	CARB Executive Order #	--
Certificate Issue Date	--	Certificate Revision Date	--
Certificate Effective Date	--	Conditional Certificate	--
CSI Revision #	--	CSI Submission/Revision Date	05/07/2026 03:21:08 AM
Model Year	2027		

Test Group Information

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

Drive Sources and Fuel(s)

Drive Source #1: Combustion Engine

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Gasoline	Spark Ignition direct & ported injection	No

Hybrid Indicator	No		
Multiple Fuel Storage	--	Rechargeable Energy Storage System Indicator	--
Multiple Fuel Combustion	--	Off-board Charge Capable Indicator	--
Fuel Cell Indicator	--	EPA Vehicle Class	LDT2
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	VKMXGPGNNYP3	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	VHYXV02.5UP3
Test Group OBD Compliance Level	Full - no deficiencies	Number of Test Group OBD Deficiencies	0
OBD Deficiencies Comments	--		
Mfr Test Group Comments	The fuel for Litmus test is E10. Litmus result(Value/Threshold): City(19.6/18.9),HWY(25.7/25.3)-2MODE. Test No: RKMXX10081467(FTP),RKMXX10081468(HWY),RKMXX10081469(US06),RKMXX10081470(SC03),RKMXX10081471(Cold)		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Evaporative/Refueling Family Information			
Evaporative Summary Information Type	New	Submission/Correction Date	05/04/2026 01:20:52 AM
Integrated ORVR?	Yes	Fuel(s)	Gasoline
Multiple Fuel Storage	--		
Bladder Fuel Tank?	No		
Fuel Tank Material	Plastic	Fuel Tank Material Description	HDPE
Fill Pipe Seal Type	Liquid seal		
Air Intake System Vapor Storage Device?	Yes	Air Intake System Vapor Storage Device Description	HC-TRAP
Fuel System Vapor Storage Canister?	Yes	Other Vapor Storage	--
Fuel System Vapor Storage Canister(s) Total Working Capacity (grams)	144	Number of Primary Canisters	1
Number of Bleed Canisters	0	Bleed Canister Total Working Capacity (grams)	--
Mfr Evaporative/Refueling Family Comments	--		
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	--		
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
VKMXR0144JPG-MQ4	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
Kia Corporation	1 - KIA	828 - Sorento AWD	California + CAA Section 177 states	All Wheel Drive	Automated Manual-Selectable (e.g. Automated Manual with paddles)	8	No
Kia Corporation	1 - KIA	829 - Sorento FWD	California + CAA Section 177 states	2-Wheel Drive, Front	Automated Manual-Selectable (e.g. Automated Manual with paddles)	8	No
Kia Corporation	1 - KIA	828 - Sorento AWD	Federal	All Wheel Drive	Automated Manual-Selectable (e.g. Automated Manual with paddles)	8	No
Kia Corporation	1 - KIA	829 - Sorento FWD	Federal	2-Wheel Drive, Front	Automated Manual-Selectable (e.g. Automated Manual with paddles)	8	No

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG	
Engine Description				
Hybrid Type	--	Hybrid Description	--	
Engine Type	4-Stroke Spark Ignition	Mfr Engine Description	--	
Engine Block Arrangement	Inline	Mfr Engine Block Arrangement Description	--	
Camless Valvetrain Indicator	No	Oil Viscosity/Classification	SAE 0W30	
Number of Cylinders/Rotors	4	Mechanically Variable Compression Ratio Indicator	N	
After Treatment Device(s) (ATD)				
ATD Number	ATD Type	ATD Precious Metal	Substrate Material	Substrate Construction
1	Three-way catalyst	Platinum + Palladium + Rhodium	Ceramic	Monolith
Mfr After Treatment Device (ATD) Comments				
--				
Direct Ozone Reduction (DOR) Device				
Not Equipped				
Mfr Emission Control Device Comments				
--				
Engine Configuration Number 1				
Engine Displacement (liters)	2.5	Engine Rated Horsepower	281	
Number of Inlet Valves Per Cylinder	2	Number of Exhaust Valves Per Cylinder	2	
Air Aspiration Method	Turbocharged	Number of Air Aspiration Devices	1	
Air Aspiration Device Configuration	Single	Charge Air Cooler Type	Air	
Air Aspiration Drive Method(s)	Mechanical			
Cylinder Deactivation	No			
Cylinder Deactivation Description	--			
Variable Valve Timing	Yes			
Variable Valve Timing System Description	Fixed3			
Variable Valve Lift?	No			
Variable Valve Lift System Description	--			
Number of Knock Sensors	1	Number of Air/Fuel Sensors	2	
Air/Fuel Sensor # 1 Type	Other	Air/Fuel Sensor # 1 Description	WR-H2OS	
Air/Fuel Sensor # 2 Type	Heated oxygen	Air/Fuel Sensor # 2 Description	--	
Mfr Air/Fuel Sensor Comments	--			
Exhaust Gas Recirculation	No	Cooled Exhaust Gas Recirculation	No	
EGR Type	--	Exhaust Gas Recirculation Description if 'Other'	--	
Closed Loop Air Injection System	No			
Air Injection Type	--	Air Injection Type if 'Other'	--	
Mfr Engine Configuration Comments	--			

