# Lotus Cars Ltd
# Application for Certification – Part 1
# 2024 Model Year Emira

| | |
|---|---|
| Durability Group: | RLTXGPGNNEV1 |
| Evap. Family: | RLTXR0130JHB |
| Test Group: | RLTXV03.5JHB |
| Summary Sheet No: | CSI Report |
| Durability Group Description: | Four stroke, Otto Cycle, Gasoline Fuelled, Ported FI, Catalyst description: unheated monolith & precious metal |
| Ceramic Monolith: | Pt/Pd/Rh Catalyst |
| Test Group Description: | 3.5 Litre V6 LDV |
| Applicable Standards: | 50 State, Tier 3, BIN 125 / LEV III, ULEV 125 |
| Models Covered: | Emira |
| Issue Date: | 25th October 2023 |
| EPA Response Date: | As soon as possible |

Vehicles Tested & EPA Test Numbers:

| VID | Config | Test Type / Test Number | |
|---|---|---|---|
| EDV-24-EVSM6 | Config 0 | FTP75 | RLTX10082871 |
| | | Highway | RLTX10082867 |
| | | Cold CO | RLTX10082874 |
| | | 50 Deg F | RLTX10028273 |
| | | SC03 | RLTX10082869 |
| | | US06 | RLTX10082868 |
| EDV-24-EVSM6/1 | Config 0 | FTP75 | RLTX10082872 |
| | | Highway | RLTX10082870 |
| EDV-24-EVSA6 | Config 0 | 2-Day EVAP | RLTX10082876 |
| | | 3-Day EVAP | RLTX10082877 |
| | | BETP | RLTX10082875 |
| | | Running Loss | RLTX10082878 |
| EDV-17-EVM6/2 | Config 0 | ORVR | HLTX10043888 |

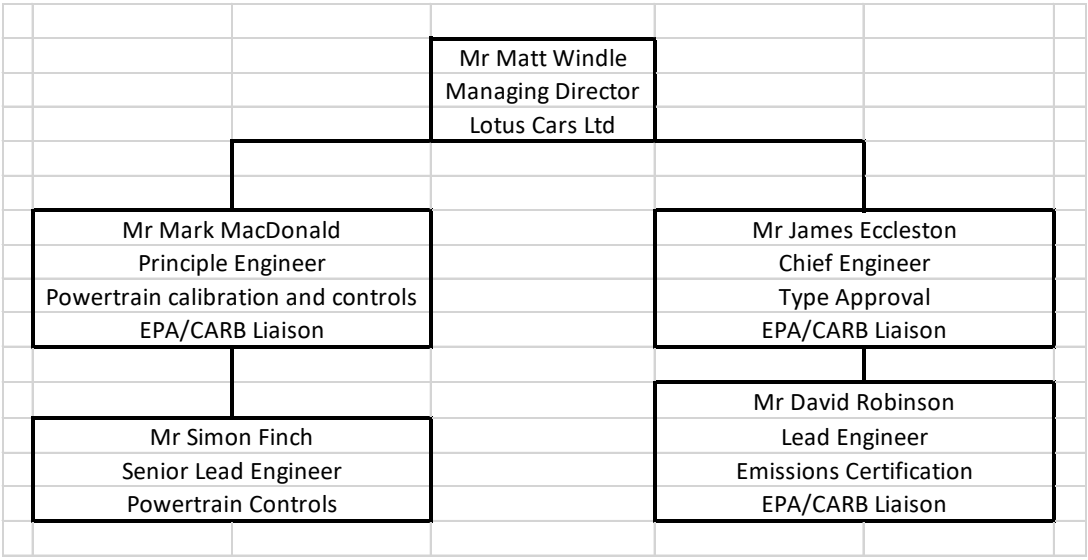
Contacts:
David Robinson
Tel: +(44) (0)1953 608000
Email: drobinson@lotuscars.com

Mark MacDonald
Tel: +44 (0)1953 608679
Email: mmacdonald@lotuscars.com

**Contents**

# 1. CORRESPONDENCE AND COMMUNICATIONS

## 1.1. Organisation Chart




## 1.2. USA Contact Information

Lotus Cars Ltd is situated in the United Kingdom. The name of the US-based representative is Mr Stephen Burke who can be contacted at the address of our US importer:

Lotus Cars USA Inc
47584 Galleon Drive
Plymouth
MI 48170
USA
Tel: 734 995 2544

Lotus Cars USA Inc. is a wholly-owned subsidiary of Lotus Group International Limited, which in turn is a subsidiary of Zhejiang Geely Holdings Group.

## 1.3. Mailing information

All technical information should be sent to:

Mr M. MacDonald
Group Lotus Ltd
Potash Lane
Hethel
Norwich
Norfolk
NR14 8EZ
UK

**1.4. EPA & CARB Liaison**

The following people are authorised to liaise with EPA and CARB on behalf of Lotus Cars Ltd:

| | |
|---|---|
| Mr D. Robinson | Lead Engineer – Type Approval Department |
| Miss S Way | Lead Engineer – Type Approval Department |
| Mr M. MacDonald | Principal Engineer – Powertrain Calibration and Controls |
| Mr J. Eccleston | Chief Engineer – Type Approval Department |

**1.5. Certification information**

The corporation name which should appear on the Certificate of Conformity is:

LOTUS CARS LIMITED

The certificate should be mailed to:

Mr D. Robinson
Lotus Cars Ltd
Potash Lane
Hethel
Norwich
Norfolk
NR14 8EZ
UK

**1.6. Contact information**

Lotus Cars LtdTel: +44 (0)1953 608000
Fax: +44 (0)1953 608300

Mr M. MacDonald Tel: +44 (0)1953 608679
Email: mmacdonald@lotuscars.com

Mr D. Robinson Tel: ++44 (0)1953 608000
Email: drobinson@lotuscars.com

Miss S.Way Tel: ++44 (0)1953 608836
Email: sway@lotuscars.com

Mr J. Eccleston Tel: ++44 (0)1953 608000
Email: jeccleston@lotuscars.com

## 2. DURABILITY/REFUELLING FAMILY DESCRIPTION

| | |
|---|---|
| Durability Group: | RLTXGPGNNEV1 |
| Combustion Cycle: | 4-Stroke Otto Cycle |
| Engine: | V6 |
| Fuel: | Gasoline |
| Fuel Metering System: | Electronic MPI Sequential |
| Catalysts: | Three, 3-Way Ceramic Monolith |
| 'Primary' Catalyst: | 1 per cylinder bank |
| Catalyst metals | Pt/Rh/Pd |
| 'Underfloor' Catalyst: | 1 Catalyst fed by both cylinder banks |
| Catalyst Metals: | Pd/Rh |

For useful life, the Emira family is in the light duty vehicles test group as per 40 CFR 86.1811-17.

## 3. DURABILITY PROCEDURE DESCRIPTION

| | |
|---|---|
| Evaporative Name: | RLTXR0130JHB |
| Vapour storage method: | Single canister |
| Canister Design: | Plastic unit, 2520 cc |
| Fuel system: | The fuel system has a single stainless steel tank, filled via a single filler neck system |
| Control system: | Integrated |
| Fill-pipe design: | Liquid trap |
| Vapour control: | The vapours are collected by the canister from the fuel level vent valve & grade valves during refuelling, normal running and parked conditions |
| Purge Control: | The engine management controller defines when and how much the purge valve can be operated to clean the canister during operations |
| Hose material: | The hoses are constructed from multi-layer materials |
| Fuel tank: | The fuel tank is of stainless steel construction |

The Lotus Emira Test Group is combined with the Evaporative & Refuelling Family in Engine Family RLTXV03.5JHB.

### 3.1. EPA REVIEW OF LOTUS 2005MY ORVR DESCRIPTION

**Summary**

Lotus Emira ORVR system does not require a full ORVR safety application as allowed for by EPA communication CISD-06-06.

**Background**

Lotus Emira ORVR system uses standard ORVR technology, and follows the design of the Lotus Elise/Exige ORVR system. This is in accordance with the guidance given in CISD-06-06.

The Lotus Emira EVAP Family RLTXR0130JHB uses the same technology as our 2005 model year submission, EVAP Family 5LTXR0115JHB (Lotus Elise/Exige). Lotus affirms there has been no significant in-use problems associated with this system.

## Lotus Emira ORVR System Information

The Lotus Emira ORVR system is a fully integrated ORVR system using a liquid seal and a proven ORVR canister.

Proprietary Fill Level Vent Valves and Gradient Venting Valves have been used to control vapour flow to the 2520cc volume proprietary ORVR canister, which has an EPA minimum working capacity of 130 grams.

The Canister Close Valve is the same components used on the Lotus Elise / Exige/ Evora since its first EPA certification in 2004. The purge valve is supplied by Toyota Motor Company with the engine.

Lotus engine management software controls the purge valve to regenerate the canister, as undertaken on Elise/Exige/Evora, and its refuelling / evaporative emissions have been proved in certification testing.

## ElectroStatic Discharge

The ElectroStatic Discharge strategy for the refuelling system is the same as that approved by the ORVR safety application for the Elise / Exige for MY05 (please see Attachment 1). This uses a stainless steel fuel filler neck that ensures metal contact between it and the fuel dispensing nozzle. A conductive inner layer hose joins the neck to the stainless steel fuel tank. The fuel filler neck is earthed to the vehicle ground via its mounting bracket, an earth braid, and via the conductive hose to the earthed fuel tank.

Testing has proven that the system is sufficiently conductive to both vehicle ground and, via the tyres, actual ground. This has confirmed that the system is compliant with the requirements that prevent accumulation of charge in the refuelling system (ref SAE J1645).

## Comparison to Existing Approved Design

As stated, the components used in the Evora ORVR system are of the same technology as those employed in the Lotus Elise ORVR system. Differences are changes in pipe / hose lengths, and an increase in canister size, in line with fuel tank volume increase. The in-tank venting valves are of similar design and construction, but are proprietary parts from another proven component supplier (Raval).

Attachment 2 shows images of the Elise / Exige / Evora and Emira Fuel Systems to illustrate the similarity.

## Attachment 1 – Elise/Exige 2005 MY ORVR Report Approval

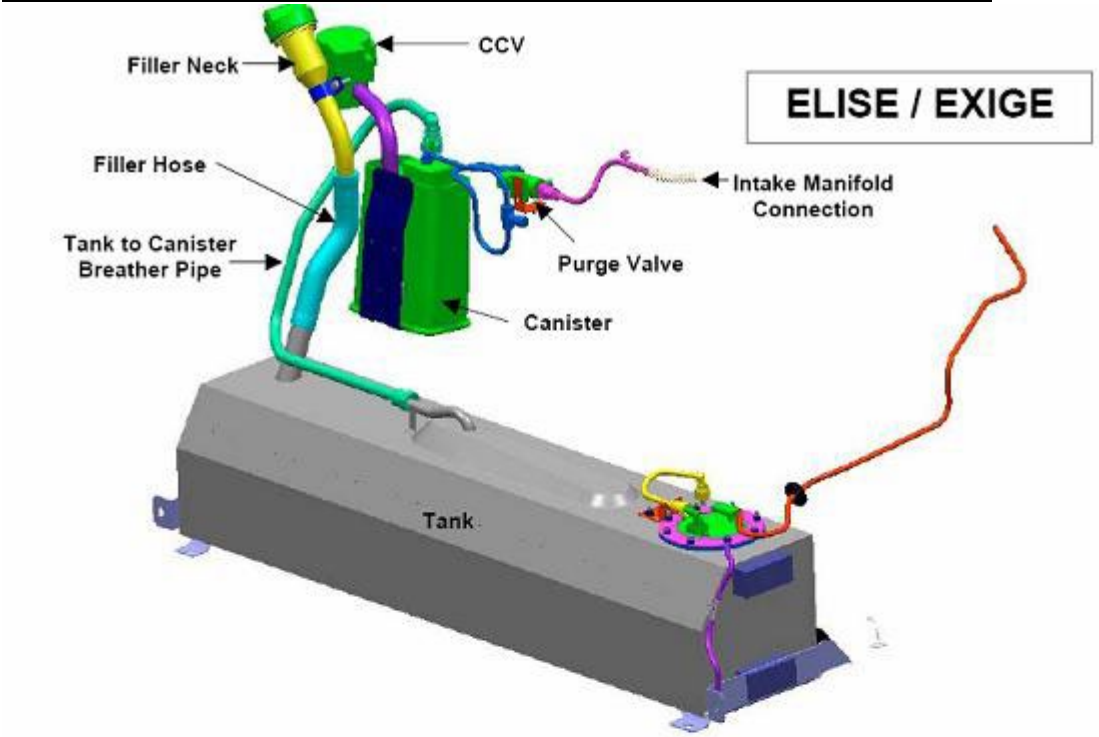
LOTUS CARS LTD.

