Application for Certification - Part 1

Test Group (FOI)

• **Model Year:**	2027
• **Manufacturer Name:**	Kia Corporation
• **Test Group:**	VKMXT02.5YR3
• **Test Group Description:**	2.5 Liter / I4 GDPI / Otto-cycle
• **Durability Group:**	VKMXGPGNNYR3
• **Durability Group Description:**	Monolith, WU-TWC+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-MQ4U4H5GA184A/0 (Exh) MQ4U1H5GA042A/0 (Evap) FEDV- MQ4U4H5GA183F/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	:	VKMXGPGNNYR3
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: VKMXR0144JRG (C/O 21MY Sorento 2.5)

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)
144JRG	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

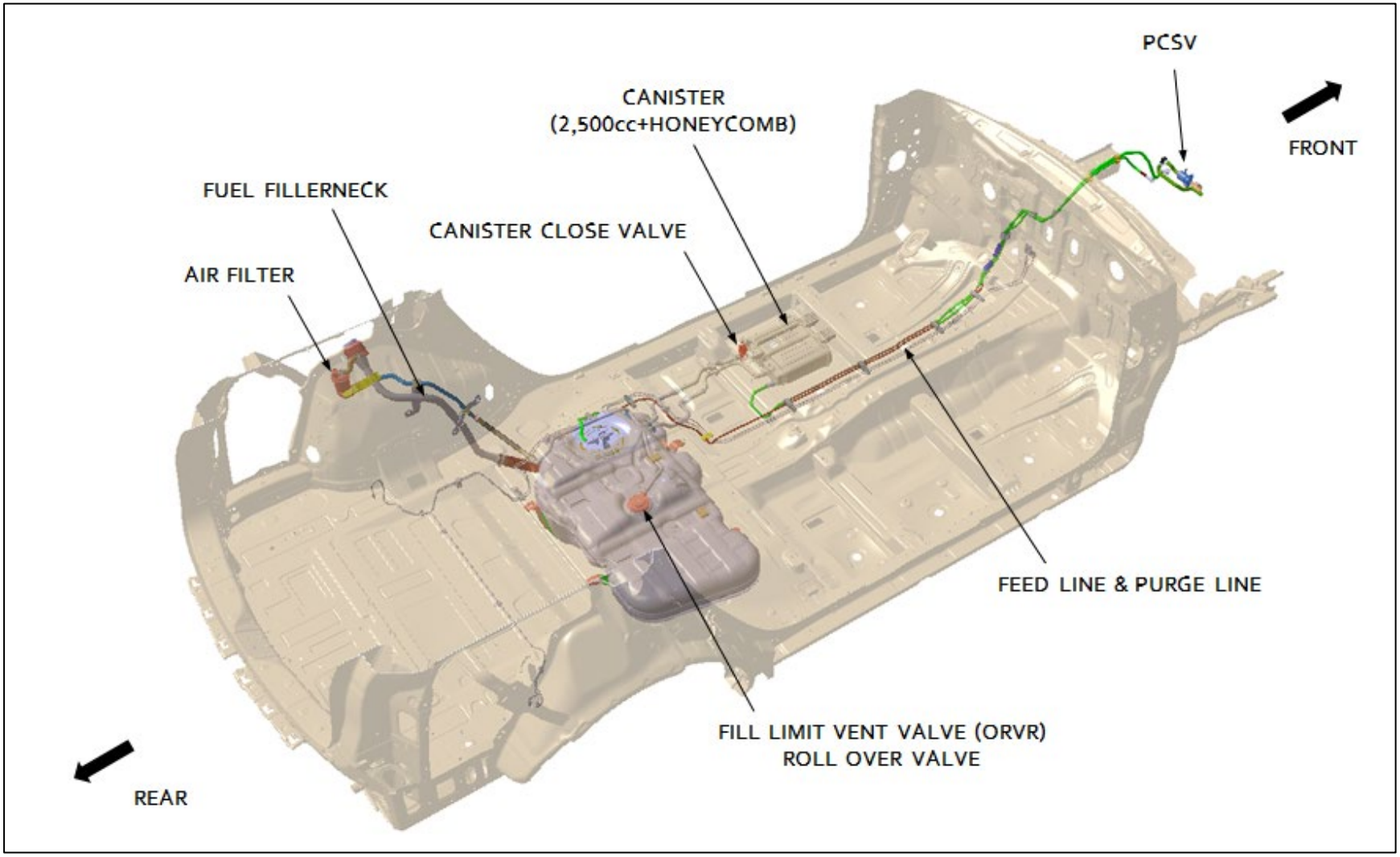
7. Purge control system
    a. Type of valve: Duty
    b. Purge control strategy: Controlled by ECU
    c. High load purge system : No
    d. Active purge system : No