Certification Summary Information Report

Test Group		VKMXT02.5YP3				Evaporative/Refueling Family		VKMXR0144JPG			
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		RKMX10081467	RKMX10081469	RKMX10081470	RKMX10081471	RKMX10081468	23.4	228.2	33.5	286.1	--
SFTP LEV-III Official Test Numbers											
Test Group Fuel		FTP		US06		SC03					
Gasoline		RKMX10081467		RKMX10081469		RKMX10081470					

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
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Emission Data Vehicle Information

Vehicle ID / Configuration	MQ4U1H5GA042A / 0	Manufacturer Vehicle Configuration Number	0
Original Test Group Name	MKMXT02.5JRG	Original Evaporative/Refueling Family	MKMXR0144JRG
Original Test Vehicle Model Year	2021		

Vehicle Model

Represented Test Vehicle Make	Kia	Represented Test Vehicle Model	Sorento
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Leak Family Details

Leak Family Identifier	MQ4	Leak Family Name	MKMXR0144JRG-MQ4
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Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Combustion Engine	Gasoline

Hybrid Indicator	No	Multiple Fuel Combustion	--
Multiple Fuel Storage	--	Rechargeable Energy Storage System Indicator	--
Fuel Cell Indicator	--	Rechargeable Energy Storage System, if 'Other'	--
Rechargeable Energy Storage System	--		
Off-board charge Capable Indicator	--		
Odometer Correction -- Initial	0	Odometer Correction Factor	1
Odometer Correction Sign	- = System Miles is equal to (Test odometer reading - Initial system miles) * Correction factor		
Odometer Correction Units	Miles		
Engine Code	G4KN-AC	Rated Horsepower	191
Displacement (liters)	2.5		
Air Aspiration Method	Naturally Aspirated	Air Aspiration Method, if 'Other'	
Number of Air Aspiration Devices	--	Air Aspiration Device Configuration	--
Charge Air Cooler Type	--	Drive Mode While Testing	2-Wheel Drive, Front
Shift Indicator Light Usage	Not equipped	Aged Emission Components	4,000 (mi)
Curb Weight (lbs)	3935	Equivalent Test Weight (pounds)	4250
GVWR (lbs)	5467	N/V Ratio	31
Axle Ratio	4.08		
Transmission Type	Semi-Automatic	# of Transmission Gears	8
Transmission Lockup	Yes	Creep Gear	No

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	28.002	0.5319	0.023241	5.556	0.47281	0.022473	15

Emission Control Device Comments --

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG						
Manufacturer Test Vehicle Comments	MQ4A 2.5 AWD 8AT 18in EVAP-CORRECT CW & GVWR								
Test #	MKMX10065282	Test Procedure	38 - CA fuel 3-day evap.						
Exhaust Test # for this Evap Test	MKMX10065271	Test Fuel Type	46 - CARB LEV3 E10 Regular Gasoline						
Test Date	05/28/2020	Fuel	Gasoline						
Fuel Batch ID	19E-03	Fuel Calibration Number	1						
Vehicle Class	N/A	DF Type	Mfr. Determined						
Verify Test Lab ID	772-1, Jangduck-Dong								
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)								
Test Start Odometer Reading	4130	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	No						
Test Results									
<table border="1"> <tr> <th>Test Result Name</th> <th>Unrounded Test Result</th> <th>Verify Calculated FE Equivalent Value (miles per gallon)</th> </tr> <tr> <td>HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)</td> <td>0.2474</td> <td>--</td> </tr> </table>				Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)	HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.2474	--
Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)							
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.2474	--							
Manufacturer Test Comments									
21MY MQ4a 2.5 18"(ETW:4250)-3DBL									
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	0.2474	0	0.247	0.4	Pass	
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.2474	0	0.247	0.4	Pass	

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	MKMX10065284	Test Procedure	27 - California fuel 2-day evap
Exhaust Test # for this Evap Test	MKMX10065272	Test Fuel Type	46 - CARB LEV3 E10 Regular
Test Date	04/25/2020	Fuel	Gasoline
Fuel Batch ID	19E-03	Fuel Calibration Number	1
Vehicle Class	N/A	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	4062	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	No