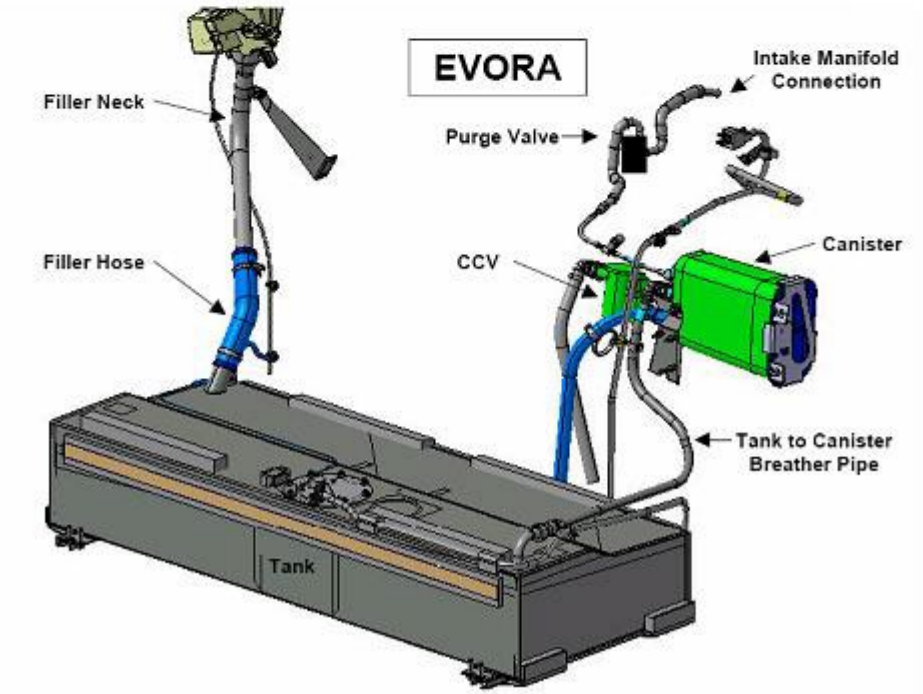
1-9-04
EPA review complete. Review includes e-mails dated 12/22/03.
L Sohacki

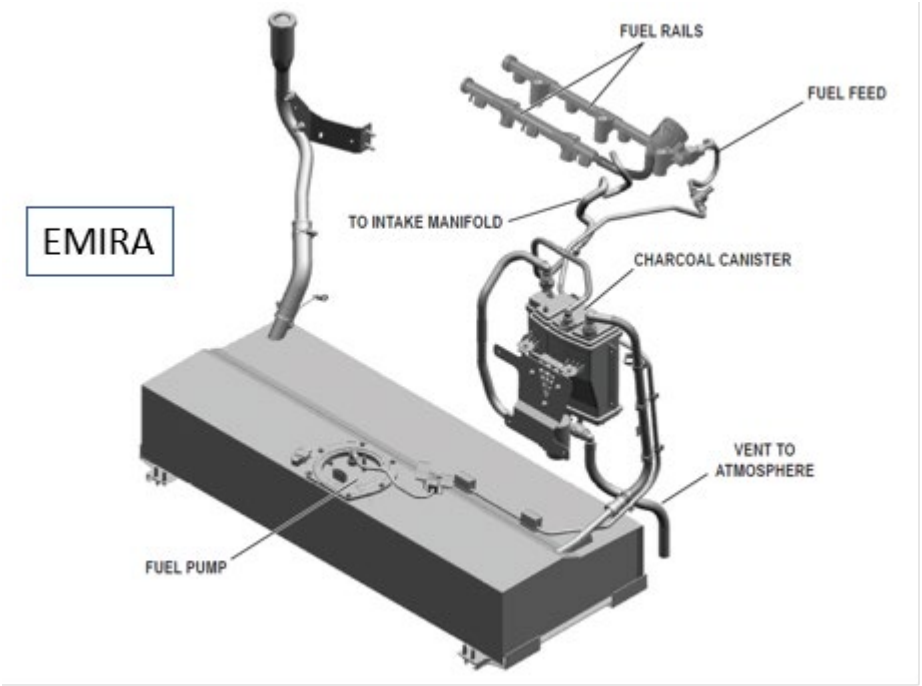
December 10th 2003 LOTUS **ELISE: ORVR REPORT: 2005 MY**

Lynn Sohacki
EPA, Ann Arbor

**Attachment 2 – Elise / Exige/Evora ORVR System Comparison to Emira**




FUEL RAILS
FUEL FEED
TO INTAKE MANIFOLD
CHARCOAL CANISTER
VENT TO ATMOSPHERE
FUEL PUMP
EMIRA

## Attachment 3 – Email EPA / Lotus dated 14 March 23

**From:** Cawdron, Ian <ICawdron@lotuscars.com>
**Sent:** Tuesday, November 22, 2022 11:42 AM
**To:** Snyder, Jim <Snyder.Jim@epa.gov>
**Cc:** Robinson, David <DRobinson@lotuscars.com>
**Subject:** ORVR - Lotus Emira

Hi Jim

Please see attached slides detailing the similarity between our previously approved Evora ORVR system and the new Emira system. Apart from the revised filler cap and new canister, there is very little difference and I don't believe these adversely affect ORVR.

I'd be grateful if you would review these changes and confirm whether EPA is happy to carry over approval from Evora to Emira?

Many thanks


**IAN CAWDRON LCGI**
LEAD ENGINEER - LEGISLATION
icawdron@lotuscars.com
**T:** +44 (0) 1953 608297
**GROUP LOTUS** Hethel, Norwich, Norfolk, NR14 8EZ, England


RE: ORVR - Lotus Emira

Snyder, Jim <Snyder.Jim@epa.gov>
To Cawdron, Ian
Cc Robinson, David

Reply | Reply All | Forward | ...
Tue 14/03/2023 13:44



Yes, the minimal changes appear to be improvements and Lotus can carry over the approval of the ORVR system.


Jim Snyder
Light-Duty Vehicle Group
Compliance Division
United States Environmental Protection Agency
(734) 214-4946
snyder.jim@epa.gov

## 4. DURABILITY PROCEDURE DESCRIPTION

Lotus has requested the continued use of assigned DFs in accordance with the small volume provision of 86.1838-01(b)(2), as detailed in 86.1826-01.

The EPA and CARB assigned DFs are additive for emissions. These DFs are used with certification test data to prove compliance and are detailed below:

### 4.1. EPA & CARB Exhaust DFs (additive – g/mile)

| | 50K | 120K | 150K |
|---|---|---|---|
| NMHC/NMOG | 0.0047 | 0.0118 | 0.0149 |
| CO | 0.1197 | - | 0.38 |
| NOX | 0.0036 | - | 0.0115 |
| HCHO | 0.0002 | - | 0.0005 |
| CH4 | - | 0.0069 | - |
| N2O | - | 0.0028 | - |

120k NMHC/NMOG, 50k DFs, 120k CH4 and 150k N2O DFs were derived from the Tier 3 DFs supplied in CD-2023-01:

| Criteria Pollutant Assigned DFs | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tier 3 BIN | Useful Life | CO (g/mile) | HCHO (g/mile) | NMOG (g/mile) | NOx (g/mile) | NMOG+NOx (g/mile)* | PM (g/mile) |
| 0 | 150,000 miles | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20 | 150,000 miles | 0.06 | 0.0001 | 0.0025 | 0.0019 | 0.0043 | 0.0000 |
| 30 | 150,000 miles | 0.11 | 0.0001 | 0.0034 | 0.0024 | 0.0058 | 0.0000 |
| 50 | 150,000 miles | 0.16 | 0.0002 | 0.0062 | 0.0047 | 0.0109 | 0.0000 |
| 70 | 150,000 miles | 0.24 | 0.0003 | 0.0098 | 0.0070 | 0.0168 | 0.0000 |
| 125 | 150,000 miles | 0.38 | 0.0005 | 0.0149 | 0.0115 | 0.0264 | 0.0000 |
| 160 | 150,000 miles | 0.50 | 0.0006 | 0.0198 | 0.0149 | 0.0347 | 0.0000 |

| GHG Assigned DFs | | | |
|---|---|---|---|
| Tier 3 BIN | Useful Life | N2O (g/mile) | CH4 (g/mile) |
| 0 | 120,000 miles | 0.0000 | 0.0000 |
| 20 | 120,000 miles | 0.0004 | 0.0010 |
| 30 | 120,000 miles | 0.0007 | 0.0020 |
| 50 | 120,000 miles | 0.0011 | 0.0026 |
| 70 | 120,000 miles | 0.0012 | 0.0027 |
| 125 | 120,000 miles | 0.0028 | 0.0069 |
| 160 | 120,000 miles | 0.0034 | 0.0083 |

50k DF = (150k DF)(46k / 146k)
120k DF = (150k DF)(116k / 146k) unless provided in the table
All calculations use the same method described in CCD-12-07

### 4.2. Evaporative DFs (additive)

Lotus has used the Evaporative DFs supplied in CD-2023-01 for a '0.325 FEL or higher, integrated system':

| Standards | Useful Life | Vehicle class | Hot Soak + 2-day Diurnal DF (g) | Hot Soak + 3-day Diurnal DF (g) | Running Loss DF (g/mi) | ORVR DF (g/USgal) |
|---|---|---|---|---|---|---|
| Tier 3 / LEV III | 150K | LDV | 0.0000 | 0.0000 | 0.000 | 0.006 |

## 5. TEST GROUP DESCRIPTION

| | |
|---|---|
| Test Group name: | RLTXV03.5JHB |
| Summary sheet number: | CSI Report |
| Arrangement and number of cylinders: | V6 |
| Vehicle class covered: | LDV |
| Emission standards class: | Tier 3 - BIN 125 / LEV III – ULEV125 |
| Applicable emission standards: | 50-State, Tier 3-BIN 125 & LEV III-ULEV125 |

### 5.1. Tier 3, Bin 125 FTP Applicable Standards

(g/mile, unless otherwise stated)

