



Application for Certification

VJLXT04.4GTH

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Defender

Part 1

Issued: 04/02/26

Application for Emissions Certification

Model Year: 2027
Manufacturer Name: Jaguar Land Rover

Test Group: VJLXT04.4GTH
Test Group Description: 4.4 liter V8 Turbocharged LDT

Durability Group: VJLXGPGNNGTG
Durability Group Description: Positive ignition - Four stroke
Gasoline Fuelled
Direct Fuel Injection
Ceramic Monolith Pd/Rh Catalyst

Evaporative Group: VJLXR0175P1B

Applicable Standards
CARB / EPA FTP Standard: Federal - Tier 3 Bin 50
California – LEV IV ULEV50

Carlines Covered: 300: Defender 110 MHEV

EPA & CARB Response Requested By: September 7th 2026

For Questions, Contact: Vahakn Varjabedian (201) 818 – 8139
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5. Test Group Description

5.1.	Test Group name	VJLXT04.4GTH
5.2.	Summary Sheet number(s)	CSI- VJLXT04.4GTH- VJLXR0175P1B
5.3.	Engine displacement	4.4L
5.4.	Arrangement and number of cylinders:	
5.4.1.	Arrangement of cylinders:	In-line.
5.4.2.	Number of cylinders:	4
5.5.	Emission standards	
5.5.1.	Vehicle class covered	Federal – LDT4 California – LDT2
5.5.2.	Participation in NLEV	Not applicable
5.5.3.	Emission standards class	Federal – Tier 3 Bin 50 California – LEV IV ULEV50
5.5.4.	Applicable emission standards	Refer to Enclosure 1 of Section 7.

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6. Test Vehicle Description**6.1. Test Vehicles**

Carline	Test Vehicle No.	Cfg. No.	Engine Displ. (cm ³)	Emission Control System	Engine Code	Trans	ETW	Axle Ratio	Remarks
300	3ESTT048	01	4395	2WR-HO2S/2TWC/2HO2S/DFI/2TC/2CAC	4.4NC11-24	S8	6500	4.543	Defender EDV & DDV
300	3ESTT049	03	4395	2WR-HO2S/2TWC/2HO2S/DFI/2TC/2CAC	4.4NC11-24	S8	6500	4.543	Defender FEDV
232	3KMVP032	00	4395	2WR-HO2S/2TWC/2HO2S/DFI/2TC/2CAC	4.4NC10-22	S8	6000	3.31	Range Rover Evaps EDV

For complete vehicle descriptions, refer to Vehicle Information submitted to the EPA Central Data Exchange (CDX) EV-CIS System, or to the Summary Sheet enclosed in Section 7 of this application.

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EV-CIS VI Outputs

Information Process Code : N**EPA Manufacturer Code : JLX****Vehicle Identification Text : 3ESTT048****Vehicle Configuration Number : 1**

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 1**Test Group Name : SJLXT04.4GTH****Evaporative Refueling Family Name : SJLXR0175P1B****Model Year : 2025****Actual Test Vehicle Make Text : LAND ROVER****Actual Test Vehicle Model Text : Defender 110 MHEV**

Drive Source Details

Drive Source Identifier : C**Fuel Identifier : G**

Drive Source Details

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

Odometer Correction Details

Correction Initial Value : 0**Correction Factor Value : 1.00****Correction Sign Identifier : -****Correction Units Code : M****Engine Code Text : 4.4NC11-24****Engine Rated Horsepower Value : 625**

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Engine Displacement Value : 4.4

Air Aspiration Details

Air Aspiration Method Identifier : TC**Air Aspiration Device Count : 2****Air Aspiration Configuration Identifier : P****Charge Air Cooler Identifier : L**

Vehicle Specifications Details

Curb Weight Value : 5925**Equivalent Test Weight Value : 6500****Gross Vehicle Weight Rating Value : 7120****NV Ratio Value : 31.4****Axle Ratio Value : 4.54**

Transmission Specifications Details

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

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06**Target CoefficientA Value : 54.99****Target CoefficientB Value : 0.4833****Target CoefficientC Value : 0.0397****Set CoefficientA Value : -25.988****Set CoefficientB Value : 0.46165****Set CoefficientC Value : 0.035453**

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO**Target CoefficientA Value : 60.489****Target CoefficientB Value : 0.53163****Target CoefficientC Value : 0.04367****Set CoefficientA Value : -25.988****Set CoefficientB Value : 0.46165****Set CoefficientC Value : 0.035453**

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Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E**Target CoefficientA Value : 54.99****Target CoefficientB Value : 0.4833****Target CoefficientC Value : 0.0397****Set CoefficientA Value : -25.988****Set CoefficientB Value : 0.46165****Set CoefficientC Value : 0.035453****Manufacturer Comment Text : Defender 110 NC11 4.4 V8 Turbocharged MHEV. EDV/DDV. Goodyear Duratrac 275/60R20 Tires.**

EPA Generated Test Vehicle Details

Original Receipt Date : 20250515**Hybrid Vehicle Indicator : Y****Adjusted Loaded Vehicle Weight Value : 6522****Loaded Vehicle Weight Value : 6225****Total Road Load Horsepower Value : 23.8**