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.2346	--

Manufacturer Test Comments

21MY MQ4a 2.5 18"(ETW:4250) CA E10-2DBL

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	0.2346	0	0.235	0.4	Pass
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.2346	0	0.235	0.4	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG						
Test #	MKMX10065283	Test Procedure	24 - Federal fuel refueling test (ORVR)						
Exhaust Test # for this Evap Test	MKMX10065273	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)						
Test Date	04/22/2020	Fuel	Gasoline						
Fuel Batch ID	19T-03	Fuel Calibration Number	1						
Vehicle Class	N/A	DF Type	Mfr. Determined						
Verify Test Lab ID	772-1, Jangduck-Dong								
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)								
Test Start Odometer Reading	4043	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	No						
Test Results									
<table border="1"> <tr> <td>Test Result Name</td> <td>Unrounded Test Result</td> <td>Verify Calculated FE Equivalent Value (miles per gallon)</td> </tr> <tr> <td>HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)</td> <td>0.008</td> <td>--</td> </tr> </table>				Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)	HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.008	--
Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)							
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.008	--							
Manufacturer Test Comments									
21MY MQ4a 2.5 18"(ETW:4250) FED E10-ORVR									
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	0.008	0.003	0.01	0.2	Pass	
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.008	0.003	0.01	0.2	Pass	

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG						
Test #	MKMX10065285	Test Procedure	37 - California Fuel Running Loss						
Exhaust Test # for this Evap Test	MKMX10065271	Test Fuel Type	46 - CARB LEV3 E10 Regular Gasoline						
Test Date	05/28/2020	Fuel	Gasoline						
Fuel Batch ID	19E-03	Fuel Calibration Number	1						
Vehicle Class	N/A	DF Type	Mfr. Determined						
Verify Test Lab ID	772-1, Jangduck-Dong								
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)								
Test Start Odometer Reading	4130	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	No						
Test Results									
<table border="1"> <tr> <th>Test Result Name</th> <th>Unrounded Test Result</th> <th>Verify Calculated FE Equivalent Value (miles per gallon)</th> </tr> <tr> <td>HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)</td> <td>0.0003</td> <td>--</td> </tr> </table>				Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)	HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.0003	--
Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)							
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.0003	--							
Manufacturer Test Comments									
21MY MQ4a 2.5 18"(ETW:4250) CA E10-RL									
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	0	0	0.05	Pass	
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	HC-TOTAL-EQUIV	0	0	0	0.05	Pass	

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	MKMX10065287	Test Procedure	65 - Evap Canister Bleed Test
Exhaust Test # for this Evap Test	--	Test Fuel Type	46 - CARB LEV3 E10 Regular Gasoline
Test Date	05/15/2020	Fuel	Gasoline
Fuel Batch ID	19E-03	Fuel Calibration Number	1
Vehicle Class	N/A	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	4092	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	No

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
HC-TOTAL (Total Hydrocarbon)	0.0099	--

Manufacturer Test Comments

21MY MQ4a 2.5 18"(ETW:4250) CA E10-Bleed-correct E10 evap test measurement method

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	0.01	0.02	Pass
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	HC-TOTAL	0.0099	0	0.01	0.02	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	MKMX10065286	Test Procedure	68 - Leak Test - Port Near Fuel Pipe
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	06/02/2020	Fuel	Gasoline
Fuel Batch ID	19T-03	Fuel Calibration Number	1
Vehicle Class	N/A	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4131	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	No

Test Results

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

Manufacturer Test Comments

21MY MQ4a 2.5 18"(ETW:4250) FED E10-Leak Test Port Near Fuel Pipe

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	LEAK-DIA	0	0	0	0.02	Pass
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	LEAK-DIA	0	0	0	0.02	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG						
Test #	MKMX10065288	Test Procedure	67 - Leak Test - Port Near Canister						
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)						
Test Date	06/02/2020	Fuel	Gasoline						
Fuel Batch ID	19T-03	Fuel Calibration Number	1						
Vehicle Class	N/A	DF Type	Mfr. Determined						
Verify Test Lab ID	772-1, Jangduck-Dong								
E10 Evaporative Test Measurement Method	--								
Test Start Odometer Reading	4131	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	No						
Test Results									
<table><tr><td>Test Result Name</td><td>Unrounded Test Result</td><td>Verify Calculated FE Equivalent Value</td></tr><tr><td>LEAK-DIA (Effective Leak Diameter (inches))</td><td>0</td><td>--</td></tr></table>				Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value	LEAK-DIA (Effective Leak Diameter (inches))	0	--
Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value							
LEAK-DIA (Effective Leak Diameter (inches))	0	--							
Manufacturer Test Comments 21MY MQ4a 2.5 18"(ETW:4250) FED E10-Leak Test Port Near Canister									
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail	
Fed	150,000 miles	Federal Tier 3 Evap	LEAK-DIA	0	0	0	0.02	Pass	
CA	150,000 miles	California LEV-IV Zero Evap (Option 2)	LEAK-DIA	0	0	0	0.02	Pass	