Lotus has declared a COLD NMHC Family Emission Limit of 0.4 g/test for this Test Group

| | 50K | 120K | 150K |
|---|---|---|---|
| NMOG + NOx | - | - | 0.125 |
| NMHC – COLD | - | 0.4 | - |
| CO | - | - | 2.1 |
| CO – COLD | 10.0 | - | - |
| HCHO | - | - | 0.004 |
| PM | - | - | 0.003 |
| CH4 | - | 0.03 | - |
| N2O | - | 0.01 | - |

### 5.2. 50°F

| | 50K |
|---|---|
| CO | as FTP |
| NMOG + NOx | 0.25 |
| HCHO | 0.0016 |

### 5.3. SFTP

#### 5.3.1. SC03

| | 150K |
|---|---|
| CO | 3.2 |
| NMHC + NOx | 0.07 |

#### 5.3.2. US06

| | 150K |
|---|---|
| NMHC + NOx | 0.120 |
| CO | 9.6 |
| PM | 0.006 |

### 5.4. Enhanced Evap., Running Loss and ORVR Standards

Lotus has declared an Evaporative Family Emission Limit of 0.450 g/test for this Test Group.

| | | |
|---|---|---|
| EPA 2-Day | - | 0.450 g/test |
| EPA 3-Day | - | 0.450 g/test |
| EPA Running Loss | - | 0.050 g/mile |
| EPA ORVR | - | 0.200 g/gallon |
| EPA BETP | - | 0.020 g |

## 6. TEST VEHICLE DESCRIPTION

| | |
|---|---|
| EDV-24-EVSM6 | Emira MT – low altitude exhaust tests |
| EDV-24-EVSM6/1 | Emira MT – low altitude fuel economy testing |
| EDV-24-EVSA6 | Emira AT – evaporative and Running Loss testing |
| EDV-17-EVM6/2 | Evora 400 MT – ORVR |

### 6.1. Base Vehicle Description

Lotus Emira is a 2-door, mid-engine sports car.

| | | |
|---|---|---|
| Engine: | V6, 3.5 litre DOHC | |
| Engine Control System: | Please refer to the Verify CSI report | |
| Transmission: | Please refer to the Verify CSI report | |
| ETW: | 3,625 lbs. Please refer to the Verify CSI report | |
| Axle ratio: | Manual | 1st – 4th = 3.777<br>5th & 6th = 3.238 |

### 6.2. Vehicle Information

Please refer to the CSI Report in Section 7

## 7. TEST RESULTS

# Attachment 4 – CSI Report

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| | | | |
|---|---|---|---|
| **Manufacturer** | Lotus Cars Ltd | **Manufacturer Code** | LTX |
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Certificate Number** | -- | **CARB Executive Order #** | -- |
| **Certificate Issue Date** | -- | **Certificate Revision Date** | -- |
| **Certificate Effective Date** | -- | **Conditional Certificate** | -- |
| **CSI Revision #** | -- | **CSI Submission/Revision Date** | 10/26/2023 06:18:28 AM |
| **Model Year** | 2024 | | |

### 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 | Multipoint/sequential fuel 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** | LDV |
| **Federal Clean Fuel Vehicle** | No | **Federal Clean Fuel Vehicle Standard** | -- |
| **Federal Clean Fuel Vehicle ILEV** | No | **California Partial Zero Emissions Vehicle Indicator** | No |
| **Durability Group Name** | RLTXGPGNNEV1 | **Durability Group Equivalency Factor** | 1 |
| **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** | Not Applicable | **SFTP Tier 2 Composite CO Option** | -- |
| **SFTP LEV-III Composite Compliance Indicator** | No | | |
| **OBD Compliance Type** | CARB | **OBD Demonstration Vehicle Test Group** | RLTXV03.5JHB |
| **Test Group OBD Compliance Level** | Full - no deficiencies | **Number of Test Group OBD Deficiencies** | 0 |
| **OBD Deficiencies Comments** | -- | | |
| **Mfr Test Group Comments** | Emira Base Approval | | |
| **Mfr Exhaust / Evap Standards Comments** | -- | | |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

### Evaporative/Refueling Family Information

| | | | |
|---|---|---|---|
| **Evaporative Summary Information Type** | New | **Submission/Correction Date** | 10/09/2023 08:42:46 AM |
| **Integrated ORVR?** | Yes | **Fuel(s)** | Gasoline |
| **Multiple Fuel Storage** | -- | | |
| **Bladder Fuel Tank?** | No | | |
| **Fuel Tank Material** | Metal | **Fuel Tank Material Description** | Stainless Steel |
| **Fill Pipe Seal Type** | Liquid seal | | |
| **Air Intake System Vapor Storage Device?** | Yes | **Air Intake System Vapor Storage Device Description** | Panel filter permanently fixed to the clean air side of the air cleaner box |
| **Fuel System Vapor Storage Canister?** | Yes | **Other Vapor Storage** | -- |
| **Fuel System Vapor Storage Canister(s) Total Working Capacity (grams)** | 130 | **Number of Primary Canisters** | 1 |
| **Number of Bleed Canisters** | 0 | **Bleed Canister Total Working Capacity (grams)** | -- |
| **Mfr Evaporative/Refueling Family Comments** | The Lotus Emira utilises a standard liquid seal ORVR system, similar to other Lotus products, with no known in-use issues. The stainless steel filler neck is connected to a single stainless steel fuel tank. Vapour passes through proprietary venting valves to a Kayser ORVR canister. The canister is regenerated by operation of the Toyota purge valve. Lotus' engine management system controls this valve to optimise purge flow into the engine depending upon operating conditions. | | |

### 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 |
|---|---|---|---|
| RLTXR0130JHB-131 | 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 |
|---|---|---|---|---|---|---|---|
| Lotus Cars Ltd | 1 - Lotus Cars Ltd | 8 - Emira | California + CAA Section 177 states | 2-Wheel Drive, Rear | Manual | 6 | No |
| Lotus Cars Ltd | 1 - Lotus Cars Ltd | 8 - Emira | Federal | 2-Wheel Drive, Rear | Manual | 6 | No |

### Engine Description

| | | | |
|---|---|---|---|
| **Hybrid Type** | -- | **Hybrid Description** | -- |
| **Engine Type** | 4-Stroke Spark Ignition | **Mfr Engine Description** | -- |
| **Engine Block Arrangement** | V-shaped engine | **Mfr Engine Block Arrangement Description** | -- |
| **Camless Valvetrain Indicator** | No | **Oil Viscosity/Classification** | 0W-40 |
| **Number of Cylinders/Rotors** | 6 | **Mechanically Variable Compression Ratio Indicator** | N |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |

### 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 | Palladium + Rhodium | Ceramic | Monolith |
| 3 | Three-way catalyst | Platinum + Palladium + Rhodium | Ceramic | Monolith |

| | |
|---|---|
| **Mfr After Treatment Device (ATD) Comments** | Two primary TWC (PT/PL/RH) and One secondary TWC (PL/RH) |
| **Direct Ozone Reduction (DOR) Device** | Not Equipped |
| **Mfr Emission Control Device Comments** | -- |

### Engine Configuration Number 1

| | | | |
|---|---|---|---|
| **Engine Displacement (liters)** | 3.5 | **Engine Rated Horsepower** | 400 |
| **Number of Inlet Valves Per Cylinder** | 2 | **Number of Exhaust Valves Per Cylinder** | 2 |
| **Air Aspiration Method** | Supercharged | **Number of Air Aspiration Devices** | 1 |
| **Air Aspiration Device Configuration** | Single | **Charge Air Cooler Type** | Liquid |
| **Air Aspiration Drive Method(s)** | Mechanical | | |
| **Cylinder Deactivation** | No | | |
| **Cylinder Deactivation Description** | -- | | |
| **Variable Valve Timing** | Yes | | |
| **Variable Valve Timing System Description** | VVT mechanisms are on the inlet and exhaust camshafts for both engine banks. The system changes inlet and exhaust valve timing over the entire speed range in accordance to engine speed and load. | | |
| **Variable Valve Lift?** | No | | |
| **Variable Valve Lift System Description** | -- | | |
| **Number of Knock Sensors** | 2 | **Number of Air/Fuel Sensors** | 1 |
| **Air/Fuel Sensor # 1 Type** | Heated oxygen | **Air/Fuel Sensor # 1 Description** | -- |
| **Mfr Air/Fuel Sensor Comments** | -- | | |
| **Exhaust Gas Recirculation** | No | **Cooled Exhaust Gas Recirculation** | No |
| **EGR Type** | -- | **Exhaust Gas Recirculation Description if 'Other'** | -- |
| **Closed Loop Air Injection System** | No | | |
| **Air Injection Type** | Not Applicable | **Air Injection Type if 'Other'** | -- |
| **Mfr Engine Configuration Comments** | The 2GR engine is a proven Toyota engine, in use on such vehicles as the US specification Toyota Camry. Lotus has previously used Toyota powertrains and found both reliability and emissions durability to be excellent. This engine does not feature any new, unproven technology. | | |

### 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 | RLTX10082871 | RLTX10082868 | RLTX10082869 | RLTX10082874 | RLTX10082867 | 19.2 | 228.2 | 32.2 | 286.1 | -- |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

### Emission Data Vehicle Information

| | | | |
|---|---|---|---|
| Vehicle ID / Configuration | EDV-17-EVM6/2 / 0 | Manufacturer Vehicle Configuration Number | 5 |
| Original Test Group Name | HLTXV03.5JHB | Original Evaporative/Refueling Family | HLTXR0130JHB |
| Original Test Vehicle Model Year | 2017 | | |

### Vehicle Model

| | | | |
|---|---|---|---|
| Represented Test Vehicle Make | Lotus | Represented Test Vehicle Model | Evora 400 |

### Leak Family Details

| | | | |
|---|---|---|---|
| Leak Family Identifier | -- | Leak Family Name | -- |

### Drive Sources and Fuel System Details

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

| | | | |
|---|---|---|---|
| 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 * Correction factor) + Initial system miles | | |
| Odometer Correction Units | Miles | | |
| Engine Code | 2GR-3.5S | Rated Horsepower | 400 |
| Displacement (liters) | 3.5 | | |
| Air Aspiration Method | Supercharged | Air Aspiration Method, if 'Other' | |
| Number of Air Aspiration Devices | 1 | Air Aspiration Device Configuration | Single |
| Charge Air Cooler Type | Liquid | Drive Mode While Testing | 2-Wheel Drive, Rear |
| Shift Indicator Light Usage | Equipped, not shifted by SIL | Aged Emission Components | 4,000 (mi) |
| Curb Weight (lbs) | 3175 | Equivalent Test Weight (pounds) | 3500 |
| GVWR (lbs) | 4061 | N/V Ratio | 36 |
| Axle Ratio | 3.24 | | |
| Transmission Type | Manual | # of Transmission Gears | 6 |
| Transmission Lockup | No | Creeper Gear | No |

### 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 | 37.485 | 0.406 | 0.01764 | 17.86 | -0.0029 | 0.02059 | 13.6 |

Emission Control Device Comments: --

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Manufacturer Test Vehicle Comments** | 2017MY Evora 400 MT - Evap tests only | | |
| **Test #** | **HLTX10043888** | **Test Procedure** | **24 - Federal fuel refueling test (ORVR)** |
| **Exhaust Test # for this Evap Test** | HLTX10041983 | **Test Fuel Type** | 61 - Tier 2 Cert Gasoline |
| **Test Date** | 03/16/2016 | **Fuel** | N/A |
| **Fuel Batch ID** | DJ2221 | **Fuel Calibration Number** | 2221 |
| **Vehicle Class** | N/A | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | Roush Emissions Laboratory | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 6012 | **Odometer Units** | M |
| **4WD Test Dyno** | No | **Diesel Adjustment Factor Usage** | -- |
| **State of Charge Delta** | -- | | |
| **Drive Cycle Speed Tolerance Criteria** | Used Part 86 (+/- 2 mph, +/- 1 sec) | **Road Speed Fan Usage** | Yes |