8. Vapor hose material: Rubber

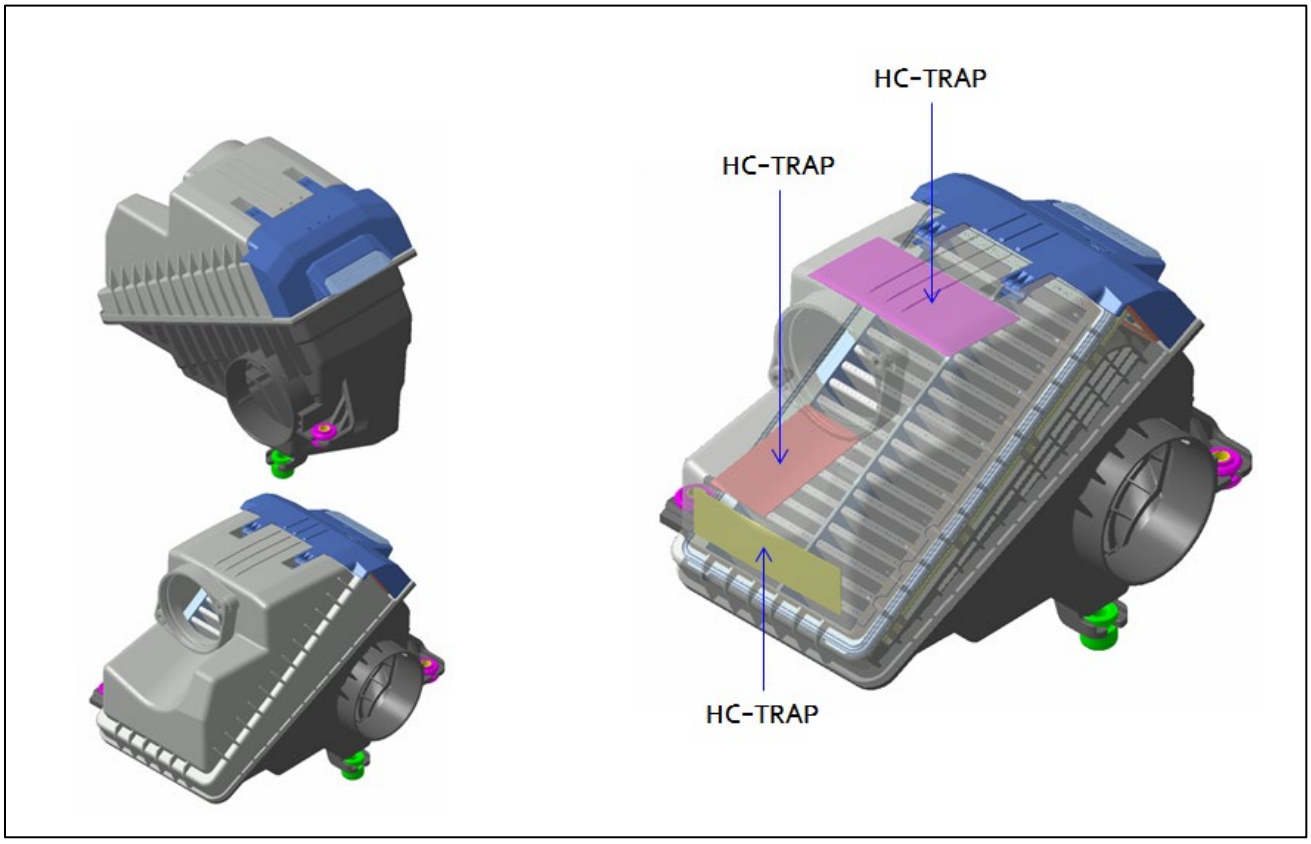
9. Fuel tank material: Plastic

10. HC-Trap
    a. Media : PAPER containing Activated Carbon
    b. Working capacity: 0.8g

03.00.01.02 Evaporative/Refueling Schematic



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	:	VKMXT02.5YR3
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 : 5NMS3CAJBK1P98112
VehicleConfigurationNumber : 0

VehicleConfigurationDetails

VehicleDescriptionDetails

ManufacturerVehicleConfigurationNumber : 0
TestGroupName : RKMXT02.5JR3
EvaporativeRefuelingFamilyName : RKMXR0144JRG
LeakFamilyIdentifier : MQ4
LeakFamilyName : RKMXR0144JRG-MQ4
ModelYear : 2024
ActualTestVehicleMakeText : Kia
ActualTestVehicleModelText : Sorento

DriveSourceDetails

DriveSourceIdentifier : C
FuelIdentifier : G

TestDriveCode : F
ShiftIndicatorLightUsageIdentifier : 1
AgedComponentUsageIdentifier : 4

OdometerCorrectionDetails

CorrectionInitialValue : 0
CorrectionFactorValue : 1.0108
CorrectionSignIdentifier : -
CorrectionUnitsCode : M

EngineCodeText : G4KN-AC
EngineRatedHorsepowerValue : 191
EngineDisplacementValue : 2.5

AirAspirationDetails

AirAspirationMethodIdentifier : NA

VehicleSpecificationsDetails

CurbWeightValue : 4045
EquivalentTestWeightValue : 4250
GrossVehicleWeightRatingValue : 5512
NVRatioValue : 31.0
AxleRatioValue : 4.08

TransmissionSpecificationsDetails

LightDutyTransmissionTypeIdentifier : SA