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG						
Emission Data Vehicle Information									
Vehicle ID / Configuration	MQ4U4H5TD162A / 0	Manufacturer Vehicle Configuration Number	0						
Original Test Group Name	RKMXT02.5JP3	Original Evaporative/Refueling Family	RKMXR0144JPG						
Original Test Vehicle Model Year	2024								
Vehicle Model									
Represented Test Vehicle Make	Kia	Represented Test Vehicle Model	Sorento						
Leak Family Details									
Leak Family Identifier	MQ4	Leak Family Name	RKMXR0144JPG-MQ4						
Drive Sources and Fuel System Details									
	<table border="1"> <tr> <th>Drive Source and Fuel#</th><th>Drive Source</th><th>Fuel</th></tr> <tr> <td>1</td><td>Combustion Engine</td><td>Gasoline</td></tr> </table>	Drive Source and Fuel#	Drive Source	Fuel	1	Combustion Engine	Gasoline		
Drive Source and Fuel#	Drive Source	Fuel							
1	Combustion Engine	Gasoline							
Hybrid Indicator	No								
Multiple Fuel Storage	--	Multiple Fuel Combustion	--						
Fuel Cell Indicator	--	Rechargeable Energy Storage System Indicator	--						
Rechargeable Energy Storage System	--	Rechargeable Energy Storage System, if 'Other'	--						
Off-board charge Capable Indicator	--								
Odometer Correction -- Initial	0	Odometer Correction Factor	1.0163						
Odometer Correction Sign	- = System Miles is equal to (Test odometer reading - Initial system miles) * Correction factor								
Odometer Correction Units	Miles								
Engine Code	G4KP-AMC	Rated Horsepower	281						
Displacement (liters)	2.5								
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)	4213	Equivalent Test Weight (pounds)	4500						
GVWR (lbs)	5401	N/V Ratio	26						
Axle Ratio	3.32								
Transmission Type	Automated Manual- Selectable (e.g. Automated Manual with paddles)	# of Transmission Gears	8						
Transmission Lockup	No	Creep Gear	No						

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family		VKMXR0144JPG	
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	36.284	0.28805	0.02568	15.321	0.1133	0.025968	15.3	
Cold CO	39.912	0.31686	0.028248	9.658	-0.02044	0.029485	N/A	
US06	36.284	0.28805	0.02568	15.321	0.1133	0.025968	N/A	
Emission Control Device Comments		--						
Manufacturer Test Vehicle Comments		MQ4a PE 2.5T AWD DCT8 17in X-PRO						

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX10081467	Test Procedure	21 - Federal fuel 2-day exhaust (w/can load)
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	06/21/2023	Fuel	Gasoline
Fuel Batch ID	21T-01	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4365	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 (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	377.6511	--
FE BAG 1 (Bag 1 Fuel Economy)	22.8663	22.8663
CO2 BAG 2 (Bag 2 Carbon Dioxide)	353.9281	--
FE BAG 2 (Bag 2 Fuel Economy)	24.4848	24.4848
CO2 BAG 3 (Bag 3 Carbon Dioxide)	312.8147	--
FE BAG 3 (Bag 3 Fuel Economy)	27.6871	27.6871
METHANE (CH4 - Methane)	0.002	--
CO (Carbon Monoxide)	0.1897	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.5	--
DT-EER (Drive Trace Energy Economy Rating)	0.56	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	2.55	--
MFR FE (Manufacturer Fuel Economy)	24.8903	24.8903
NOX (Nitrogen Oxide)	0.0032	--
HC-NM (Non-methane Hydrocarbon)	0.0027	--
NMOG (Non-methane organic gases)	0.003	--
PM (Particulate Matter)	0.0007	--
HC-TOTAL (Total Hydrocarbon)	0.0041	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	348.3106	999