### Test Results

| Test Result Name | Unrounded Test Result | Verify Calculated FE Equivalent Value |
|---|---|---|
| HC (Hydrocarbon for Running Loss and ORVR) | 0.096043 | -- |

**Manufacturer Test Comments** --

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |

### Emission Data Vehicle Information

| | | | |
|---|---|---|---|
| **Vehicle ID / Configuration** | EDV-24-EVSA6 / 0 | **Manufacturer Vehicle Configuration Number** | 2 |
| **Original Test Group Name** | RLTXV03.5JHB | **Original Evaporative/Refueling Family** | RLTXR0130JHB |
| **Original Test Vehicle Model Year** | 2024 | | |

### Vehicle Model

| | | | |
|---|---|---|---|
| **Represented Test Vehicle Make** | Lotus | **Represented Test Vehicle Model** | Emira |

### Leak Family Details

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

### Drive Sources and Fuel System Details

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

| | | | |
|---|---|---|---|
| **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 * Correction factor) + Initial system miles | | |
| **Odometer Correction Units** | Miles | | |
| **Engine Code** | 2GR-3.5S | **Rated Horsepower** | 400 |
| **Displacement (liters)** | 3.5 | | |
| **Air Aspiration Method** | Supercharged | **Air Aspiration Method, if 'Other'** | |
| **Number of Air Aspiration Devices** | 1 | **Air Aspiration Device Configuration** | Single |
| **Charge Air Cooler Type** | Liquid | **Drive Mode While Testing** | 2-Wheel Drive, Rear |
| **Shift Indicator Light Usage** | Equipped, not shifted by SIL | **Aged Emission Components** | 4,000 (mi) |
| **Curb Weight (lbs)** | 3241 | **Equivalent Test Weight (pounds)** | 3625 |
| **GVWR (lbs)** | 3902 | **N/V Ratio** | 28.5 |
| **Axle Ratio** | 3.69 | | |
| **Transmission Type** | Semi-Automatic | **# of Transmission Gears** | 6 |
| **Transmission Lockup** | No | **Creeper Gear** | No |

### Dynamometer Coefficients:

| | Target Coefficients | | | Set Coefficients | | | |
|---|---|---|---|---|---|---|---|
| **Coefficient Category** | **A (lbf)** | **B (lbf/mph)** | **C (lbf/mph**2)** | **A (lbf)** | **B (lbf/mph)** | **C (lbf/mph**2)** | **EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients** |
| City/Highway/Evap | 37.419 | 0.55691 | 0.017409 | 13.151 | 0.21852 | 0.020146 | 14.5 |

**Emission Control Device Comments** --

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Manufacturer Test Vehicle Comments** | 2024MY Emira EVAP testing configuration | | |
| **Test #** | **RLTX10082876** | **Test Procedure** | **23 - 2-day evap** |
| **Exhaust Test # for this Evap Test** | RLTX10082871 | **Test Fuel Type** | 47 - CARB LEV3 E10 Premium Gasoline |
| **Test Date** | 07/12/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C50641 | **Fuel Calibration Number** | 9043 |
| **Vehicle Class** | N/A | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | Applus IDIADA Group | | |
| **E10 Evaporative Test Measurement Method** | Calculated (1.08 x FID Total Hydrocarbons) | | |
| **Test Start Odometer Reading** | 4254 | **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) |
|---|---|---|
| HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only) | 0.269 | -- |

**Manufacturer Test Comments** --

| 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 | 0.269 | 0.0000 | 0.27 | 0.45 | Pass |
| CA | 150,000 miles | California LEV-III Zero Evap (Option 2) | HC-TOTAL-EQUIV | 0.269 | 0.0000 | 0.27 | 0.45 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082877** | **Test Procedure** | **34 - Federal fuel 3-day evap** 47 - CARB LEV3 E10 Premium |
| **Exhaust Test # for this Evap Test** | RLTX10082871 | **Test Fuel Type** | Gasoline |
| **Test Date** | 07/04/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C50641 | **Fuel Calibration Number** | 9043 |
| **Vehicle Class** | N/A | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | Applus IDIADA Group | | |
| **E10 Evaporative Test Measurement Method** | Calculated (1.08 x FID Total Hydrocarbons) | | |
| **Test Start Odometer Reading** | 4218 | **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) |
|---|---|---|
| HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only) | 0.357 | -- |

**Manufacturer Test Comments** Declared FEL 0.45

| 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 | 0.357 | 0.0000 | 0.36 | 0.45 | Pass |
| CA | 150,000 miles | California LEV-III Zero Evap (Option 2) | HC-TOTAL-EQUIV | 0.357 | 0.0000 | 0.36 | 0.45 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082878** | **Test Procedure** | **32 - Federal Fuel Running Loss** |
| **Exhaust Test # for this Evap Test** | RLTX10082871 | **Test Fuel Type** | 47 - CARB LEV3 E10 Premium Gasoline |
| **Test Date** | 07/04/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C50641 | **Fuel Calibration Number** | 9043 |
| **Vehicle Class** | N/A | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | Applus IDIADA Group | | |
| **E10 Evaporative Test Measurement Method** | Calculated (1.08 x FID Total Hydrocarbons) | | |
| **Test Start Odometer Reading** | 4218 | **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) |
|---|---|---|
| HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only) | 0.0008 | -- |

**Manufacturer Test Comments** --

| 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 | 0.001 | 0.0000 | 0.00 | 0.05 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082875** | **Test Procedure** | **65 - Evap Canister Bleed Test**<br>47 - CARB LEV3 E10 Premium |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | Gasoline |
| **Test Date** | 11/06/2022 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C44869 | **Fuel Calibration Number** | 9455 |
| **Vehicle Class** | N/A | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | Applus IDIADA Group | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4254 | **Odometer Units** | M |
| **4WD Test Dyno** | No | **Diesel Adjustment Factor Usage** | -- |
| **State of Charge Delta** | -- | | |
| **Drive Cycle Speed Tolerance Criteria** | Used Part 86 (+/- 2 mph, +/- 1 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)** | 0.0113 | -- |

**Manufacturer Test Comments** BETP conducted at Idiada using production canister, therefore vehicle values are dummy values only

| 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 | 0.011 | 0.0000 | 0.01 | 0.02 | Pass |
| CA | 150,000 miles | California LEV-III Zero Evap (Option 2) | HC-TOTAL | 0.011 | 0.0000 | 0.01 | 0.02 | Pass |

Page 10 of 41 CSI Submission/Revision Date: 10/26/2023 06:18:28 AM

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

### Emission Data Vehicle Information

| | | | |
|---|---|---|---|
| Vehicle ID / Configuration | EDV-24-EVSM6 / 0 | Manufacturer Vehicle Configuration Number | 1 |
| Original Test Group Name | RLTXV03.5JHB | Original Evaporative/Refueling Family | RLTXR0130JHB |
| Original Test Vehicle Model Year | 2024 | | |

### Vehicle Model

| | | | |
|---|---|---|---|
| Represented Test Vehicle Make | Lotus | Represented Test Vehicle Model | Emira |

### Leak Family Details

| | | | |
|---|---|---|---|
| Leak Family Identifier | -- | Leak Family Name | -- |

### Drive Sources and Fuel System Details

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

| | | | |
|---|---|---|---|
| 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 * Correction factor) + Initial system miles | | |
| Odometer Correction Units | Miles | | |
| Engine Code | 2GR-3.5S | Rated Horsepower | 400 |
| Displacement (liters) | 3.5 | | |
| Air Aspiration Method | Supercharged | Air Aspiration Method, if 'Other' | |
| Number of Air Aspiration Devices | 1 | Air Aspiration Device Configuration | Single |
| Charge Air Cooler Type | Liquid | Drive Mode While Testing | 2-Wheel Drive, Rear |
| Shift Indicator Light Usage | Equipped, not shifted by SIL | Aged Emission Components | 4,000 (mi) |
| Curb Weight (lbs) | 3225 | Equivalent Test Weight (pounds) | 3625 |
| GVWR (lbs) | 3887 | N/V Ratio | 35.5 |
| Axle Ratio | 3.24 | | |
| Transmission Type | Manual | # of Transmission Gears | 6 |
| Transmission Lockup | No | Creeper Gear | No |

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

**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 | 37.419 | 0.55691 | 0.017409 | 19.963 | 0.24494 | 0.018929 | 14.5 |
| Cold CO | 41.161 | 0.6126 | 0.01915 | 23.268 | 0.1364 | 0.02205 | N/A |
| US06 | 37.419 | 0.55691 | 0.017409 | 15.579 | 0.17764 | 0.019657 | N/A |

**Emission Control Device Comments** --

**Manufacturer Test Vehicle Comments** MY24 Emissions Testing

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082871** | **Test Procedure** | **21 - Federal fuel 2-day exhaust (w/can load)** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 46 - CARB LEV3 E10 Regular Gasoline |
| **Test Date** | 05/17/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C55270 | **Fuel Calibration Number** | 9093 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4152 | **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) | 431.4717087 | -- |
| FE BAG 1 (Bag 1 Fuel Economy) | 20.056572 | 20.056572 |
| CO2 BAG 2 (Bag 2 Carbon Dioxide) | 479.8468874 | -- |
| FE BAG 2 (Bag 2 Fuel Economy) | 18.1212154 | 18.1212154 |
| CO2 BAG 3 (Bag 3 Carbon Dioxide) | 387.1607582 | -- |
| FE BAG 3 (Bag 3 Fuel Economy) | 22.4499677 | 22.4499677 |
| METHANE (CH4 - Methane) | 0.0059399 | -- |
| CO (Carbon Monoxide) | 0.272692 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | 5.02 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | 1.48 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | 8.34 | -- |
| MFR FE (Manufacturer Fuel Economy) | 19.5174765 | 19.5174765 |
| NOX (Nitrogen Oxide) | 0.0128045 | -- |
| N2O (Nitrous Oxide) | 0.0011626 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0.0134667 | -- |
| NMOG (Non-methane organic gases) | 0.0148368 | -- |
| PM (Particulate Matter) | 0.0002693 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0190187 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CREE/OPT-CREE |
|---|---|---|
| Carbon-Related Exhaust Emissions | 445.5313012 | 999 |