Transaction Status Details

Transaction Status Identifier : ACCEPTED

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Information Process Code : N
EPA Manufacturer Code : J LX
Vehicle Identification Text : 3KMVP032
Vehicle Configuration Number : 0
Vehicle Configuration Details
Vehicle Description Details
Manufacturer Vehicle Configuration Number : 0
Test Group Name : NJLXT04.4GTE
Evaporative Refueling Family Name : NJLXR0175P1B
Model Year : 2022
Actual Test Vehicle Make Text : LAND ROVER
Actual Test Vehicle Model Text : New Range Rover

Drive Source Details
Drive Source Identifier : C
Fuel Identifier : G

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : N
Test Drive Code : 4
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4
Odometer Correction Details
Correction Initial Value : 0
Correction Factor Value : 1.00
Correction Sign Identifier : -
Correction Units Code : M

Engine Code Text : 4.4NC10-22
Engine Rated Horsepower Value : 530
Engine Displacement Value : 4.4
Air Aspiration Details
Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 2
Air Aspiration Configuration Identifier : P

Charge Air Cooler Identifier : L
Vehicle Specifications Details
Curb Weight Value : 5705
Equivalent Test Weight Value : 6000
Gross Vehicle Weight Rating Value : 7385
NV Ratio Value : 22.9
Axle Ratio Value : 3.31

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

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Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06**Target CoefficientA Value :** 46.948**Target CoefficientB Value :** -0.11133**Target CoefficientC Value :** 0.034230**Set CoefficientA Value :** 50.874**Set CoefficientB Value :** -0.11143**Set CoefficientC Value :** 0.034206

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E**Target CoefficientA Value :** 46.948**Target CoefficientB Value :** -0.11133**Target CoefficientC Value :** 0.034230**Set CoefficientA Value :** 50.874**Set CoefficientB Value :** -0.11143**Set CoefficientC Value :** 0.034206

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO**Target CoefficientA Value :** 51.643**Target CoefficientB Value :** -0.12246**Target CoefficientC Value :** 0.037653**Set CoefficientA Value :** 50.874**Set CoefficientB Value :** -0.11143**Set CoefficientC Value :** 0.034206**Manufacturer Comment Text :** New Range Rover NC10 4.4 V8 Turbocharged LWB.
285/45R22 Tires. Evaps EDV.

EPA Generated Test Vehicle Details

Original Receipt Date : 20211110**Hybrid Vehicle Indicator :** N**Adjusted Loaded Vehicle Weight Value :** 6545**Loaded Vehicle Weight Value :** 6005**Total Road Load Horsepower Value :** 16.9

Transaction Status Details

Transaction Status Identifier : ACCEPTED

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6.2. EDV Selection

According to 86.1828-01 the Defender 110 with 275/60R20 Goodyear Duratrac tires is expected to be worst-case for exhaust emission compliance within this test group. The Defender 110 is the only vehicle in the test group, but there are three tire options. The selected tire is considered worst case having the highest coefficient of rolling resistance and giving the heightened road load horse power at 50mph. The EDV and DDV were tested in the worst-case driver mode for all test cycles. The worst-case driver mode for this test group is OCTA mode due to stop-start being inhibited and other features which are described in section 12.3.

All certified vehicle configurations are represented by data from the EDVs listed below:

6.3. EV-CIS Test Numbers

Driver mode for all emissions test drive cycles on vehicle 3ESTT048-01 was OCTA mode.

Driver mode for all evaporative test drive cycles on vehicle 3KMVP032-00 was Normal mode - D.

Vehicle-ID	Config.	Test	Test Number
3ESTT048	00	FTP	SJLX10090874
		HWFET	SJLX10090875
		US06	SJLX10090876
		SC03	SJLX10090877
		FTP20	SJLX10090878
		FTP50	SJLX10090879
3KMVP032	00	3-diurnal Set A	NJLX10072639
		3-diurnal Set B	NJLX10072640
		Running Loss Set A	NJLX10072654
		Running Loss Set B	NJLX10072656
		ORVR Set A	NJLX10072655
		ORVR Set B	NJLX10072657

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7. Test Results (Cover page)

Refer to the enclosed Certification Summary Information Report processed by the EPA EV-CIS system.

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8. Emission Testing Waiver Statements

High Altitude Testing

Based on an engineering evaluation of appropriate high-altitude emission testing Jaguar Land Rover state that light-duty vehicles included in this application comply with the applicable emission standards at high altitude.

According to 40 CFR §86.1829-15 (c) Jaguar Land Rover waive high altitude emissions data submittal on the basis of this statement.

Data submittal waiver for Idle CO Testing

Based on an engineering evaluation of appropriate Idle CO emissions Jaguar Land Rover state that light-duty vehicles included in this application comply with all applicable idle CO emission standards. According to 40 CFR §86.1829-01(b)(5)(ii) Jaguar Land Rover waive Idle CO emissions data submittal on the basis of this statement.

Data submittal for 2-Day Evaporative Testing

Based on an engineering evaluation of appropriate evaporative emission testing, Jaguar Land Rover state that all vehicles in evaporative/refuelling family VJLXR0175P1B comply with the applicable two-day evaporative emission standard.

Jaguar Land Rover waive 2-Diurnal Evaporative emissions testing on this basis.

91 RON (Knock Sensor)

Pursuant to VPCD-97-01, Jaguar Land Rover's engineering evaluation states the city and highway fuel economy test result differences between 91 RON operation and 96 RON operation is within 3%, and there are no emissions increases (beyond normal test variability) using 91 RON fuel when tested on the FTP.