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family				VKMXR0144JPG			
		Test Result Name		Unrounded Test Result			Verify Calculated CO2					
		Carbon dioxide		347.5704			--					
Manufacturer Test Comments		24MY MQ4a PE 2.5T AWD 17" E10-FTP										
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	--	--	--	0.091253	--	999	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.002	--	--	--	0.0024	--	0.004	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.19	--	--	--	0.1	--	0.3	1.0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO-COMP	0.24	--	--	--	0	--	0.2	4.2	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.003	--	1.1	--	0.0024	--	0.005	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0062	--	--	--	--	--	0.013	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX-COMP	0.0126	--	--	--	0	--	0.013	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0032	--	--	--	0.0042	--	0.007	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0007	--	--	--	0	--	0.001	0.003	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.19	--	--	--	0.1	--	0.3	1.0	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.003	--	1.1	--	0.0024	--	0.005	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0062	--	--	--	--	--	0.013	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0032	--	--	--	0.0042	--	0.007	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	PM	0.0007	--	--	--	0	--	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	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX10081471	Test Procedure	11 - Cold CO
Exhaust Test # for this Evap Test	--	Test Fuel Type	28 - Cold CO E10 Regular Gasoline (Tier 3)
Test Date	05/31/2023	Fuel	Gasoline
Fuel Batch ID	22D-01	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4206	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 (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	435.5323	--
FE BAG 1 (Bag 1 Fuel Economy)	19.6814	19.6814
CO2 BAG 2 (Bag 2 Carbon Dioxide)	374.5538	--
FE BAG 2 (Bag 2 Fuel Economy)	23.0779	23.0779
CO2 BAG 3 (Bag 3 Carbon Dioxide)	316.6296	--
FE BAG 3 (Bag 3 Fuel Economy)	27.2961	27.2961
CO (Carbon Monoxide)	0.4922	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.61	--
DT-EER (Drive Trace Energy Economy Rating)	0.38	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	0.84	--
MFR FE (Manufacturer Fuel Economy)	23.278	23.278
NOX (Nitrogen Oxide)	0.0035	--
HC-NM (Non-methane Hydrocarbon)	0.0269	--
HC-TOTAL (Total Hydrocarbon)	0.0333	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	371.2837	--

Manufacturer Test Comments

24MY MQ4a 2.5T AWD 17" E10-20F

Certification Summary Information Report

Test Group		VKMXT02.5YP3				Evaporative/Refueling Family				VKMXR0144JPG		
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	0.49	--	--	--	0.03	--	0.5	12.5	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	HC-NM	0.03	--	--	--	0.0018	--	0	0.3	Pass
CA	50,000 miles	California LEV-IV SULEV30	CO	0.49	--	--	--	0.03	--	0.5	12.5	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX10081472	Test Procedure	52 - Fed. fuel 50 F exh.
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	05/25/2023	Fuel	Gasoline
Fuel Batch ID	21T-01	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4136	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 (miles per gallon)
CO (Carbon Monoxide)	0.2645	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.52	--
DT-EER (Drive Trace Energy Economy Rating)	1.01	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.82	--
MFR FE (Manufacturer Fuel Economy)	24.3235	24.3235
NOX (Nitrogen Oxide)	0.0039	--
HC-NM (Non-methane Hydrocarbon)	0.0039	--
NMOG (Non-methane organic gases)	0.0043	--
HC-TOTAL (Total Hydrocarbon)	0.0061	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	356.3891	--

Manufacturer Test Comments

24MY MQ4a 2.5T AWD 17" E10-50F

Certification Summary Information Report

Test Group		VKMXT02.5YP3				Evaporative/Refueling Family				VKMXR0144JPG		
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-IV SULEV30	CO	0.26	--	--	--	--	--	0.3	1.0	Pass
CA	4,000 miles	California LEV-IV SULEV30	NMOG	0.0043	--	1.1	--	--	--	0.004	99.999	Pass
CA	4,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0082	--	--	--	--	--	0.008	0.060	Pass
CA	4,000 miles	California LEV-IV SULEV30	NOX	0.0039	--	--	--	--	--	0.004	99.999	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX91005608	Test Procedure	21 - Federal fuel 2-day exhaust (w/can load)
Exhaust Test # for this Evap Test	--	Test Fuel Type	61 - Tier 2 Cert Gasoline
Test Date	08/25/2023	Fuel	Gasoline
Fuel Batch ID	29351	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	--		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4559	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 (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	372.699585	--
FE BAG 1 (Bag 1 Fuel Economy)	23.7969933	--
CO2 BAG 2 (Bag 2 Carbon Dioxide)	372.2931213	--
FE BAG 2 (Bag 2 Fuel Economy)	23.9269905	--
CO2 BAG 3 (Bag 3 Carbon Dioxide)	310.0399475	--
FE BAG 3 (Bag 3 Fuel Economy)	28.7451801	--
METHANE (CH4 - Methane)	0.0030071	--
CO (Carbon Monoxide)	0.2938731	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.9634501	--
DT-EER (Drive Trace Energy Economy Rating)	1.1960009	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	2.5269611	--
MFR FE (Manufacturer Fuel Economy)	25.0517273	--
NOX (Nitrogen Oxide)	0.0035055	--
N2O (Nitrous Oxide)	0	--
HC-NM (Non-methane Hydrocarbon)	0.003435	--
NMOG (Non-methane organic gases)	0.0035724	--
HC-TOTAL (Total Hydrocarbon)	0.006113	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	9999.9999999	355

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family				VKMXR0144JPG			
		Test Result Name		Unrounded Test Result			Verify Calculated CO2					
		Carbon dioxide		355.2835693			--					
Manufacturer Test Comments		None										
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	355	--	--	--	0.091253	--	355	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.003	--	--	--	0.0024	--	0.005	0.030	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	N2O	0	--	--	--	0.0002	--	0	0.010	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.29	--	--	--	0.1	--	0.4	1.0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0036	--	1.1	--	0.0024	--	0.006	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0071	--	--	--	--	--	0.014	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0035	--	--	--	0.0042	--	0.008	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.29	--	--	--	0.1	--	0.4	1.0	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.0036	--	1.1	--	0.0024	--	0.006	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0071	--	--	--	--	--	0.014	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0035	--	--	--	0.0042	--	0.008	99.999	Pass
NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.												