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 444.4032963 | -- |

**Manufacturer Test Comments** --

| 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 125 | CREE | 999 | -- | -- | -- | 0 | -- | 999 | -- | -- |
| Fed | 120,000 miles | Federal Tier 3 Bin 125 | METHANE | 0.006 | -- | -- | -- | 0.0069 | -- | 0.01 | 0.03 | Pass |
| Fed | 120,000 miles | Federal Tier 3 Bin 125 | N2O | 0.001 | -- | -- | -- | 0.0028 | -- | 0.00 | 0.01 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | CO | 0.27 | -- | -- | -- | 0.38 | -- | 0.6 | 2.1 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG | 0.0148 | -- | 1.1 | -- | 0.0149 | -- | 0.030 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG+NOX | 0.0276 | -- | -- | -- | -- | -- | 0.054 | 0.125 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NOX | 0.0128 | -- | -- | -- | 0.0115 | -- | 0.024 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | PM | 0.0003 | -- | -- | -- | 0 | -- | 0.000 | 0.003 | Pass |
| CA | 120,000 miles | California LEV-III ULEV125 | CREE | 999 | -- | -- | -- | 0 | -- | 999 | -- | -- |
| CA | 120,000 miles | California LEV-III ULEV125 | METHANE | 0.006 | -- | -- | -- | 0.0069 | -- | 0.01 | 0.03 | Pass |
| CA | 120,000 miles | California LEV-III ULEV125 | N2O | 0.001 | -- | -- | -- | 0.0028 | -- | 0.00 | 0.01 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | CO | 0.27 | -- | -- | -- | 0.38 | -- | 0.6 | 2.1 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG | 0.0148 | -- | 1.1 | -- | 0.0149 | -- | 0.030 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.0276 | -- | -- | -- | -- | -- | 0.054 | 0.125 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NOX | 0.0128 | -- | -- | -- | 0.0115 | -- | 0.024 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | PM | 0.0003 | -- | -- | -- | 0 | -- | 0.000 | 0.003 | Pass |

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

Page 14 of 41 CSI Submission/Revision Date: 10/26/2023 06:18:28 AM

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| **Test #** | **RLTX10082872** | **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 | 07/07/2023 | Fuel | Gasoline |
| Fuel Batch ID | C44900 | Fuel Calibration Number | 9046 |
| Vehicle Class | LDV/Passenger Car | DF Type | EPA Assigned |
| Verify Test Lab ID | MAHLE Powertrain Ltd | | |
| 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) |
|---|---|---|
| CO2 BAG 1 (Bag 1 Carbon Dioxide) | 438.1080921 | -- |
| FE BAG 1 (Bag 1 Fuel Economy) | 20.2224765 | 20.2224765 |
| CO2 BAG 2 (Bag 2 Carbon Dioxide) | 488.9448005 | -- |
| FE BAG 2 (Bag 2 Fuel Economy) | 18.2608534 | 18.2608534 |
| CO2 BAG 3 (Bag 3 Carbon Dioxide) | 394.7839278 | -- |
| FE BAG 3 (Bag 3 Fuel Economy) | 22.5968948 | 22.5968948 |
| METHANE (CH4 - Methane) | 0.0095822 | -- |
| CO (Carbon Monoxide) | 0.4763755 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | 1.74 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | -0.14 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | 3.19 | -- |
| MFR FE (Manufacturer Fuel Economy) | 19.6678799 | 19.6678799 |
| NOX (Nitrogen Oxide) | 0.0127603 | -- |
| N2O (Nitrous Oxide) | 0.0016661 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0.0215814 | -- |
| NMOG (Non-methane organic gases) | 0.0224446 | -- |
| PM (Particulate Matter) | 0.0004135 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0306828 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CREE/OPT-CREE |
|---|---|---|
| Carbon-Related Exhaust Emissions | 454.0137692 | 454 |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 452.5703984 | -- |

Manufacturer Test Comments: NMOG=1.04 x NMHC

| 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 125 | CREE | 454 | -- | -- | -- | 0 | -- | 454 | -- | -- |
| Fed | 120,000 miles | Federal Tier 3 Bin 125 | METHANE | 0.010 | -- | -- | -- | 0.0069 | -- | 0.02 | 0.03 | Pass |
| Fed | 120,000 miles | Federal Tier 3 Bin 125 | N2O | 0.002 | -- | -- | -- | 0.0028 | -- | 0.00 | 0.01 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | CO | 0.48 | -- | -- | -- | 0.38 | -- | 0.9 | 2.1 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG | 0.0224 | -- | 1.1 | -- | 0.0149 | -- | 0.037 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG+NOX | 0.0352 | -- | -- | -- | -- | -- | 0.062 | 0.125 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NOX | 0.0128 | -- | -- | -- | 0.0115 | -- | 0.024 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | PM | 0.0004 | -- | -- | -- | 0 | -- | 0.000 | 0.003 | Pass |
| CA | 120,000 miles | California LEV-III ULEV125 | CREE | 454 | -- | -- | -- | 0 | -- | 454 | -- | -- |
| CA | 120,000 miles | California LEV-III ULEV125 | METHANE | 0.010 | -- | -- | -- | 0.0069 | -- | 0.02 | 0.03 | Pass |
| CA | 120,000 miles | California LEV-III ULEV125 | N2O | 0.002 | -- | -- | -- | 0.0028 | -- | 0.00 | 0.01 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | CO | 0.48 | -- | -- | -- | 0.38 | -- | 0.9 | 2.1 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG | 0.0224 | -- | 1.1 | -- | 0.0149 | -- | 0.037 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.0352 | -- | -- | -- | -- | -- | 0.062 | 0.125 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NOX | 0.0128 | -- | -- | -- | 0.0115 | -- | 0.024 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | PM | 0.0004 | -- | -- | -- | 0 | -- | 0.000 | 0.003 | Pass |

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

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082873** | **Test Procedure** | **51 - CA fuel 50 Deg(F) exhaust test** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 46 - CARB LEV3 E10 Regular Gasoline |
| **Test Date** | 05/24/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C55270 | **Fuel Calibration Number** | 9093 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4223 | **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) | 463.9377893 | -- |
| FE BAG 1 (Bag 1 Fuel Economy) | 18.69003 | 18.69003 |
| CO2 BAG 2 (Bag 2 Carbon Dioxide) | 501.5931543 | -- |
| FE BAG 2 (Bag 2 Fuel Economy) | 17.335858 | 17.335858 |
| CO2 BAG 3 (Bag 3 Carbon Dioxide) | 405.7932074 | -- |
| FE BAG 3 (Bag 3 Fuel Economy) | 21.4274223 | 21.4274223 |
| METHANE (CH4 - Methane) | 0.0130196 | -- |
| CO (Carbon Monoxide) | 0.0006439 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | 3.71 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | 1.92 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | 5.77 | -- |
| MFR FE (Manufacturer Fuel Economy) | 18.5804853 | 18.5804853 |
| NOX (Nitrogen Oxide) | 0.0119637 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0.0803337 | -- |
| NMOG (Non-methane organic gases) | 0.1005566 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0932092 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 467.528024 | -- |

**Manufacturer Test Comments** --

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| 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 | 50,000 miles | California LEV-III ULEV125 | CO | 0.00 | -- | -- | -- | 0.1197 | -- | 0.1 | 2.1 | Pass |
| CA | 50,000 miles | California LEV-III ULEV125 | NMOG | 0.1006 | -- | 1.1 | -- | 0.0047 | -- | 0.105 | 99.999 | Pass |
| CA | 50,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.1126 | -- | -- | -- | -- | -- | 0.12 | 0.25 | Pass |
| CA | 50,000 miles | California LEV-III ULEV125 | NOX | 0.0120 | -- | -- | -- | 0.0036 | -- | 0.016 | 99.999 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082874** | **Test Procedure** | **11 - Cold CO** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 28 - Cold CO E10 Regular Gasoline (Tier 3) |
| **Test Date** | 06/07/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C31346 | **Fuel Calibration Number** | 9346 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4298 | **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) | 500.6396265 | -- |
| FE BAG 1 (Bag 1 Fuel Economy) | 16.826501 | 16.826501 |
| CO2 BAG 2 (Bag 2 Carbon Dioxide) | 520.3448839 | -- |
| FE BAG 2 (Bag 2 Fuel Economy) | 16.580611 | 16.580611 |
| CO2 BAG 3 (Bag 3 Carbon Dioxide) | 420.1108055 | -- |
| FE BAG 3 (Bag 3 Fuel Economy) | 20.5246714 | 20.5246714 |
| METHANE (CH4 - Methane) | 0.0168336 | -- |
| CO (Carbon Monoxide) | 1.1649144 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | 0.3 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | -0.77 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | 0.33 | -- |
| MFR FE (Manufacturer Fuel Economy) | 17.5518469 | 17.5518469 |
| NOX (Nitrogen Oxide) | 0.0121607 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0.2811593 | -- |
| NMOG (Non-methane organic gases) | 0.3100597 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.2974806 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 488.7918485 | -- |

**Manufacturer Test Comments** --

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| 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 125 | CO | 1.2 | -- | -- | -- | 0.1197 | -- | 1 | 10 | Pass |
| Fed | 120,000 miles | Federal Tier 3 Bin 125 | HC-NM | 0.28 | -- | -- | -- | 0.0118 | -- | 0.3 | 0.4 | Pass |
| CA | 50,000 miles | California LEV-III ULEV125 | CO | 1.2 | -- | -- | -- | 0.1197 | -- | 1 | 10 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |

| | | | |
|---|---|---|---|
| **Test #** | **RLTX10082867** | **Test Procedure** | **3 - HWFE** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 46 - CARB LEV3 E10 Regular Gasoline |
| **Test Date** | 05/17/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C55270 | **Fuel Calibration Number** | 9093 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4152 | **Odometer Units** | M |
| **4WD Test Dyno** | No | **Diesel Adjustment Factor Usage** | -- |
| **State of Charge Delta** | -- | | |
| **Drive Cycle Speed Tolerance Criteria** | Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec) | **Road Speed Fan Usage** | Yes |

### Test Results

| Test Result Name | Unrounded Test Result | Verify Calculated FE Equivalent Value (miles per gallon) |
|---|---|---|
| METHANE (CH4 - Methane) | 0.0006753 | -- |
| CO (Carbon Monoxide) | 0.0024502 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | 11.9 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | 0.78 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | 15.42 | -- |
| MFR FE (Manufacturer Fuel Economy) | 30.9906783 | 30.9906783 |
| NOX (Nitrogen Oxide) | 0.0037919 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0 | -- |
| NMOG (Non-methane organic gases) | 0 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0005048 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CREE/OPT-CREE |
|---|---|---|
| Carbon-Related Exhaust Emissions | 280.5891181 | 999 |

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 279.9416795 | -- |

**Manufacturer Test Comments** --

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| 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 125 | CREE | 999 | -- | -- | -- | 0 | -- | 999 | -- | -- |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG | 0.0000 | -- | 1.03 | -- | 0.0149 | -- | 0.015 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG+NOX | 0.0038 | -- | -- | -- | -- | -- | 0.030 | 0.125 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NOX | 0.0038 | -- | -- | -- | 0.0115 | -- | 0.015 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | CREE | 999 | -- | -- | -- | 0 | -- | 999 | -- | -- |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG | 0.0000 | -- | 1.03 | -- | 0.0149 | -- | 0.015 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.0038 | -- | -- | -- | -- | -- | 0.030 | 0.125 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NOX | 0.0038 | -- | -- | -- | 0.0115 | -- | 0.015 | 99.999 | Pass |

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

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Test #** | **RLTX10082868** | **Test Procedure** | **90 - US06** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 46 - CARB LEV3 E10 Regular Gasoline |
| **Test Date** | 05/18/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C55270 | **Fuel Calibration Number** | 9093 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4192 | **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) | 535.9601247 | -- |
| FE BAG 1 (Bag 1 Fuel Economy) | 16.0852601 | 16.0852601 |
| CO2 BAG 2 (Bag 2 Carbon Dioxide) | 330.7490276 | -- |
| FE BAG 2 (Bag 2 Fuel Economy) | 26.2345347 | 26.2345347 |
| METHANE (CH4 - Methane) | 0.0031279 | -- |
| CO (Carbon Monoxide) | 1.0005683 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | -1.36 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | -1.1 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | -1.79 | -- |
| MFR FE (Manufacturer Fuel Economy) | 22.96763 | 22.96763 |
| NOX (Nitrogen Oxide) | 0.01142 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0.0022425 | -- |
| NMOG (Non-methane organic gases) | 0.0023098 | -- |
| PM (Particulate Matter) | 0.0043807 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0034217 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 376.3797786 | -- |