TransmissionLockupIndicator : Y
TransmissionCreeperGearIndicator : N
TransmissionGearCount : 8

TargetSetCoefficientDetails

TestProcedureDynamometerCoefficientsCategory : C-H-E
TargetCoefficientAValue : 26.766
TargetCoefficientBValue : 0.43060
TargetCoefficientCValue : 0.023788
SetCoefficientAValue : 2.456
SetCoefficientBValue : 0.40661
SetCoefficientCValue : 0.022636

ManufacturerCommentText : MQ4A PE 2.5 AWD 8AT 18in-EXHAUST DDV

EPAGeneratedTestVehicleDetails

OriginalReceiptDate : 20230901
HybridVehicleIndicator : N
AdjustedLoadedVehicleWeightValue : 4778
LoadedVehicleWeightValue : 4345
TotalRoadLoadHorsepowerValue : 14.4

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	26.9	20.5	38.5	16.8	22.4
BAG2	27.4	24.9		28.0	
BAG3	31.9	28.5			
TOTAL	28.4			24.4	

(1) Determining the City FE Method

5 Cycle City Criteria (Specific 5 cycle City FE ≥ 0.96 Mpg Based City FE)	Passed

		UNROUNDED	ADJ. ROUNDED	Examination	Decision
CITY FE	MPG BASED	22.25209366	21.4	Applicable	Selected
	5-CYCLE	22.12352986	22.1	Applicable	
	Ratio of 5CYCLE to 0.96 MPG-BASED		103.27		

CRITERIA : 100%

(2) Determining the Hwy FE Method

5 Cycle Highway Criteria (Specific 5 cycle HWY FE ≥ 0.95 Mpg Based HWY FE)	Passed

		UNROUNDED	ADJ. ROUNDED	Examination	Decision
HWY FE	MPG BASED	27.1633	25.8	Select This	Selected
	5-CYCLE	26.1385	26.1	Not Applicable	
	MODIFIED	26.1443	26.1	Not Applicable	
	Ratio of 5CYCLE to 0.95 MPG-BASED		101.16		