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX10081468	Test Procedure	3 - HWFE
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	06/21/2023	Fuel	Gasoline
Fuel Batch ID	21T-01	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4375	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 (miles per gallon)
CO (Carbon Monoxide)	0.0488	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	2.24	--
DT-EER (Drive Trace Energy Economy Rating)	0.01	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	2.9	--
MFR FE (Manufacturer Fuel Economy)	37.6808	37.6808
NOX (Nitrogen Oxide)	0.0014	--
HC-NM (Non-methane Hydrocarbon)	0	--
NMOG (Non-methane organic gases)	0	--
HC-TOTAL (Total Hydrocarbon)	0	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	230.0786	999

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	230.4481	--

Manufacturer Test Comments 24MY MQ4a 2.5T AWD 17" E10-HWY

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family					VKMXR0144JPG		
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	--	--	--	0.091253	--	999	--	--
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0	--	1.03	--	0.0024	--	0.002	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0014	--	--	--	--	--	0.008	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0014	--	--	--	0.0042	--	0.006	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0	--	1.03	--	0.0024	--	0.002	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0014	--	--	--	--	--	0.008	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0014	--	--	--	0.0042	--	0.006	99.999	Pass

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

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX91005609	Test Procedure	3 - HWFE
Exhaust Test # for this Evap Test	--	Test Fuel Type	61 - Tier 2 Cert Gasoline
Test Date	08/25/2023	Fuel	Gasoline
Fuel Batch ID	29351	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	--		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4570	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 (miles per gallon)	
METHANE (CH4 - Methane)	0.0007723	--	
CO (Carbon Monoxide)	0.0668473	--	
DT-ASCR (Drive Trace Absolute Speed Change Rating)	3.1108975	--	
DT-EER (Drive Trace Energy Economy Rating)	-0.0587267	--	
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	4.206615	--	
MFR FE (Manufacturer Fuel Economy)	38.3013382	--	
NOX (Nitrogen Oxide)	0.0015624	--	
N2O (Nitrous Oxide)	0	--	
HC-NM (Non-methane Hydrocarbon)	0	--	
NMOG (Non-methane organic gases)	0	--	
HC-TOTAL (Total Hydrocarbon)	0.0004427	--	
Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE	
Carbon-Related Exhaust Emissions	9999.9999999	233	
Test Result Name	Unrounded Test Result	Verify Calculated CO2	
Carbon dioxide	232.5883636	--	
Manufacturer Test Comments	None		

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family					VKMXR0144JPG		
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	233	--	--	--	0.091253	--	233	--	--
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0	--	1.03	--	0.0024	--	0.002	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0016	--	--	--	--	--	0.008	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0016	--	--	--	0.0042	--	0.006	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0	--	1.03	--	0.0024	--	0.002	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0016	--	--	--	--	--	0.008	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0016	--	--	--	0.0042	--	0.006	99.999	Pass

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

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX10081469	Test Procedure	90 - US06
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	06/21/2023	Fuel	Gasoline
Fuel Batch ID	21T-01	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4395	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 (miles per gallon)
CO2 BAG 1 (Bag 1 Carbon Dioxide)	577.9782	--
FE BAG 1 (Bag 1 Fuel Economy)	14.9841	14.9841
CO2 BAG 2 (Bag 2 Carbon Dioxide)	313.2156	--
FE BAG 2 (Bag 2 Fuel Economy)	27.6783	27.6783
CO (Carbon Monoxide)	0.1869	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-4.02	--
DT-EER (Drive Trace Energy Economy Rating)	-1.5	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-6.37	--
MFR FE (Manufacturer Fuel Economy)	23.2858	23.2858
NOX (Nitrogen Oxide)	0.0054	--
HC-NM (Non-methane Hydrocarbon)	0.0025	--
NMOG (Non-methane organic gases)	0.0026	--
PM (Particulate Matter)	0.0014	--
HC-TOTAL (Total Hydrocarbon)	0.0037	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	371.9355	--