**Manufacturer Test Comments** --

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

**Test Group** RLTXV03.5JHB **Evaporative/Refueling Family** RLTXR0130JHB

| 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 125 | CO | 1.00 | -- | -- | -- | 0.38 | -- | 1.4 | 9.6 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG | 0.0023 | -- | 1.03 | -- | 0.0149 | -- | 0.017 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG+NOX | 0.0137 | -- | -- | -- | -- | -- | 0.04 | 0.12 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NOX | 0.0114 | -- | -- | -- | 0.0115 | -- | 0.023 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | PM | 0.0044 | -- | -- | -- | 0 | -- | 0.004 | 0.006 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | CO | 1.00 | -- | -- | -- | 0.38 | -- | 1.4 | 9.6 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG | 0.0023 | -- | 1.03 | -- | 0.0149 | -- | 0.017 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.0137 | -- | -- | -- | -- | -- | 0.04 | 0.12 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NOX | 0.0114 | -- | -- | -- | 0.0115 | -- | 0.023 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | PM | 0.0044 | -- | -- | -- | 0 | -- | 0.004 | 0.006 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| **Test #** | **RLTX10082869** | **Test Procedure** | **95 - SC03** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 46 - CARB LEV3 E10 Regular Gasoline |
| **Test Date** | 06/12/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C55270 | **Fuel Calibration Number** | 9093 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **E10 Evaporative Test Measurement Method** | -- | | |
| **Test Start Odometer Reading** | 4322 | **Odometer Units** | M |
| **4WD Test Dyno** | No | **Diesel Adjustment Factor Usage** | -- |
| **State of Charge Delta** | -- | | |
| **Drive Cycle Speed Tolerance Criteria** | Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec) | **Road Speed Fan Usage** | Yes |

### Test Results

| Test Result Name | Unrounded Test Result | Verify Calculated FE Equivalent Value (miles per gallon) |
|---|---|---|
| METHANE (CH4 - Methane) | 0.0060136 | -- |
| CO (Carbon Monoxide) | 0.0449242 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | -1.76 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | -0.06 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | -1.51 | -- |
| MFR FE (Manufacturer Fuel Economy) | 16.2721521 | 16.2721521 |
| NOX (Nitrogen Oxide) | 0.0225937 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0.0043519 | -- |
| NMOG (Non-methane organic gases) | 0.0044825 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0101825 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 533.6449472 | -- |

**Manufacturer Test Comments** --

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| 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 125 | CO | 0.04 | -- | -- | -- | 0.38 | -- | 0.4 | 2.1 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG | 0.0045 | -- | 1.03 | -- | 0.0149 | -- | 0.019 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG+NOX | 0.0271 | -- | -- | -- | -- | -- | 0.05 | 0.07 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NOX | 0.0226 | -- | -- | -- | 0.0115 | -- | 0.034 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | CO | 0.04 | -- | -- | -- | 0.38 | -- | 0.4 | 3.2 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG | 0.0045 | -- | 1.03 | -- | 0.0149 | -- | 0.019 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.0271 | -- | -- | -- | -- | -- | 0.05 | 0.07 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NOX | 0.0226 | -- | -- | -- | 0.0115 | -- | 0.034 | 99.999 | Pass |

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

### Emission Data Vehicle Information

| | | | |
|---|---|---|---|
| Vehicle ID / Configuration | EDV-24-EVSM6/1 / 0 | Manufacturer Vehicle Configuration Number | 1 |
| Original Test Group Name | RLTXV03.5JHB | Original Evaporative/Refueling Family | RLTXR0130JHB |
| Original Test Vehicle Model Year | 2024 | | |

### Vehicle Model

| | | | |
|---|---|---|---|
| Represented Test Vehicle Make | Lotus | Represented Test Vehicle Model | Emira |

### Leak Family Details

| | | | |
|---|---|---|---|
| Leak Family Identifier | -- | Leak Family Name | -- |

### Drive Sources and Fuel System Details

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

| | | | |
|---|---|---|---|
| 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 * Correction factor) + Initial system miles | | |
| Odometer Correction Units | Miles | | |
| Engine Code | 2GR-3.5S | Rated Horsepower | 400 |
| Displacement (liters) | 3.5 | | |
| Air Aspiration Method | Supercharged | Air Aspiration Method, if 'Other' | |
| Number of Air Aspiration Devices | 1 | Air Aspiration Device Configuration | Single |
| Charge Air Cooler Type | Liquid | Drive Mode While Testing | 2-Wheel Drive, Rear |
| Shift Indicator Light Usage | Equipped, not shifted by SIL | Aged Emission Components | 4,000 (mi) |
| Curb Weight (lbs) | 3225 | Equivalent Test Weight (pounds) | 3625 |
| GVWR (lbs) | 3887 | N/V Ratio | 35.5 |
| Axle Ratio | 3.24 | | |
| Transmission Type | Manual | # of Transmission Gears | 6 |
| Transmission Lockup | No | Creeper Gear | No |

### Dynamometer Coefficients:

| | Target Coefficients | | | Set Coefficients | | | |
|---|---|---|---|---|---|---|---|
| Coefficient Category | A (lbf) | B (lbf/mph) | C (lbf/mph**2) | A (lbf) | B (lbf/mph) | C (lbf/mph**2) | EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients |
| City/Highway/Evap | 37.419 | 0.55691 | 0.017409 | 21.177 | 0.21672 | 0.019167 | 14.5 |

Emission Control Device Comments --

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Manufacturer Test Vehicle Comments** | 2024MY FE testing | | |

Page 28 of 41 CSI Submission/Revision Date: 10/26/2023 06:18:28 AM

Date: 10/26/2023 06:18:53 AM

## Certification Summary Information Report

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |

| | | | |
|---|---|---|---|
| **Test #** | **RLTX10082870** | **Test Procedure** | **3 - HWFE** |
| **Exhaust Test # for this Evap Test** | -- | **Test Fuel Type** | 61 - Tier 2 Cert Gasoline |
| **Test Date** | 07/07/2023 | **Fuel** | Gasoline |
| **Fuel Batch ID** | C44900 | **Fuel Calibration Number** | 9046 |
| **Vehicle Class** | LDV/Passenger Car | **DF Type** | EPA Assigned |
| **Verify Test Lab ID** | MAHLE Powertrain Ltd | | |
| **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) |
|---|---|---|
| METHANE (CH4 - Methane) | 0.0013667 | -- |
| CO (Carbon Monoxide) | 0.0520847 | -- |
| DT-ASCR (Drive Trace Absolute Speed Change Rating) | 5.11 | -- |
| DT-EER (Drive Trace Energy Economy Rating) | -0.03 | -- |
| DT-IWRR (Drive Trace Inertia Work Ratio Rating) | 6.65 | -- |
| MFR FE (Manufacturer Fuel Economy) | 31.8139189 | 31.8139189 |
| NOX (Nitrogen Oxide) | 0.003115 | -- |
| HC-NM (Non-methane Hydrocarbon) | 0 | -- |
| NMOG (Non-methane organic gases) | 0 | -- |
| HC-TOTAL (Total Hydrocarbon) | 0.0012924 | -- |

| Test Result Name | Unrounded Test Result | Verify Calculated CREE/OPT-CREE |
|---|---|---|
| Carbon-Related Exhaust Emissions | 281.0032996 | 280 |

| Test Result Name | Unrounded Test Result | Verify Calculated CO2 |
|---|---|---|
| Carbon dioxide | 279.9957733 | -- |

**Manufacturer Test Comments** NMOG=1.04 x NMHC

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

| 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 125 | CREE | 280 | -- | -- | -- | 0 | -- | 280 | -- | -- |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG | 0.0000 | -- | 1.03 | -- | 0.0149 | -- | 0.015 | 99.999 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NMOG+NOX | 0.0031 | -- | -- | -- | -- | -- | 0.030 | 0.125 | Pass |
| Fed | 150,000 miles | Federal Tier 3 Bin 125 | NOX | 0.0031 | -- | -- | -- | 0.0115 | -- | 0.015 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | CREE | 280 | -- | -- | -- | 0 | -- | 280 | -- | -- |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG | 0.0000 | -- | 1.03 | -- | 0.0149 | -- | 0.015 | 99.999 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NMOG+NOX | 0.0031 | -- | -- | -- | -- | -- | 0.030 | 0.125 | Pass |
| CA | 150,000 miles | California LEV-III ULEV125 | NOX | 0.0031 | -- | -- | -- | 0.0115 | -- | 0.015 | 99.999 | Pass |

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

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| **Fuel Properties** | | | |
| **Fuel Batch ID** | **C50641** | **Fuel Calibration Number** | **9043** |
| Test Fuel Type | 47 - CARB LEV3 E10 Premium Gasoline | Fuel Batch Calibration Date | 05/17/2022 |
| Fuel Batch Calibration Effective Date | 09/22/2022 | Fuel Batch Calibration Ineffective Date | -- |
| Carbon Weight Fraction NMHC | -- | Carbon Weight Fraction HC | -- |
| Exhaust Carbon Weight Fraction | -- | Fuel Methanol Volume Fraction | -- |
| Fuel Density (grams/cubic ft) | -- | Fuel Specific Gravity | 0.748 |
| Fuel Ethanol Volume Percent (%) | 9.5 | Fuel Net Heating Value (BTU / lb) | 17830 |
| Fuel Blend Carbon Weight Fraction | 0.829 | Weight Fraction CO2 | -- |
| **Fuel Batch ID** | **C55270** | **Fuel Calibration Number** | **9093** |
| Test Fuel Type | 46 - CARB LEV3 E10 Regular Gasoline | Fuel Batch Calibration Date | 02/20/2023 |
| Fuel Batch Calibration Effective Date | 02/20/2023 | Fuel Batch Calibration Ineffective Date | -- |
| Carbon Weight Fraction NMHC | -- | Carbon Weight Fraction HC | -- |
| Exhaust Carbon Weight Fraction | -- | Fuel Methanol Volume Fraction | -- |
| Fuel Density (grams/cubic ft) | -- | Fuel Specific Gravity | 0.75 |
| Fuel Ethanol Volume Percent (%) | 9.9 | Fuel Net Heating Value (BTU / lb) | 17847 |
| Fuel Blend Carbon Weight Fraction | 0.826 | Weight Fraction CO2 | -- |
| **Fuel Batch ID** | **C31346** | **Fuel Calibration Number** | **9346** |
| Test Fuel Type | 28 - Cold CO E10 Regular Gasoline (Tier 3) | Fuel Batch Calibration Date | 03/22/2023 |
| Fuel Batch Calibration Effective Date | 03/22/2023 | Fuel Batch Calibration Ineffective Date | -- |
| Carbon Weight Fraction NMHC | -- | Carbon Weight Fraction HC | -- |
| Exhaust Carbon Weight Fraction | -- | Fuel Methanol Volume Fraction | -- |
| Fuel Density (grams/cubic ft) | -- | Fuel Specific Gravity | 0.738 |
| Fuel Ethanol Volume Percent (%) | 9.9 | Fuel Net Heating Value (BTU / lb) | 17803 |
| Fuel Blend Carbon Weight Fraction | 0.824 | Weight Fraction CO2 | -- |
| **Fuel Batch ID** | **C44900** | **Fuel Calibration Number** | **9046** |
| Test Fuel Type | 61 - Tier 2 Cert Gasoline | Fuel Batch Calibration Date | 07/04/2023 |
| Fuel Batch Calibration Effective Date | 07/04/2023 | Fuel Batch Calibration Ineffective Date | -- |
| Carbon Weight Fraction NMHC | -- | Carbon Weight Fraction HC | -- |
| Exhaust Carbon Weight Fraction | -- | Fuel Methanol Volume Fraction | -- |
| Fuel Density (grams/cubic ft) | -- | Fuel Specific Gravity | 0.737 |
| Fuel Ethanol Volume Percent (%) | -- | Fuel Net Heating Value (BTU / lb) | 18470 |
| Fuel Blend Carbon Weight Fraction | 0.872 | Weight Fraction CO2 | -- |
| **Fuel Batch ID** | **C44869** | **Fuel Calibration Number** | **9455** |
| Test Fuel Type | 47 - CARB LEV3 E10 Premium Gasoline | Fuel Batch Calibration Date | 08/31/2021 |
| Fuel Batch Calibration Effective Date | 08/31/2021 | Fuel Batch Calibration Ineffective Date | -- |
| Carbon Weight Fraction NMHC | -- | Carbon Weight Fraction HC | -- |