Data submittal for Formaldehyde (HCHO) Measurement

Based on an engineering evaluation, Jaguar Land Rover states that light-duty vehicles included in this application comply with all applicable HCHO standards.

Data submittal waiver for Non-Methane Organic Gas (NMOG) Measurement

Based on test data from engineering programmes Jaguar Land Rover use the following NMOG:NMHC ratios in order to express NMOG emissions:

Cold and Hot Start tests, E0 fuels: $\text{NMOG} = \text{NMHC} \times 1.03$

Cold Start tests, E10 fuels: $\text{NMOG} = \text{NMHC} \times 1.10$

Hot Start tests, E10 fuels: $\text{NMOG} = \text{NMHC} \times 1.03$

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**Data submittal waiver for Spit-Back testing**

All Jaguar Land Rover Gasoline fuelled vehicles are certified to the refuelling emissions standards in §86.1811-04(e), and inherently meet the fuel dispensing spitback standards as part of compliance with the refuelling emissions requirements.

Compliance with the applicable standards is for the Full Useful life of the vehicle.

Fuel dispensing spitback testing of Jaguar Land Rover vehicles is therefore waived in accordance with §86.1810-01(l).

Evaporative Leak Detection

JLR OBD system conforms to current OBD requirements covered in Section 1968.2 of Title 13, CCR.

JLR OBD system is capable of detecting 0.020" inch diameter orifice leakage in the evaporative emissions system.

SC03 Test Procedures

Jaguar Land Rover attests that NMOG+NOx and CO exhaust emissions for vehicles tested using the SC03 test procedures incorporated in the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles", comply with the standards in 13 CCR 1961.4.(d)(4).

Quick Drive-away

Vehicles in this test group are not part of JLR's phase in for Quick drive-away as set forth in 13 CCR 1964.1(d)(2)(C)1(a))

Partial Soak

Vehicles in this test group are not part of JLR's phase in for Partial Soak as set forth in 13 CCR 1964.1(d)(2)(B)1)

9. OBD Compliance Statement

Jaguar Land Rover states that the OBD system for Test Group VJLXT04.4GTH meets the full intent of the clean air act as amended in 1970 section 202(m), and the applicable federal OBD regulations, contained in 40 CFR §86.005-17 and 40 CFR §86.1806-01. Furthermore, Jaguar Land Rover states that the OBD system complies with all the requirements of Title 13 CCR 1968.2.

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12. Description of Vehicles Covered by Certificate and Test Parameters

12.1. Description of Vehicle

Carline	Model Name	Vehicle Class Fed/CAL	Emission Control System Description						Engine Code	N° Valves/ Cyl	Sales Area	Trans & Over-drive	SIL	Standard Tire Size	N/V Ratio	ETW - lb.	Fuel Tank Volume - gal
			Type	Catalyst Config	EGR	Air Pump	Fuel System Type	Intake Air Aspiration Method									
300	Defender	LDT2/LDT4	Catalyst	TWC	N/A	N/A	DFI	Turbo Charged	4.4NC11-24	4	50-state	L8	No	275/60R20	31.4	6500	23.8
300	Defender	LDT2/LDT4	Catalyst	TWC	N/A	N/A	DFI	Turbo Charged	4.4NC11-24	4	50-state	L8	No	275/60R20	31.4	6500	23.8
300	Defender	LDT2/LDT4	Catalyst	TWC	N/A	N/A	DFI	Turbo Charged	4.4NC11-24	4	50-state	L8	No	275/45R22	31.7	6500	23.8

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12.2 Engine Starting Procedure

With the transmission in P or N, the Smart key inside the vehicle and the brake pedal pressed, press and release the START/STOP button to start the engine.

12.3 Transmissions

Automatic Transmissions

Type 8HP80XMH

A/T code	Class	No. of fwd gears	Overdrive	Gear ratios
8HP80XMH	Automatic	8	Yes	5.500
				3.520
				2.200
				1.720
				1.317
				1.000
				0.833
				0.640

General Description

The transmission is an electronically controlled, fully automatic, synchronous 8 speed transmission. The shift points and converter lock up are functions of throttle pedal position and vehicle speed. Each transmission calibration contains the individual shift points for the corresponding transmission application. Strategies relating to the automatic transmission are documented in the ACED document contained in Section 16.

Special Features:

The automatic transmission fluid is a fill for life oil and does not require service. There is no dipstick tube.

The gear selector allows the selection of Park, Reverse, Neutral, Drive and Drive (S) ranges. A manual sequential shift option is included. Sequential manual gear selection is selected by moving the transmission gear selector to the "S" (Sequential shift) position. Upshifts and downshifts may then be made by operating steering wheel mounted shift paddles.

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Manual Transmission Summary

Manual transmissions are not available.

Shifting/Special Testing**Shifting instruction****Gear-shift interlock**

A brake pedal/gear-shift interlock is incorporated in the gear selector mechanism. The gear selector lever may only be moved from the Park position if the ignition is "on" and footbrake is pressed.

The vehicle is moved out of P by pressing a release lever on the front of the selector lever while simultaneously depressing the brake pedal. P may be reselected from any gear position by pressing the button located on the top of the selector.

User Selectable modes

Some Land Rover models covered by this application are fitted with a rotary transmission selector with P-R-N-D-S positions. Manual shifting is available by operating paddles attached to the rear of the steering wheel. Manual shifting is enabled by moving the selector to the "S" position and operating the shift paddles.