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	Electronic	
	Air pump type	N/A	
	Fuel system type	DFI, SFI	
	Intake air aspiration method	Natural	
	Other	-	
Engine Code		G4KN-AC	
Number of valves per cylinder		4	
Engine displacement (L)		2.5	
Sales area		50-State	
Transmission and overdrive		SA8 (Overdrive)	
SIL		N/A	
Tire size		235/60R18 (Continental/Kumho) 235/65R17 (Continental)	
N/V Ratios		31.0 (18inch) / 30.9 (17inch)	
ETW(lb)		4250	4250
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 VKMXT02.5YR3 / Evaporative Family VKMXR0144JRG

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 CFR86.188-01(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@hatci.com or (734) 273-1904.

Sincerely,

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

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 VKMXT02.5YR3 / Evaporative Family VKMXR0144JRG

Dear Ms. Robin U. Lang:

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

All vehicles within the test group mentioned above comply with the applicable regulations contained in 40 CFR86.188-01(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@hatci.com or (734) 273-1904.

Sincerely,

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

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, WU-TWC, TWC, EGR, EGRC	
Group : VKMXT02.5YR3 Evap. : VKMXR0144JRG	**ALC**	32450-2S218

15.03 ORVR Safety Statement

Kia uses standard technology in all ORVR systems for 2027 model year vehicles. In accordance with EPA Guidance Letter CISD-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
VKMXT02.5YR3	Sorento AWD Sorento FWD	DFI, SFI, WR-HO2S, HO2S, WU-TWC, TWC, EGR, EGRC, OBD II

Note) DFI : Direct Fuel Injection
SFI : Sequential multiport Fuel Injection
WR-HO2S : Wide Range Heated Oxygen Sensor
HO2S : Heated Oxygen Sensor
WU-TWC : Warm up Three Way Catalyst System
TWC : Three Way Catalyst System
EGR : Exhaust Gas Recirculation
EGRC : EGR 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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG
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 03:19:32 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	VKMXGPGNNYR3	**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(22.1/21.4),HWY(26.1/25.8)-2MODE. Test No: RKMX10081446(FTP),RKMX10081447(HWY),RKMX10081448(US06),RKMX10081449(SC03),RKMX10081450(Cold)		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Evaporative/Refueling Family Information

Evaporative Summary Information Type	New	**Submission/Correction Date**	05/04/2026 01:19:31 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
VKMXR0144JRG-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	829 - Sorento FWD	California + CAA Section 177 states	2-Wheel Drive, Front	Semi-Automatic	8	Yes
Kia Corporation	1 - KIA	829 - Sorento FWD	Federal	2-Wheel Drive, Front	Semi-Automatic	8	Yes
Kia Corporation	1 - KIA	828 - Sorento AWD	California + CAA Section 177 states	All Wheel Drive	Semi-Automatic	8	Yes
Kia Corporation	1 - KIA	828 - Sorento AWD	Federal	All Wheel Drive	Semi-Automatic	8	Yes

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 0W20
Number of Cylinders/Rotors	4	**Mechanically Variable Compression Ratio Indicator**	N

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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
2	Three-way catalyst	Platinum + 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**	191
Number of Inlet Valves Per Cylinder	2	**Number of Exhaust Valves Per Cylinder**	2
Air Aspiration Method	Naturally Aspirated	**Number of Air Aspiration Devices**	--
Air Aspiration Device Configuration	--	**Charge Air Cooler Type**	--
Air Aspiration Drive Method(s)	--		
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	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	--		

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	RKMX10081446	RKMX10081448	RKMX10081449	RKMX10081450	RKMX10081447	26.2	228.2	33.6	286.1	--

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

SFTP LEV-III Official Test Numbers

Test Group Fuel	FTP	US06	SC03
Gasoline	RKMX10081446	RKMX10081448	RKMX10081449

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Emission Data Vehicle Information