Date: 10/26/2023 06:18:53 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| Exhaust Carbon Weight Fraction | -- | Fuel Methanol Volume Fraction | -- |
| Fuel Density (grams/cubic ft) | -- | Fuel Specific Gravity | 0.748 |
| Fuel Ethanol Volume Percent (%) | 9.6 | Fuel Net Heating Value (BTU / lb) | 17829 |
| Fuel Blend Carbon Weight Fraction | 0.828 | Weight Fraction CO2 | -- |
| **Fuel Batch ID** | **DJ2221** | **Fuel Calibration Number** | **2221** |
| Test Fuel Type | 61 - Tier 2 Cert Gasoline | Fuel Batch Calibration Date | 10/26/2015 |
| Fuel Batch Calibration Effective Date | 10/26/2015 | Fuel Batch Calibration Ineffective Date | -- |
| Carbon Weight Fraction NMHC | -- | Carbon Weight Fraction HC | -- |
| Exhaust Carbon Weight Fraction | -- | Fuel Methanol Volume Fraction | -- |
| Fuel Density (grams/cubic ft) | -- | Fuel Specific Gravity | 0.742 |
| Fuel Ethanol Volume Percent (%) | -- | Fuel Net Heating Value (BTU / lb) | 18476 |
| Fuel Blend Carbon Weight Fraction | 0.865 | Weight Fraction CO2 | -- |

Page 32 of 41 CSI Submission/Revision Date: 10/26/2023 06:18:28 AM

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

**Consolidated List of Standards**

**Exhaust Standards**

| | | | |
|---|---|---|---|
| **Cert Region** | California + CAA Section 177 states | **Cert/In-Use Code** | **Cert** |
| **Vehicle Class** | LDV/Passenger Car | **Standard Level** | California LEV-III ULEV125 |
| **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 | 999.9 |
| 120,000 miles | METHANE | -- | -- | -- | -- | -- | -- | 0.0069 | 0.03 |
| 120,000 miles | N2O | -- | -- | -- | -- | -- | -- | 0.0028 | 0.01 |
| 150,000 miles | CO | -- | -- | -- | -- | -- | -- | 0.38 | 2.1 |
| 150,000 miles | NMOG | -- | -- | 1.1 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.125 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |
| 150,000 miles | PM | -- | -- | -- | -- | -- | -- | 0 | 0.003 |

| | | | |
|---|---|---|---|
| **Cert Region** | California + CAA Section 177 states | **Cert/In-Use Code** | **Cert** |
| **Vehicle Class** | LDV/Passenger Car | **Standard Level** | California LEV-III ULEV125 |
| **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 | -- | -- | -- | -- | -- | -- | 0.38 | 3.2 |
| 150,000 miles | NMOG | -- | -- | 1.03 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.07 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |

Date: 10/26/2023 06:18:54 AM

## Certification Summary Information Report

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| Cert Region | Federal | Cert/In-Use Code | Cert |
| Vehicle Class | LDV/Passenger Car | Standard Level | Federal Tier 3 Bin 125 |
| 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 | -- | -- | -- | -- | -- | -- | 0.38 | 9.6 |
| 150,000 miles | NMOG | -- | -- | 1.03 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.12 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |
| 150,000 miles | PM | -- | -- | -- | -- | -- | -- | 0 | 0.006 |

| Cert Region | Federal | Cert/In-Use Code | Cert |
|---|---|---|---|
| Vehicle Class | LDV/Passenger Car | Standard Level | Federal Tier 3 Bin 125 |
| 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 | 999.9 |
| 120,000 miles | METHANE | -- | -- | -- | -- | -- | -- | 0.0069 | 0.03 |
| 120,000 miles | N2O | -- | -- | -- | -- | -- | -- | 0.0028 | 0.01 |
| 150,000 miles | CO | -- | -- | -- | -- | -- | -- | 0.38 | 2.1 |
| 150,000 miles | NMOG | -- | -- | 1.1 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.125 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |
| 150,000 miles | PM | -- | -- | -- | -- | -- | -- | 0 | 0.003 |

| Cert Region | Federal | Cert/In-Use Code | Cert |
|---|---|---|---|
| Vehicle Class | LDV/Passenger Car | Standard Level | Federal Tier 3 Bin 125 |
| 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 | 999.9 |
| 150,000 miles | NMOG | -- | -- | 1.03 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.125 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| Cert Region | California + CAA Section 177 states | Cert/In-Use Code | Cert |
| Vehicle Class | LDV/Passenger Car | Standard Level | California LEV-III ULEV125 |
| Fuel | Gasoline | Test Procedure | CA fuel 50 Deg(F) exhaust test |

| Useful Life | Emission Name | Rounded Result | RAF | NMOG / NMHC | Upward Diesel Adjustment Factor | Downward Diesel Adjustment Factor | Mult DF | Add DF | Std |
|---|---|---|---|---|---|---|---|---|---|
| 50,000 miles | CO | -- | -- | -- | -- | -- | -- | 0.1197 | 2.1 |
| 50,000 miles | NMOG | -- | -- | 1.1 | -- | -- | -- | 0.0047 | 99.999 |
| 50,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0083 | 0.25 |
| 50,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0036 | 99.999 |

| Cert Region | Federal | Cert/In-Use Code | Cert |
|---|---|---|---|
| Vehicle Class | LDV/Passenger Car | Standard Level | Federal Tier 3 Bin 125 |
| 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 | -- | -- | -- | -- | -- | -- | 0.38 | 2.1 |
| 150,000 miles | NMOG | -- | -- | 1.03 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.07 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |

| Cert Region | California + CAA Section 177 states | Cert/In-Use Code | Cert |
|---|---|---|---|
| Vehicle Class | LDV/Passenger Car | Standard Level | California LEV-III ULEV125 |
| 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 | CREE | -- | -- | -- | -- | -- | -- | 0 | 999.9 |
| 150,000 miles | NMOG | -- | -- | 1.03 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.125 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Cert Region** | California + CAA Section 177 states | **Cert/In-Use Code** | Cert |
| **Vehicle Class** | LDV/Passenger Car | **Standard Level** | California LEV-III ULEV125 |
| **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 | -- | -- | -- | -- | -- | -- | 0.38 | 9.6 |
| 150,000 miles | NMOG | -- | -- | 1.03 | -- | -- | -- | 0.0149 | 99.999 |
| 150,000 miles | NMOG+NOX | -- | -- | -- | -- | -- | -- | 0.0264 | 0.12 |
| 150,000 miles | NOX | -- | -- | -- | -- | -- | -- | 0.0115 | 99.999 |
| 150,000 miles | PM | -- | -- | -- | -- | -- | -- | 0 | 0.006 |

| | | | |
|---|---|---|---|
| **Cert Region** | Federal | **Cert/In-Use Code** | Cert |
| **Vehicle Class** | LDV/Passenger Car | **Standard Level** | Federal Tier 3 Bin 125 |
| **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 | -- | -- | -- | -- | -- | -- | 0.1197 | 10 |
| 120,000 miles | HC-NM | -- | -- | -- | -- | -- | -- | 0.0118 | 0.4 |

| | | | |
|---|---|---|---|
| **Cert Region** | California + CAA Section 177 states | **Cert/In-Use Code** | Cert |
| **Vehicle Class** | LDV/Passenger Car | **Standard Level** | California LEV-III ULEV125 |
| **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 | -- | -- | -- | -- | -- | -- | 0.1197 | 10 |

**Evaporative/Refueling Standards**

| | | | |
|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | **Cert Region** | California + CAA Section 177 states |
| **Cert/In-Use Code** | Cert | **Standard Level** | California LEV-III Zero Evap (Option 2) |
| **Test Procedure** | Federal fuel 3-day evap | | |

| Fuel | Useful Life | Emission Name | Rounded Result | Std | Add DF |
|---|---|---|---|---|---|
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.45 | 0.0000 |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| | | | |
|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
| **Evaporative/Refueling Family** | RLTXR0130JHB | **Cert Region** | California + CAA Section 177 states |
| **Cert/In-Use Code** | Cert | **Standard Level** | California LEV-III Zero Evap (Option 2) |
| **Test Procedure** | 2-day evap | | |

| Fuel | Useful Life | Emission Name | Rounded Result | Std | Add DF |
|---|---|---|---|---|---|
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.45 | 0.0000 |

| | | | |
|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | **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 | -- | 0.2 | 0.006 |

| | | | |
|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | **Cert Region** | California + CAA Section 177 states |
| **Cert/In-Use Code** | Cert | **Standard Level** | California LEV-III Zero Evap (Option 2) |
| **Test Procedure** | Evap Canister Bleed Test | | |

| Fuel | Useful Life | Emission Name | Rounded Result | Std | Add DF |
|---|---|---|---|---|---|
| Gasoline | 150,000 miles | HC-TOTAL | -- | 0.02 | 0.0000 |

| | | | |
|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | **Cert Region** | California + CAA Section 177 states |
| **Cert/In-Use Code** | Cert | **Standard Level** | California LEV-III Zero Evap (Option 2) |
| **Test Procedure** | California Fuel Running Loss | | |

| Fuel | Useful Life | Emission Name | Rounded Result | Std | Add DF |
|---|---|---|---|---|---|
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.005 | 0.0000 |

| | | | |
|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | **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 | -- | 0.02 | 0.0000 |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| | | | | | |
|---|---|---|---|---|---|
| **Test Group** | RLTXV03.5JHB | | **Evaporative/Refueling Family** | | RLTXR0130JHB |
| **Evaporative/Refueling Family** | RLTXR0130JHB | | **Cert Region** | | Federal |
| **Cert/In-Use Code** | Cert | | **Standard Level** | | Federal Tier 3 Evap |
| **Test Procedure** | 2-day evap | | | | |
| **Fuel** | **Useful Life** | **Emission Name** | **Rounded Result** | **Std** | **Add DF** |
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.45 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | | **Cert Region** | | Federal |
| **Cert/In-Use Code** | Cert | | **Standard Level** | | Federal Tier 3 Evap |
| **Test Procedure** | Federal Fuel Running Loss | | | | |
| **Fuel** | **Useful Life** | **Emission Name** | **Rounded Result** | **Std** | **Add DF** |
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.05 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | | **Cert Region** | | Federal |
| **Cert/In-Use Code** | Cert | | **Standard Level** | | Federal Tier 3 Evap |
| **Test Procedure** | Federal fuel 3-day evap | | | | |
| **Fuel** | **Useful Life** | **Emission Name** | **Rounded Result** | **Std** | **Add DF** |
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.45 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Evaporative/Refueling Family** | RLTXR0130JHB | | **Cert Region** | | California + CAA Section 177 states |
| **Cert/In-Use Code** | Cert | | **Standard Level** | | California LEV-III Zero Evap (Option 2) |
| **Test Procedure** | Federal fuel refueling test (ORVR) | | | | |
| **Fuel** | **Useful Life** | **Emission Name** | **Rounded Result** | **Std** | **Add DF** |
| Gasoline | 150,000 miles | HC-TOTAL-EQUIV | -- | 0.2 | 0.006 |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|