Manufacturer Test Comments

24MY MQ4a 2.5T AWD 17" E10-US06

Certification Summary Information Report

Test Group		VKMXT02.5YP3				Evaporative/Refueling Family				VKMXR0144JPG		
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	0.1869	--	--	--	0.1	--	0.287	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0026	--	1.03	--	0.0024	--	0.005	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.008	--	--	--	--	--	0.015	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0054	--	--	--	0.0042	--	0.01	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0014	--	--	--	0	--	0.001	0.006	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.19	--	--	--	0.1	--	0.3	9.6	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.0026	--	1.03	--	0.0024	--	0.005	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.008	--	--	--	--	--	0.015	0.036	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0054	--	--	--	0.0042	--	0.01	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	PM	0.0014	--	--	--	0	--	0.001	0.006	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Test #	RKMX10081470	Test Procedure	95 - SC03
Exhaust Test # for this Evap Test	--	Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)
Test Date	05/24/2023	Fuel	Gasoline
Fuel Batch ID	21T-01	Fuel Calibration Number	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	DF Type	Mfr. Determined
Verify Test Lab ID	772-1, Jangduck-Dong		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4121	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 (miles per gallon)
CO (Carbon Monoxide)	0.0565	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-2.54	--
DT-EER (Drive Trace Energy Economy Rating)	-1.01	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-3.17	--
MFR FE (Manufacturer Fuel Economy)	19.2189	19.2189
NOX (Nitrogen Oxide)	0.0043	--
HC-NM (Non-methane Hydrocarbon)	0	--
NMOG (Non-methane organic gases)	0	--
HC-TOTAL (Total Hydrocarbon)	0.0005	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	451.3394	--

Manufacturer Test Comments

24MY MQ4a 2.5T AWD 17" E10-SC03

Certification Summary Information Report

Test Group		VKMXT02.5YP3				Evaporative/Refueling Family				VKMXR0144JPG		
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	0.0565	--	--	--	0.1	--	0.156	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0	--	1.03	--	0.0024	--	0.002	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0043	--	--	--	--	--	0.011	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0043	--	--	--	0.0042	--	0.008	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.06	--	--	--	0.1	--	0.2	1.0	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0	--	1.03	--	0.0024	--	0.002	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0043	--	--	--	--	--	0.011	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0043	--	--	--	0.0042	--	0.008	99.999	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Fuel Properties			
Fuel Batch ID	22D-01	Fuel Calibration Number	1
Test Fuel Type	28 - Cold CO E10 Regular Gasoline (Tier 3)	Fuel Batch Calibration Date	07/29/2021
Fuel Batch Calibration Effective Date	05/10/2022	Fuel Batch Calibration Ineffective Date	05/10/2025
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.742
Fuel Ethanol Volume Percent (%)	9.9	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17925
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	19T-03	Fuel Calibration Number	1
Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)	Fuel Batch Calibration Date	08/22/2019
Fuel Batch Calibration Effective Date	04/13/2020	Fuel Batch Calibration Ineffective Date	04/13/2023
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.743
Fuel Ethanol Volume Percent (%)	9.8	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17949
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	Fuel Carbon Mass Fraction (E10)	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.826	Weight Fraction CO2	--
Fuel Batch ID	21T-01	Fuel Calibration Number	1
Test Fuel Type	48 - Tier 3 E10 Regular Gasoline (9 RVP @Low Alt.)	Fuel Batch Calibration Date	07/24/2021
Fuel Batch Calibration Effective Date	12/24/2021	Fuel Batch Calibration Ineffective Date	12/24/2024
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--
Exhaust Carbon Weight Fraction	--	Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--	Fuel Specific Gravity	0.746
Fuel Ethanol Volume Percent (%)	9.7	Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17945
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	19E-03	Fuel Calibration Number	1
Test Fuel Type	46 - CARB LEV3 E10 Regular Gasoline	Fuel Batch Calibration Date	08/08/2019
Fuel Batch Calibration Effective Date	10/29/2019	Fuel Batch Calibration Ineffective Date	10/29/2022
Carbon Weight Fraction NMHC	--	Carbon Weight Fraction HC	--

Certification Summary Information Report

Test Group		VKMXT02.5YP3	Evaporative/Refueling Family	VKMXR0144JPG
Exhaust Carbon Weight Fraction	--		Fuel Methanol Volume Fraction	--
Fuel Density (grams/cubic ft)	--		Fuel Specific Gravity	0.75
Fuel Ethanol Volume Percent (%)	9.6		Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	17917
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	29351		Fuel Calibration Number	1
Test Fuel Type	61 - Tier 2 Cert Gasoline		Fuel Batch Calibration Date	05/03/2023
Fuel Batch Calibration Effective Date	05/03/2023		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	0.742
Fuel Ethanol Volume Percent (%)	--		Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)	18439
Fuel Net Heat of Combustion (E10) (MJ/kg)	--		Fuel Carbon Mass Fraction (E10)	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.867		Weight Fraction CO2	--