Vehicle ID / Configuration	MQ4U1H5GA042A / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	MKMXT02.5JR5	**Original Evaporative/Refueling Family**	MKMXR0144JRG
Original Test Vehicle Model Year	2021		

Vehicle Model

Represented Test Vehicle Make	Kia	**Represented Test Vehicle Model**	Sorento

Leak Family Details

Leak Family Identifier	MQ4	**Leak Family Name**	MKMXR0144JRG-MQ4

Drive Sources and Fuel System Details

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
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 eqipped	**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	**Creeper Gear**	No

Dynamometer Coefficients:

	Target Coefficients			Set Coefficients			
Coefficient Category	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients**
City/Highway/Evap	28.002	0.5319	0.023241	5.556	0.47281	0.022473	15

Emission Control Device Comments --

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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 Gasoline
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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Emission Data Vehicle Information

Vehicle ID / Configuration	MQ4U4H5GA184A / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	RKMXT02.5JR3	**Original Evaporative/Refueling Family**	RKMXR0144JRG
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**	RKMXR0144JRG-MQ4

Drive Sources and Fuel System Details

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**	1.0108
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 eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	4045	**Equivalent Test Weight (pounds)**	4250
GVWR (lbs)	5512	**N/V Ratio**	31
Axle Ratio	4.08		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	Yes	**Creeper Gear**	No

Certification Summary Information Report

Test Group	VKMXT02.5YR3	Evaporative/Refueling Family	VKMXR0144JRG

Dynamometer Coefficients:

Coefficient Category	Target Coefficients A (lbf)	Target Coefficients B (lbf/mph)	Target Coefficients C (lbf/mph**2)	Set Coefficients A (lbf)	Set Coefficients B (lbf/mph)	Set Coefficients C (lbf/mph**2)	EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
City/Highway/Evap	26.766	0.4306	0.023788	2.456	0.40661	0.022636	14.4
Cold CO	29.443	0.47366	0.026167	0.429	0.32783	0.025723	N/A
US06	26.766	0.4306	0.023788	2.456	0.40661	0.022636	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments MQ4A PE 2.5 AWD 8AT 18in

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10081446**	**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	05/18/2023	**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	4216	**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)	322.0182	--
FE BAG 1 (Bag 1 Fuel Economy)	26.8517	26.8517
CO2 BAG 2 (Bag 2 Carbon Dioxide)	316.0316	--
FE BAG 2 (Bag 2 Fuel Economy)	27.416	27.416
CO2 BAG 3 (Bag 3 Carbon Dioxide)	271.6284	--
FE BAG 3 (Bag 3 Fuel Economy)	31.8528	31.8528
METHANE (CH4 - Methane)	0.0027	--
CO (Carbon Monoxide)	0.2092	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.54	--
DT-EER (Drive Trace Energy Economy Rating)	-0.6	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	0.75	--
MFR FE (Manufacturer Fuel Economy)	28.3926	28.3926
NOX (Nitrogen Oxide)	0.0039	--
HC-NM (Non-methane Hydrocarbon)	0.003	--
NMOG (Non-methane organic gases)	0.0033	--
PM (Particulate Matter)	0.001	--
HC-TOTAL (Total Hydrocarbon)	0.0053	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	305.3451	999

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	305.1103	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" E10-FTP