Other models covered by this application are fitted with a more traditional selector which operates through R-N-D modes sequentially by moving the selector forward or backward. The vehicle is moved out of P by pressing a release lever on the front of the selector lever while simultaneously depressing the brake pedal. P may be reselected from any gear position by pressing the button located on the top of the selector. Manual shifting is available by operating paddles attached to the rear of the steering wheel, or by operating the select lever (rearward for an upchange, forward for a downchange) while the lever is in the manual position. Manual shifting is enabled by moving the selector to the left.

Additional driver selectable mode information

Jaguar Land Rover has developed a range of driver selectable modes. Not all modes are available on all products and not all modes are considered to be on-road modes.

These driver selectable modes change driveability and transmissions calibratable comfort functions. The driveability functions which are modified are the comfort filters to provide a balance of control, response and comfort to suit the selected mode. The relationship between the physical driver pedal position and the ECU pedal position is changed, effectively making the vehicle feel more or less responsive. The functionality of emissions control strategies is not altered.

Changing modes to 'Dynamic' or 'OCTA/SV' will however enable new features not available in the standard 'Comfort' mode. Also included is a change to exhaust flap position behaviour to emphasise exhaust burble.

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In Dynamic Drive mode, The PCM applies a scalar to make the accelerator pedal more sensitive. The transmission applies the same shiftpoints as in Comfort Drive mode. In Dynamic Sport mode, The PCM applies a scalar to make the accelerator pedal more sensitive. The transmission selects higher shiftpoints according to the driver evaluation counter.

Driver mode	Distance travelled
Normal mode - D	On-road
Dynamic mode	On-road
OCTA mode	On-road & Off-road
Grass - Gravel - Snow mode	Off-road
Dynamic mode	Off-road
Mud & Ruts mode	Off-road
Sand mode	Off-road
Low Range	Off-road

OCTA Mode

OCTA mode is primarily an off-road driving program and is tuned for driving on high-speed off-road gravel surfaces. Because of the reduced traction on gravel surfaces - even when driving very aggressively, the vehicle cannot achieve very high lateral and longitudinal acceleration magnitudes compared to driving on asphalt.

Therefore, the transmission's driver evaluation counter behaviour in OCTA mode is tuned to reflect this; counting up more aggressively, to compensate for the reduced lateral and longitudinal acceleration magnitudes experienced on gravel.

Also in OCTA mode, the most aggressive gearshift pressure (shift feel) profile is selected for faster, more responsive gearshifts. The transmission shift points are higher, the vehicle holds gears for longer, therefore the engine speeds will be higher.

The throttle response has been softened as OCTA mode is primarily set up as an off-road mode for low grip surfaces. Therefore, driver pedal input behaviour on a chassis dyno or higher grip surfaces i.e. asphalt, is likely to be more aggressive.

Although OCTA mode is an off-road mode, it can be activated and used on-road and was therefore considered when determining worst-case. OCTA mode is deemed as worst-case.

There are no specific OCTA mode fuelling and ignition maps. Any change in these base settings will be due to the different speeds and loads encountered caused by the modified throttle response, and transmission shift schedules whilst in OCTA mode. These same base settings can be encountered by the driver if they use manual gearshifts and their throttle inputs whilst not in OCTA mode. OCTA mode inhibits stop-start.

Chassis Dynamometer Operation

If the vehicle is going to be operated on a chassis dynamometer, disable the traction control facility immediately after selecting drive.

Shift Schedules

As defined in EV-CIS

Special testing procedures

Cooling fans

For all emissions/fuel economy test cycles, a single fan, placed in the 'down' position, is required for engine cooling purposes.

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12.2.4 Dynamometer Loading Information (LVW):

Model	ETW (lbs)	Tire size	Target Coefficients			Set Coefficients*			TRLHP @50
			A	B	C	a	b	c	
Defender 110	6500	255/60R20 Goodyear Duratrac	54.99	0.4833	0.0397	Untested	Untested	Untested	23.8
Defender 110	6500	255/60R20 BF Goodrich	58.4	0.026	0.04173	Untested	Untested	Untested	21.9
Defender 110	6500	275/45R22 Michelin	63.306	0.026	0.04054	3.529	-0.06585	0.037765	22.0

* 4WD Dynamometer

12.2.5 Evaporative/Refuelling Data

12.2.5.1 Evaporative Testing Parameters

Canister Loading

Load at standard rate – 15 g/hr.

Fuel Tank Parameters

Fuel tank volumes

Carline	Evaporative Code	Nominal Capacity	Useable 40% Fill	Vapor volume at 40% Fill
Defender	MLA-22	23.8	9.5	19.8

All volumes expressed in US gallons

Fuel tank temperature profiles (FTTP)

FTTP procedure

Fuel tank temperature profiles were determined according to the procedure described in 40CFR Part 86.129-94(d).