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family			VKMXR0144JPG		
Consolidated List of Standards										
Exhaust Standards										
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-IV SULEV30		
Fuel		Gasoline			Test Procedure			Fed. fuel 50 F exh.		
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	--	--	--	--	--	--	--	1.0	
4,000 miles	HCHO	--	--	--	--	--	--	--	0.008	
4,000 miles	NMOG	--	--	1.1	--	--	--	--	99.999	
4,000 miles	NMOG+NOX	--	--	--	--	--	1	--	0.060	
4,000 miles	NOX	--	--	--	--	--	--	--	99.999	
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			Federal fuel 2-day exhaust (w/can load)		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
120,000 miles	CREE	--	--	--	--	--	--	0.091253	999	
120,000 miles	METHANE	--	--	--	--	--	--	0.0024	0.030	
120,000 miles	N2O	--	--	--	--	--	--	0.0002	0.010	
150,000 miles	CO	--	--	--	--	--	--	0.1	1.0	
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2	
150,000 miles	HCHO	--	--	--	--	--	--	--	0.004	
150,000 miles	NMOG	--	--	1.1	--	--	--	0.0024	99.999	
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030	
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.030	
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999	
150,000 miles	PM	--	--	--	--	--	--	0	0.003	

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family			VKMXR0144JPG	
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-IV 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	--	--	--	--	--	--	0.1	1.0
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999
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			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	--	--	--	--	--	--	0.1	99.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	99.999
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999
150,000 miles	PM	--	--	--	--	--	--	0	0.006
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-IV 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
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999

Certification Summary Information Report

Test Group	VKMXT02.5YP3				Evaporative/Refueling Family			VKMXR0144JPG	
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-IV SULEV30	
Fuel	Gasoline				Test Procedure			Federal fuel 2-day exhaust (w/can load)	
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.1	1.0
150,000 miles	HCHO	--	--	--	--	--	--	--	0.004
150,000 miles	NMOG	--	--	1.1	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999
150,000 miles	PM	--	--	--	--	--	--	0	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-IV 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	--	--	--	--	--	--	0.1	9.6
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.036
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999
150,000 miles	PM	--	--	--	--	--	--	0	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			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	--	--	--	--	--	--	0.1	99.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	99.999
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999

Certification Summary Information Report

Test Group		VKMXT02.5YP3			Evaporative/Refueling Family			VKMXR0144JPG	
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			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	--	--	--	--	--	--	0.091253	999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0024	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0042	99.999

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-IV 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	--	--	--	--	--	--	0.03	12.5

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	--	--	--	--	--	--	0.03	12.5
120,000 miles	HC-NM	--	--	--	--	--	--	0.0018	0.3

Evaporative/Refueling Standards

Evaporative/Refueling Family		VKMXR0144JPG	Cert Region	Federal	
Cert/In-Use Code		Cert	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	--	0.05	0

Certification Summary Information Report

Test Group		VKMXT02.5YP3		Evaporative/Refueling Family		VKMXR0144JPG	
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV 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-TOTAL-EQUIV	--	0.20	0.003		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV 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	--	0.400	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		Federal	
Cert/In-Use Code		Cert		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		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV 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	--	0.05	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV 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		

Certification Summary Information Report

Test Group		VKMXT02.5YP3		Evaporative/Refueling Family		VKMXR0144JPG	
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal Tier 3 Evap	
Test Procedure		Leak Test - Port Near Canister					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	LEAK-DIA	--	0.020	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV 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	--	0.400	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal Tier 3 Evap	
Test Procedure		Federal fuel refueling test (ORVR)					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.20	0.003		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		Federal	
Cert/In-Use Code		Cert		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	--	0.400	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV Zero Evap (Option 2)	
Test Procedure		Leak Test - Port Near Fuel Pipe					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	LEAK-DIA	--	0.02	0		

Certification Summary Information Report

Test Group		VKMXT02.5YP3		Evaporative/Refueling Family		VKMXR0144JPG	
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		Federal	
Cert/In-Use Code		Cert		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	--	0.400	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-IV Zero Evap (Option 2)	
Test Procedure		Leak Test - Port Near Canister					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	LEAK-DIA	--	0.02	0		
Evaporative/Refueling Family		VKMXR0144JPG		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal Tier 3 Evap	
Test Procedure		Leak Test - Port Near Fuel Pipe					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	LEAK-DIA	--	0.020	0		

Certification Summary Information Report

Test Group		VKMXT02.5YP3	Evaporative/Refueling Family		VKMXR0144JPG
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		VKMXT02.5YP3	Evaporative/Refueling Family		VKMXR0144JPG
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		VKMXT02.5YP3	Evaporative/Refueling Family		VKMXR0144JPG
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		VKMXT02.5YP3	Evaporative/Refueling Family		VKMXR0144JPG
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	