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 3 Bin 30	CREE	999	--	--	--	0.144735	--	999	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.0027	--	--	--	0.003	--	0.006	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.21	--	--	--	0.06	--	0.3	1.0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO-COMP	0.33	--	--	--	0	--	0.3	4.2	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0033	--	1.1	--	0.0044	--	0.008	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0072	--	--	--	--	--	0.014	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX-COMP	0.0137	--	--	--	0	--	0.014	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0039	--	--	--	0.0028	--	0.007	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.001	--	--	--	0.0001	--	0.001	0.003	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.21	--	--	--	0.06	--	0.3	1.0	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.0033	--	1.1	--	0.0044	--	0.008	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0072	--	--	--	--	--	0.014	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0039	--	--	--	0.0028	--	0.007	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	PM	0.001	--	--	--	0.0001	--	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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10081450**	**Test Procedure**	**11 - Cold CO**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	28 - Cold CO E10 Regular Gasoline (Tier 3)
Test Date	05/30/2023	**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	4436	**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)	418.8394	--
FE BAG 1 (Bag 1 Fuel Economy)	20.5454	20.5454
CO2 BAG 2 (Bag 2 Carbon Dioxide)	346.6699	--
FE BAG 2 (Bag 2 Fuel Economy)	24.9281	24.9281
CO2 BAG 3 (Bag 3 Carbon Dioxide)	303.3359	--
FE BAG 3 (Bag 3 Fuel Economy)	28.5447	28.5447
CO (Carbon Monoxide)	0.3289	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.67	--
DT-EER (Drive Trace Energy Economy Rating)	-0.19	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.05	--
MFR FE (Manufacturer Fuel Economy)	24.6838	24.6838
NOX (Nitrogen Oxide)	0.0053	--
HC-NM (Non-methane Hydrocarbon)	0.0481	--
HC-TOTAL (Total Hydrocarbon)	0.0572	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	349.7267	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" E10-20F

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

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	0.33	--	--	--	0.02	--	0.4	12.5	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	HC-NM	0.05	--	--	--	0.0032	--	0.1	0.3	Pass
CA	50,000 miles	California LEV-IV SULEV30	CO	0.33	--	--	--	0.02	--	0.4	12.5	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10081451**	**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	05/28/2023	**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	4368	**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)	0.2365	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.34	--
DT-EER (Drive Trace Energy Economy Rating)	-0.32	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-0.58	--
MFR FE (Manufacturer Fuel Economy)	27.5743	27.5743
NOX (Nitrogen Oxide)	0.0024	--
HC-NM (Non-methane Hydrocarbon)	0.0072	--
NMOG (Non-methane organic gases)	0.0079	--
HC-TOTAL (Total Hydrocarbon)	0.0105	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	314.4775	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" E10-50F

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
CA	4,000 miles	California LEV-IV SULEV30	CO	0.24	--	--	--	--	--	0.2	1.0	Pass
CA	4,000 miles	California LEV-IV SULEV30	NMOG	0.0079	--	1.1	--	--	--	0.008	99.999	Pass
CA	4,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0103	--	--	--	--	--	0.01	0.060	Pass
CA	4,000 miles	California LEV-IV SULEV30	NOX	0.0024	--	--	--	--	--	0.002	99.999	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10082264**	**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	07/16/2023	**Fuel**	Gasoline
Fuel Batch ID	22M-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	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)	324.4116	--
FE BAG 1 (Bag 1 Fuel Economy)	27.4911	27.4911
CO2 BAG 2 (Bag 2 Carbon Dioxide)	308.727	--
FE BAG 2 (Bag 2 Fuel Economy)	28.8356	28.8356
CO2 BAG 3 (Bag 3 Carbon Dioxide)	272.5509	--
FE BAG 3 (Bag 3 Fuel Economy)	32.6492	32.6492
METHANE (CH4 - Methane)	0.0022	--
CO (Carbon Monoxide)	0.1627	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.26	--
DT-EER (Drive Trace Energy Economy Rating)	-0.25	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	0.34	--
MFR FE (Manufacturer Fuel Economy)	29.505	29.505
NOX (Nitrogen Oxide)	0.0045	--
N2O (Nitrous Oxide)	0.0002	--
HC-NM (Non-methane Hydrocarbon)	0.0044	--
NMOG (Non-methane organic gases)	0.0046	--
HC-TOTAL (Total Hydrocarbon)	0.0063	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	302.2704	302