FTTP codes

Carline	Evaporative Code	FTTP code
Defender	MLA-22	FTTP0460

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Time (s)	RR Fuel	RR Vapor	RRS Fuel	RRS Vapor
1	104.0	105.1	103.9	110.4
60	103.5	104.5	104.8	109.5
120	103.4	104.8	105.6	109.7
180	101.0	104.9	105.7	110.1
240	101.5	103.8	106.6	110.5
300	102.5	104.6	107.0	111.0
360	102.9	105.5	107.5	111.8
420	102.0	104.7	107.7	111.9
480	102.6	105.2	108.0	111.8
540	102.8	106.0	108.6	112.0
600	103.4	106.5	109.0	112.3
660	103.1	105.8	109.0	112.9
720	103.5	107.0	109.5	113.0
780	103.7	106.9	110.0	112.2
840	104.2	108.5	110.0	112.9
900	104.4	108.9	110.2	113.3
960	104.6	110.1	110.3	113.8
1020	104.9	110.3	110.9	114.3
1080	104.9	108.8	111.3	114.9
1140	105.3	110.2	111.6	114.9
1200	106.1	110.5	111.5	115.2
1260	106.1	111.3	111.7	115.5
1320	106.2	111.4	111.8	115.9
1380	106.5	110.9	112.7	117.0
1440	107.0	112.2	113.4	118.4
1500	107.2	113.3	113.9	118.9
1560	107.0	112.0	114.3	119.2
1620	108.6	111.6	115.0	119.0
1680	109.0	112.7	115.7	119.5
1740	108.8	112.4	115.8	118.6
1800	109.0	112.7	116.4	119.9
1860	108.7	113.8	117.0	120.2
1920	109.0	114.5	117.5	120.7
1980	109.7	115.5	117.7	120.7
2040	109.5	114.6	117.3	120.2
2100	110.2	115.7	117.1	120.6
2160	109.8	114.8	117.3	121.6
2220	111.3	114.0	117.9	121.5

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2280	111.8	115.4	118.4	123.0	
2340	111.7	114.8	118.9	122.1	
2400	112.2	115.0	120.2	124.2	
2460	112.6	115.9	121.1	124.9	
2520	112.1	116.6	121.6	126.3	
2580	113.7	118.5	121.9	126.1	
2640	112.9	117.4	122.8	126.2	
2700	114.6	119.1	123.0	127.6	
2760	114.0	120.5	123.2	128.3	
2820	114.5	120.1	123.6	129.2	
2880	114.2	119.6	124.3	128.9	
2940	114.6	119.8	124.8	129.4	
3000	115.2	118.5	124.0	128.5	
3060	116.1	119.4	124.3	128.6	
3120	117.1	121.0	125.0	129.8	
3180	115.7	121.4	125.1	129.8	
3240	116.2	118.9	125.1	129.3	
3300	116.6	119.5	125.3	129.4	
3360	117.2	119.6	126.5	130.2	
3420	117.0	120.6	127.2	131.7	
3480	116.3	121.0	127.7	132.2	
3540	117.1	120.4	128.3	132.6	
3600	116.9	120.9	128.6	132.0	
3660	118.2	121.9	128.4	132.5	
3720	118.0	122.3	128.8	133.0	
3780	118.8	122.9	129.6	134.4	
3840	118.4	122.5	129.8	134.7	
3900	118.8	122.8	130.3	134.9	
3960	118.8	123.4	130.1	134.3	
4020	119.1	122.8	130.2	134.2	
4080	119.1	122.8	130.6	134.0	
4140	119.5	123.7	131.0	134.9	
4200	119.8	124.5	131.7	135.9	
4260	120.6	126.2	131.9	137.1	
4307	121.1	127.0	132.4	137.6	

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12.2.5.2. Fuel Tank Temperature Profile Report
(Land Rover FP9.8 & Ford CETP 00.00-L-414)

Compiled By: Lee Dunn Date: June 2023

Subject

Fuel tank temperature profile for Range Sport & Range Rover to EPA standard.

Summary

Vehicle tests were conducted to determine a fuel tank temperature profile for the Range Rover & Range Rover Sport.

Conclusion

The fuel tank temperature profile determined by this test complies with Environmental Protection Agency procedure detailed in 40CFR 86.129.94.

Test Vehicle Specification

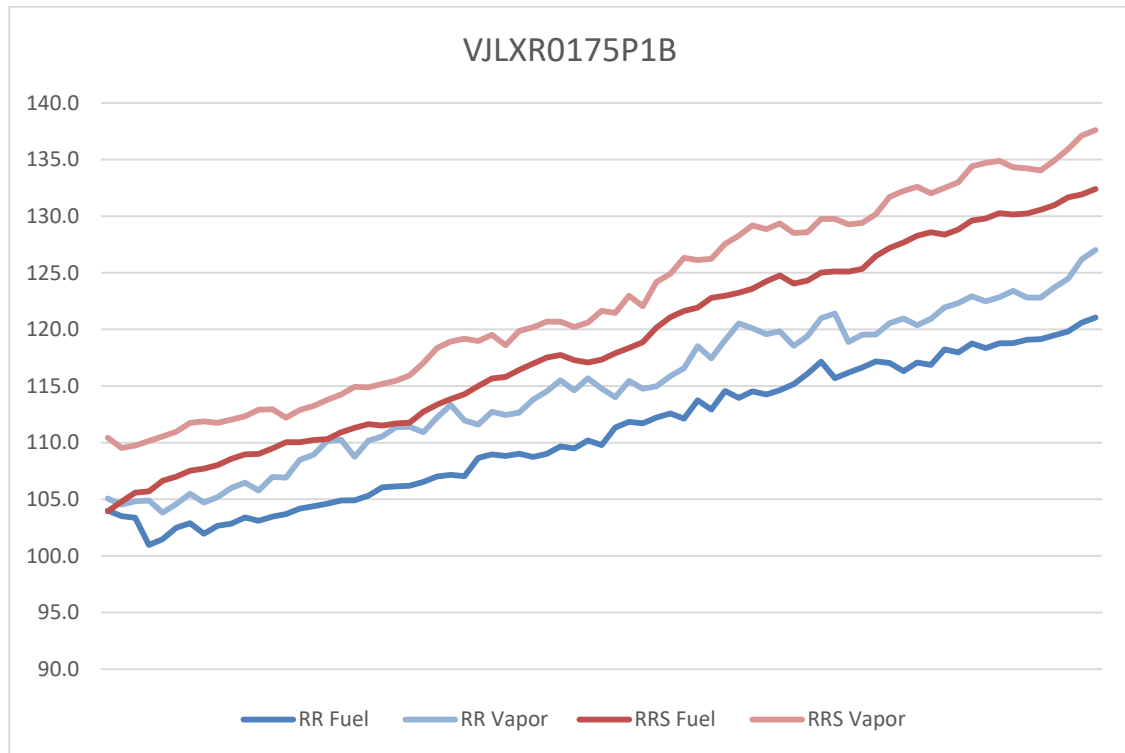
FTTP Code: MLA-22
Model: Range Rover LWB
Transmission: 8 speed automatic
Fleet identity: 3KRVB059
Test Weight: 6000lbs