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	302.0558	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" MCT E0-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	302	--	--	--	0.144735	--	302	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.0022	--	--	--	0.003	--	0.005	0.030	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	N2O	0.0002	--	--	--	0.0002	--	0	0.010	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.16	--	--	--	0.06	--	0.2	1.0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0046	--	1.1	--	0.0044	--	0.009	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0091	--	--	--	--	--	0.016	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0045	--	--	--	0.0028	--	0.007	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.16	--	--	--	0.06	--	0.2	1.0	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.0046	--	1.1	--	0.0044	--	0.009	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0091	--	--	--	--	--	0.016	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0045	--	--	--	0.0028	--	0.007	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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10081447**	**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	05/18/2023	**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	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 (miles per gallon)
CO (Carbon Monoxide)	0.0947	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.41	--
DT-EER (Drive Trace Energy Economy Rating)	-0.21	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.92	--
MFR FE (Manufacturer Fuel Economy)	38.5072	38.5072
NOX (Nitrogen Oxide)	0.0013	--
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	225.1414	999

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	224.8789	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" E10-HWY

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

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	--	--	--	0.144735	--	999	--	--
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0	--	1.03	--	0.0044	--	0.004	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0013	--	--	--	--	--	0.008	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0013	--	--	--	0.0028	--	0.004	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0	--	1.03	--	0.0044	--	0.004	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0013	--	--	--	--	--	0.008	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0013	--	--	--	0.0028	--	0.004	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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10082265**	**Test Procedure**	**3 - HWFE**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	07/16/2023	**Fuel**	Gasoline
Fuel Batch ID	22M-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	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)
CO (Carbon Monoxide)	0.0898	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.73	--
DT-EER (Drive Trace Energy Economy Rating)	0.06	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.15	--
MFR FE (Manufacturer Fuel Economy)	39.4375	39.4375
NOX (Nitrogen Oxide)	0.0021	--
HC-NM (Non-methane Hydrocarbon)	0.0001	--
NMOG (Non-methane organic gases)	0.0001	--
HC-TOTAL (Total Hydrocarbon)	0.0001	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	226.1414	226

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	225.9336	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" MCT E0-HWY

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

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	226	--	--	--	0.144735	--	226	--	--
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0001	--	1.03	--	0.0044	--	0.004	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0022	--	--	--	--	--	0.009	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0021	--	--	--	0.0028	--	0.005	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.0001	--	1.03	--	0.0044	--	0.004	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0022	--	--	--	--	--	0.009	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0021	--	--	--	0.0028	--	0.005	99.999	Pass

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

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10081448**	**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	05/18/2023	**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	4247	**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)	515.037	--
FE BAG 1 (Bag 1 Fuel Economy)	16.8187	16.8187
CO2 BAG 2 (Bag 2 Carbon Dioxide)	308.6629	--
FE BAG 2 (Bag 2 Fuel Economy)	27.999	27.999
CO (Carbon Monoxide)	0.3765	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.47	--
DT-EER (Drive Trace Energy Economy Rating)	-1.06	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-0.27	--
MFR FE (Manufacturer Fuel Economy)	24.3794	24.3794
NOX (Nitrogen Oxide)	0.0082	--
HC-NM (Non-methane Hydrocarbon)	0.0026	--
NMOG (Non-methane organic gases)	0.0027	--
PM (Particulate Matter)	0.0019	--
HC-TOTAL (Total Hydrocarbon)	0.0035	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	354.554	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" E10-US06

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.3765	--	--	--	0.06	--	0.436	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0027	--	1.03	--	0.0044	--	0.007	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0109	--	--	--	--	--	0.018	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0082	--	--	--	0.0028	--	0.011	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0019	--	--	--	0.0001	--	0.002	0.006	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.38	--	--	--	0.06	--	0.4	9.6	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0.0027	--	1.03	--	0.0044	--	0.007	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0109	--	--	--	--	--	0.018	0.036	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0082	--	--	--	0.0028	--	0.011	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	PM	0.0019	--	--	--	0.0001	--	0.002	0.006	Pass

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Test #	**RKMX10081449**	**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	05/26/2023	**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	4350	**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)	0.2315	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.63	--
DT-EER (Drive Trace Energy Economy Rating)	-0.07	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	0.78	--
MFR FE (Manufacturer Fuel Economy)	22.4388	22.4388
NOX (Nitrogen Oxide)	0.0024	--
HC-NM (Non-methane Hydrocarbon)	0	--
NMOG (Non-methane organic gases)	0	--
HC-TOTAL (Total Hydrocarbon)	0.0014	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	386.2452	--

Manufacturer Test Comments 24MY MQ4a PE 2.5 AWD 18" E10-SC03

Certification Summary Information Report

Test Group VKMXT02.5YR3 **Evaporative/Refueling Family** VKMXR0144JRG

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.2315	--	--	--	0.06	--	0.292	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0	--	1.03	--	0.0044	--	0.004	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0024	--	--	--	--	--	0.01	99.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.0024	--	--	--	0.0028	--	0.005	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	CO	0.23	--	--	--	0.06	--	0.3	1.0	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG	0	--	1.03	--	0.0044	--	0.004	99.999	Pass
CA	150,000 miles	California LEV-IV SULEV30	NMOG+NOX	0.0024	--	--	--	--	--	0.01	0.030	Pass
CA	150,000 miles	California LEV-IV SULEV30	NOX	0.0024	--	--	--	0.0028	--	0.005	99.999	Pass

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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	**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**	--
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	**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	**22M-01**	**Fuel Calibration Number**	**1**
Test Fuel Type	61 - Tier 2 Cert Gasoline	**Fuel Batch Calibration Date**	06/03/2021
Fuel Batch Calibration Effective Date	02/14/2022	**Fuel Batch Calibration Ineffective Date**	02/14/2025
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	--	**Fuel Methanol Volume Fraction**	--

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.743
Fuel Ethanol Volume Percent (%)	--	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	18435
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**	--
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**	--

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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**	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	--	--	--	--	--	--	0.06	1.0
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0028	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**	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	--	--	--	--	--	--	0.06	9.6
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.036
150,000 miles	NOX	--	--	--	--	--	--	0.0028	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0001	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	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0028	99.999

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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	--	--	--	--	--	--	0.06	99.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	99.999
150,000 miles	NOX	--	--	--	--	--	--	0.0028	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0001	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**	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	--	--	--	--	--	--	0.144735	999
120,000 miles	METHANE	--	--	--	--	--	--	0.003	0.030
120,000 miles	N2O	--	--	--	--	--	--	0.0002	0.010
150,000 miles	CO	--	--	--	--	--	--	0.06	1.0
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	HCHO	--	--	--	--	--	--	--	0.004
150,000 miles	NMOG	--	--	1.1	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0028	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0001	0.003

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

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	--	--	--	--	--	--	0.144735	999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0028	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**	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**	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	--	--	--	--	--	--	0.06	99.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	99.999
150,000 miles	NOX	--	--	--	--	--	--	0.0028	99.999

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG
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	--	--	--	--	--	--	0.06	1.0
150,000 miles	HCHO	--	--	--	--	--	--	--	0.004
150,000 miles	NMOG	--	--	1.1	--	--	--	0.0044	99.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.0028	99.999
150,000 miles	PM	--	--	--	--	--	--	0.0001	0.003

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	--	--	--	--	--	--	0.0032	0.3

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	--	--	--	--	--	--	0.02	12.5

Evaporative/Refueling Standards

Evaporative/Refueling Family	VKMXR0144JRG	**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

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Evaporative/Refueling Family	VKMXR0144JRG	**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	VKMXR0144JRG	**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	VKMXR0144JRG	**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	VKMXR0144JRG	**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	VKMXR0144JRG	**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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Evaporative/Refueling Family	VKMXR0144JRG	**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

Evaporative/Refueling Family	VKMXR0144JRG	**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

Evaporative/Refueling Family	VKMXR0144JRG	**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	VKMXR0144JRG	**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	VKMXR0144JRG	**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

Certification Summary Information Report

Test Group	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG

Evaporative/Refueling Family	VKMXR0144JRG	**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	VKMXR0144JRG	**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

Evaporative/Refueling Family	VKMXR0144JRG	**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

Certification Summary Information Report

Test Group	VKMXT02.5YR3	Evaporative/Refueling Family	VKMXR0144JRG

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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG
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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG
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	VKMXT02.5YR3	**Evaporative/Refueling Family**	VKMXR0144JRG
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