FTTP Code: MLA-22
Model: Range Rover Sport
Transmission: 8 speed automatic
Fleet identity: 3PNTT005
Test Weight: 5500lbs

Test Location

Exponent Phoenix, AZ
USA

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14. Request for Certification

14.1 Statement of Compliance

Refer to Common Section, Section 14.

14.2. Request for certificate

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

Therefore, Jaguar Land Rover herewith applies for a federal Certificate of Conformity and a California ARB Executive Order for Test Group VJLXT04.4GTH.

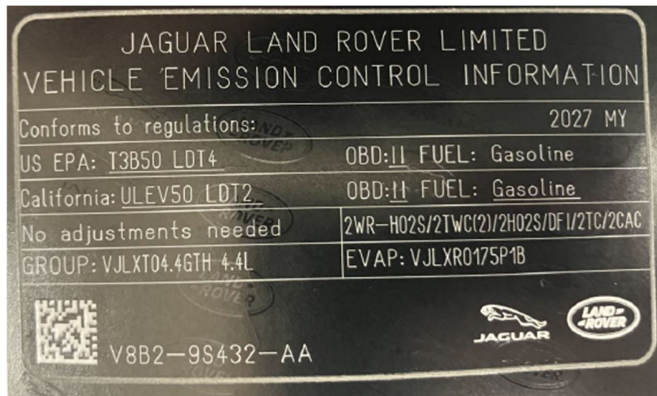
This Test Group complies with all applicable regulations contained in Title 40, Code of Federal Regulations, Part 86 and the California Code of Regulations.

Ian Munden
Manager
Emissions Certification for North America
Jaguar Land Rover

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15. Other Information

15.1. Label according to 40 CFR § 86.1807-01 and according to California Motor Vehicle Emission Control Label (VECI Label) Specifications.

15.1.1

15.1.2 Label Location: Under-bonnet.

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15.2. Fee Filing Form

See attached page.

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15.3. OBD System Approval Letter

See attached page.

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Other Information

Adjustable Parameters

There are no parameters present on any vehicle covered by this application that can be considered adjustable within the context of 40CFR Part 86.1833-01.

Fuel Specifications

Fuels Recommended to the Owner

Full statements concerning fuel recommendations are contained in the Vehicle Owners Handbooks.

Test and Service Accumulation Fuel

All test and service accumulation fuels relating to this Application for Certification are equivalent to those specified in 40CFR Part 86, Subpart S, and the California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light -Duty Trucks, and Medium-Duty Vehicles. Specifications and/or analyses will be supplied on request.

Lubricant specifications

Engine

	Factory fill	Recommended to ultimate purchaser	To be used in test vehicles
Generic type	Hydrocarbon	Hydrocarbon	Hydrocarbon
Service designation	STJLR.03.5007	STJLR.03.5007	STJLR.03.5007
Viscosity	SAE 0W30	SAE 0W30	SAE 0W30

Automatic Transmissions

The transmissions are sealed for life and the factory fill materials are listed below. All lubricants are hydrocarbon based and contain no friction modifiers.

ZF 8HP80XMH 8 Speed Automatic Transmission: ZF Lifeguard Hybrid 2

Drive Axle and Differential

The differentials are sealed for life and the factory fill materials are listed below. All lubricants are hydrocarbon based and contain no friction modifiers.

All Test Groups: Castrol BOT750B

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Litmus Result

EDV/FEDV input data:	Vehicle-Specific 5-Cycle FE: \$600.114-12	<i>Litmus threshold</i> \$600.115-11	Derived 5-Cycle FE: (MPG-Approach) \$600.210-12	
Normal temperature FTP75:	5-Cycle City Label:		MPG-Approach City Label:	
CDC5 2024-12-20 03	Start FC (City) 0.0049777		City Intercept 0.004091	
UDDS Bag 1 ₇₅ FE 11.8709 4dp	Running FC (City) 0.0809493		City Slope 1.1601	
UDDS Bag 2 ₇₅ FE 12.3560 4dp	5-cycle City FE Adj/U nmd 10.5322		5-cycle City FE Adj/U nmd 10.4781	
UDDS Bag 3 ₇₅ FE 14.1600 4dp	5-cycle City Litmus value 10.5	10.1	5-cycle City FE Adj/Rnd 10.5	
UDDS Bag 4 ₇₅ FE 12.5190 4dp	City Label 11		City Label 11	MPG Approach City value in band
FE total Unrounded 12.7430 4dp				
FE RND (EPA) 12.7 1dp				
Cold Temperature FTP20:	5-Cycle Highway Label:		MPG-Approach Highway Label:	
CDC3 2025-05-08 02	Start FC (Highway) 0.0003401		Highway Intercept 0.003191	
UDDS Bag 1 ₂₀ FE 9.9080 4dp	Running FC (Highway) 0.0610257		Highway Slope 1.2945	
UDDS Bag 2 ₂₀ FE 11.5250 4dp	5-cycle Highway FE Adj/U nmd 14.7476	13.4	5-cycle Highway FE Adj/U nmd 14.1399	
UDDS Bag 3 ₂₀ FE 13.1390 4dp	5-cycle Highway Litmus value 14.7		5-cycle Highway FE Adj/Rnd 14.1	
FE RND (EPA) 11.5 1dp	Highway Label 15		Highway Label 14	MPG Approach Highway value in band
Highway Fuel Economy Test:			MPG Approach Highway value in band:	
CDC5 2024-12-20 04			Start FC (Highway) 0.0003626	3-cycle calcs: 0.0003626
HFET FE Unmd 19.1690 4dp			Running FC (Highway) 0.0611333	0.0611333
FE RND (EPA) 19.2 1dp			3-cycle Highway FE 15	14.7164
Supplemental FTP:				
US06				
CDC5 2024-12-20 06				
US06 City FE 9.8 1dp				
US06 Highway FE 16.1 1dp				
US06 FE RND 14.1 1dp				
SC03				
CDC5 2024-12-20 10				
SC03 FE RND 11.5 1dp				
Start Fuel:				
Start Fuel ₇₅ 0.053157954				
Start Fuel ₂₀ 0.0893493				
			Combined Numbers	
			2-Cycle Combined 12 11.8602	
			3-Cycle Combined 12 12.0382	
			5-Cycle Combined 12 12.0869	

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**17. California ARB Information****17.1. Statements**

Vehicles covered by this application are not fitted with defeat devices.

All AECDs used on vehicles covered by this application are declared and described in section 16 of the application and the common section.

Test and production vehicles covered by this application do not use multiple maps in the engine management system. Modes used during on-road operation are identical to those used in testing.

Vehicles covered by this application do not use transmission calibrations which interact with the engine management or emission control systems in order to assist engine or catalyst warm-up.

The transmission calibration does not include different modes for on-road and dynamometer operation. Transmission behaviour is identical in both cases.

Also refer to Common Section, Section 17

17.2 Fill Pipe Specification

Refer to Common Section, Section 17

17.3 Projected Sales

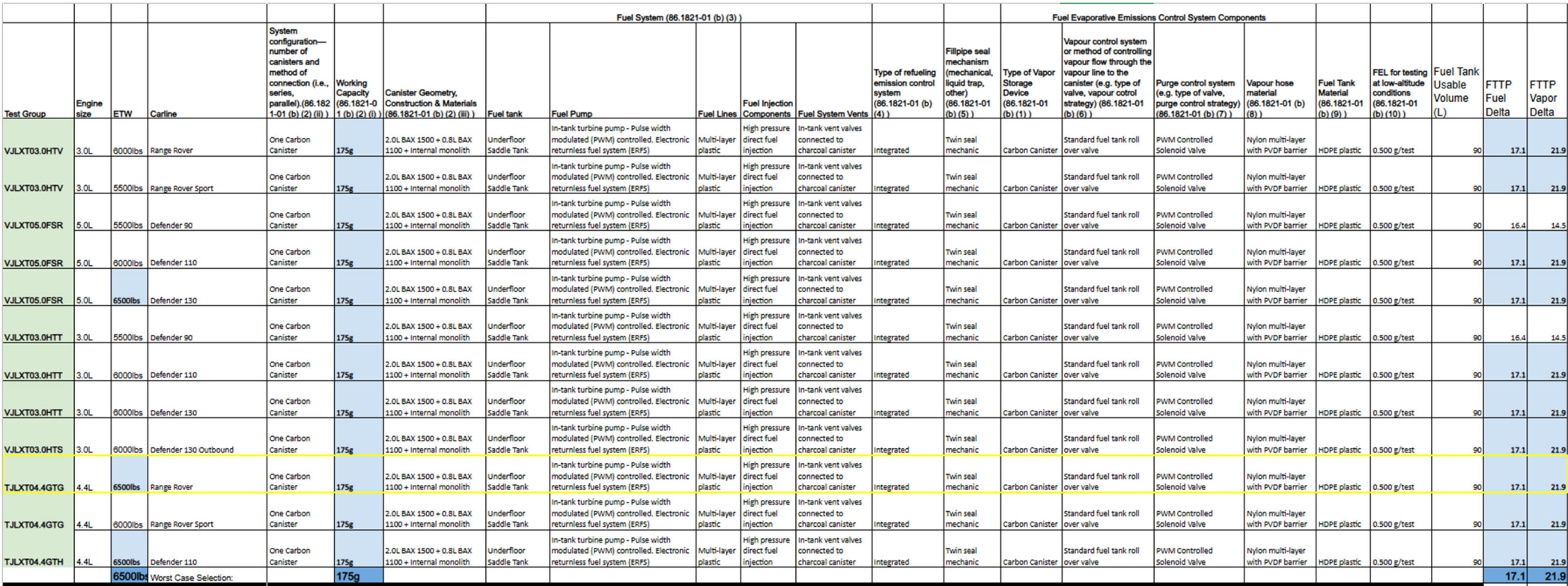
Refer to Common Section, Section 16, Confidential Information

17.4 Evaporative Emission Deterioration**17.4.1 Selection of Emission Data Vehicle and Durability Data Vehicle for Evaporative Emissions testing****17.4.1.1. Worst Case Selection**

Worst Case selection is carried out according to the provisions in 40 CFR § 86.1828-01 (b)(3). Using good engineering judgment, JLR believe carry-across data are representative of a worst case vehicle. The worst-case vehicle selection is highlighted in yellow in the table on the next page. Canister size, canister material, fuel tank material, purge strategy and flow rates and refueling characteristics are common between all vehicles within the evaporative family.

Driver mode for evaporative testing was "Normal mode – D".

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17.4.1.2. Test Vehicle Description

Vehicle Identification Number	3KMVP032
Evaporative Emission Code	MLA-22
Model	Range Rover
Emission Control System:	2WR-HO2S/2TWC/2HO2S/DFI/2TC/2CAC
Displacement	4395 cm ³
Engine Code	4.4NC10-22
Evaporative Family	PJLXR0175P1B
Equivalent Test Weight	6500 lb.
Actual Vehicle Weight	
Curb Weight	5705 lb.
Drive Axle Weight	3505 lb.
Air Conditioning	Yes
Transmission Type	S8
Transmission Code	8HP76
Axle Ratio	3.31
N/V Ratio	22.9
Tire Manufacturer	Pirelli
Tire Size	285/45R22

17.4.2. EPA Fuel Tank Temperature Profile and Ambient Conditions

The temperature correction was performed in accordance with Federal Evaporative Emission Standards and Test Procedures using the following equation:

$$T_{i, \text{profile}} = T_i - T_o$$

T_i is the series of observed liquid fuel temperature during the drive (°F) where i is the incremental measurement in time

T_o is the liquid fuel temperature observed at the start of the specified driving schedule (°F).

T_{i, profile} is the series of temperatures that comprise the relative temperature profile for table of T_i refer to Enclosure 1 of Section 12.

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17.4.6. Test Results for Evaporative Emissions

17.4.6.1 Enhanced Evaporative Emissions Test

17.4.6.1.1 Test Results of Durability Data Vehicle, Calculation of Evaporative Emission and Running Losses Deterioration Factor:

Miles	3 Day Evap. (g/test)	Running Losses (g/mi.)	Refueling g/gal
4 000 (Set A)	0.251	0.000508	0.073
4 000 (Set B)	0.276	0.000524	0.004
150 000 (Set A)	0.256	0.000452	0.0263
150 000 (Set B)	0.229	0.000523	0.0171
<u>Average Values</u>			
4 000	0.2635	0.000516	0.0382
150 000	0.2425	0.0004875	0.0217
<u>Deterioration factors</u>	<u>0.000</u>	<u>0.00</u>	<u>0.00</u>

17.4.6.1.2. Test Results of Emission Data Vehicle

4K Evaporative Emission Test Data		Deterioration Factors	Compliance with Std.	Standard	Unit
Test Vehicle Model	Range Rover		Test Data + DF		
Test Vehicle id	3KMVP032				
3-Diurnal SHED Test	0.3095	0.000	0.3095	0.500	g
Running Loss Test	0.000516	0.00	0.000516	0.05	g/mi.
Refueling Test	0.0382	0.00	0.0382	0.2	g/gal

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**Method for Calculation of CO₂ Equivalent Value & GHG score:**

CO₂-Equivalent Value =

CO₂ + (296 x N₂O) + (23 x CH₄) – A/C Direct Emissions Allowance – A/C Indirect Emissions Allowance

Where:

A/C-direct is credit for "Low leak" A/C system

A/C-indirect is credit for "Improved system"

Fuel Adjustment Factor = 1.0 (gasoline)

CO₂ equivalent emissions values calculated according to 3(a)(1)(A) of the 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 and Title 13, California Code of Regulations, Section § 1961.1(a)(1)(B)

Global Warming Scores are selected from the table in 3(c) in the same section.

Smog score for Test Group VJLXT04.4GTH = 6 (ULEV50)

Environmental Performance Label

Jaguar Land Rover products for the 2027 Model Year will be fitted with labels which indicate the results obtained from the Federal Fuel Economy and Greenhouse Gas Emissions testing program in lieu of separate California labels.

Jaguar Land Rover Ltd hereby states that labels fitted to vehicles covered by this application comply with all relevant Federal specifications for Material, Color, and Label Format Requirements described in 40CFR Parts 85, 86 and 600, 49CFR Part 575, and related Manufacturer Guidance issued by the US Environmental Protection Agency and the National Highway Traffic Safety Administration.

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17.6. Vehicle weights

17.6.1. Curb weight: 5925 lb Defender 110

17.6.2. Gross vehicle weight rating: 7120 lb Defender 110

17.6.3. Equivalent test weight: 6500 lb Defender 110

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18. Revision Log

<u>Revision No.</u>	<u>Revision Date</u>	<u>Pages Affected</u>	<u>Description of Revision</u>
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