**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 | METHANOL | CH3OH - Methanol |
| CO | Carbon Monoxide | N2O | Nitrous Oxide |
| CO2 | Carbon dioxide | SPITBACK | Spitback Hydrocarbon in grams |
| CREE | Carbon-Related Exhaust Emissions | AMP-HRS | Integrated Amp-hours |
| OPT-CREE | Optional Carbon-Related Exhaust Emissions | START-SOC | System Start State of Charge Watt-hours |
| NOX | Nitrogen Oxide | END-SOC | System End State of Charge Watt-hours |
| PM | Particulate Matter | ACT-DISTANCE | Actual Distance Driven (miles) |
| PM-COMP | SFTP Composite Particulate Matter | AS-VOLT | Average System Voltage |
| HC-NM | Non-methane Hydrocarbon | CO2 BAG 1 | Bag 1 Carbon Dioxide |
| OMHCE | Organic material Hydrocarbon Equivalent | CO2 BAG 2 | Bag 2 Carbon Dioxide |
| OMNMHCE | Organic material non-methane HC equivalent | CO2 BAG 3 | Bag 3 Carbon Dioxide |
| NMOG | Non-methane organic gases | CO2 BAG 4 | Bag 4 Carbon Dioxide |
| HCHO | Formaldehyde | NMOG+NOX | Non-methane organic gases plus Nitrogen Oxides |
| H3C2HO | Acetaldehyde | NMOG+NOX-COMP | SFTP Composite Non-methane Organic Gases + Nitrogen Oxides |
| HC-NM+NOX | SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03 | DT-IWRR | Drive Trace Inertia Work Ratio Rating |
| HC-NM+NOX-COMP | SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides | DT-ASCR | Drive Trace Absolute Speed Change Rating |
| CO-COMP | SFTP Composite Carbon Monoxide | DT-EER | Drive Trace Energy Economy Rating |
| ETHANOL | C2H5OH - Ethanol | COMB-CREE | Combined Carbon-Related Exhaust Emissions |
| FE BAG 1 | Bag 1 Fuel Economy | COMB-OPT-CREE | Combined Optional Carbon-Related Exhaust Emissions |
| FE BAG 2 | Bag 2 Fuel Economy | HC-TOTAL-EQUIV | Total Hydrocarbon equivalent - Evap only |
| FE BAG 3 | Bag 3 Fuel Economy | METHANE-COMB | Combined CH4 for HD 2b/3 vehicles only |
| FE BAG 4 | Bag 4 Fuel Economy | N2O-COMB | Combined Nitrous Oxide for HD 2b/3 vehicles only |
| MFR FE | Manufacturer Fuel Economy | LEAK-DIA | Effective Leak Diameter (inches) |
| HC | Hydrocarbon for Running Loss and ORVR | LEAK-GAS CAP | Gas Cap Leakage (cc/min) |
| METHANE | CH4 - Methane | CO2-COMB | Combined Carbon Dioxide for HD 2b/3 Vehicles Only |
| **Certification Region** | | | |
| CA | California + CAA Section 177 states | FA | Federal |
| **Exhaust Emission Standard Level** | | | |
| B1 | Federal Tier 2 Bin 1 | L3ULEV340 | California LEV-III ULEV340 |
| B2 | Federal Tier 2 Bin 2 | L3ULEV250 | California LEV-III ULEV250 |
| B3 | Federal Tier 2 Bin 3 | L3ULEV200 | California LEV-III ULEV200 |
| B4 | Federal Tier 2 Bin 4 | L3SULEV170 | California LEV-III SULEV170 |
| B5 | Federal Tier 2 Bin 5 | L3SULEV150 | California LEV-III SULEV150 |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| Test Group | RLTXV03.5JHB | Evaporative/Refueling Family | RLTXR0130JHB |
|---|---|---|---|
| B6 | Federal Tier 2 Bin 6 | L3LEV630 | California LEV-III LEV630 |
| B7 | Federal Tier 2 Bin 7 | L3ULEV570 | California LEV-III ULEV570 |
| B8 | Federal Tier 2 Bin 8 | L3ULEV400 | California LEV-III ULEV400 |
| B9 | Federal Tier 2 Bin 9 | L3ULEV270 | California LEV-III ULEV270 |
| B10 | Federal Tier 2 Bin 10 | L3SULEV230 | California LEV-III SULEV230 |
| B11 | Federal Tier 2 Bin 11 | L3SULEV200 | California LEV-III SULEV200 |
| HDV1 | HDV1 (Federal HD chassis Class 2b GVW 8501-10000) | T3B160 | Federal Tier 3 Bin 160 |
| HDV2 | HDV2 (Federal HD chassis Class 3 GVW 10001-14000) | T3B125 | Federal Tier 3 Bin 125 |
| L2 | California LEV-II LEV | T3B110 | Federal Tier 3 Transitional Bin 110 |
| L2OP | California LEV-II LEV Optional | T3B85 | Federal Tier 3 Transitional Bin 85 |
| U2 | California LEV-II ULEV | T3SULEV30 | Federal Tier 3 Transitional LEV-II SULEV30 Carryover |
| S2 | California LEV-II SULEV | T3B70 | Federal Tier 3 Bin 70 |
| ZEV | California ZEV | T3B50 | Federal Tier 3 Bin 50 |
| OT | Other | T3B30 | Federal Tier 3 Bin 30 |
| T1 | Federal Tier 1 | T3B20 | Federal Tier 3 Bin 20 |
| PZEV | California PZEV | T3B0 | Federal Tier 3 Bin 0 |
| L2LEV160 | California LEV-II LEV160 | HDV2B395 | Federal Tier 3 HD Class 2b Transitional Bin 395 |
| L2ULEV125 | California LEV-II ULEV125 | HDV2B340 | Federal Tier 3 HD Class 2b Transitional Bin 340 |
| L2SULEV30 | California LEV-II SULEV30 | HDV2B250 | Federal Tier 3 HD Class 2b Bin 250 |
| L2LEV395 | California LEV-II LEV395 | HDV2B200 | Federal Tier 3 HD Class 2b Bin 200 |
| L2ULEV340 | California LEV-II ULEV340 | HDV2B170 | Federal Tier 3 HD Class 2b Bin 170 |
| L2LEV630 | California LEV-II LEV630 | HDV2B150 | Federal Tier 3 HD Class 2b Bin 150 |
| L2ULEV570 | California LEV-II ULEV570 | HDV2B0 | Federal Tier 3 HD Class 2b Bin 0 |
| L3LEV160 | California LEV-III LEV160 | HDV3B630 | Federal Tier 3 HD Class 3 Transitional Bin 630 |
| L3ULEV125 | California LEV-III ULEV125 | HDV3B570 | Federal Tier 3 HD Class 3 Transitional Bin 570 |
| L3ULEV70 | California LEV-III ULEV70 | HDV3B400 | Federal Tier 3 HD Class 3 Bin 400 |
| L3ULEV50 | California LEV-III ULEV50 | HDV3B270 | Federal Tier 3 HD Class 3 Bin 270 |
| L3SULEV30 | California LEV-III SULEV30 | HDV3B230 | Federal Tier 3 HD Class 3 Bin 230 |
| L3SULEV20 | California LEV-III SULEV20 | HDV3B200 | Federal Tier 3 HD Class 3 Bin 200 |
| L3LEV395 | California LEV-III LEV395 | HDV3B0 | Federal Tier 3 HD Class 3 Bin 0 |
| **Transmission Type Code** | | | |
| AMS | Automated Manual- Selectable (e.g. Automated Manual with paddles) | M | Manual |
| A | Automatic | OT | Other |
| AM | Automated Manual | SA | Semi-Automatic |
| CVT | Continuously Variable | SCV | Selectable Continuously Variable (e.g. CVT with paddles) |
| **Drive System Code** | | | |
| 4 | 4-Wheel Drive | P | Part-time 4-Wheel Drive |
| F | 2-Wheel Drive, Front | A | All Wheel Drive |
| R | 2-Wheel Drive, Rear | | |

Date: 10/26/2023 06:18:54 AM

**Certification Summary Information Report**

| **Test Group** | RLTXV03.5JHB | **Evaporative/Refueling Family** | RLTXR0130JHB |
|---|---|---|---|

**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 |

## 8. EMISSION WAIVER/COMPLIANCE STATEMENTS

Please refer to confidential submission.

## 9. OBD SYSTEM DESCRIPTION

The ECM monitors the normal engine control sensors and via diagnostic algorithms determines the condition of the emissions control devices. The outputs of the diagnostic algorithms are compared to thresholds to enable the ECM to recognise 'faults' in the system.

Once a fault is confirmed, the OBD system lights a 'malfunction indicator lamp' (MIL) on the instrument panel. This informs the driver that a fault has been detected and furthermore, stores in its memory a Diagnostic Trouble Code (DTC) for the particular type of fault detected. This can then be accessed by a technician, using an off-board diagnostic tool, who will be guided to the problem area.

A hand-held electronic diagnostic tool capable of connecting to our diagnostic connector is able to communicate with the ECM and display trouble codes and sensor readings to facilitate speedy fault diagnosis.

### 9.1. Malfunction Indicator Lamp (MIL)

A MIL is provided in the instrument panel in order to indicate to the driver that an emissions control system problem has occurred and that the vehicle should be taken for check/repair as soon as is practicable. The MIL lamp shall illuminate when the vehicle is in the key-on/engine-off condition. If no faults are present that should illuminate the MIL then it will extinguish when the engine is started. If, however, the lamp remains on, or comes on whilst driving, this indicates that the OBD system has detected a problem and a DTC has been stored in the memory.

If the fault cures itself, or is no longer detected, the lamp will go out after three engine start-ups with no fault present. The trouble code will be stored in the ECM memory for the next 40 engine warm-up cycles, to indicate to a technician that an intermittent fault has been detected. If no further fault or recurrence is detected during this period, the fault will be erased from the memory.

In the case of a fault that causes a sufficiently severe engine misfire such that damage to the catalytic converter may be caused, the engine management system shall take such remedial action to ensure that catalyst damage does not occur.

### 9.2. OBD II Approval

Lotus received OBD II approval from CARB on 30th March 2023 with no deficiencies. The following Lotus OBD II compliance reports refer:

- CBI_RLTXV03.5JHB_A-P.pdf
- CBI_RLTXV03.5JHB_FLCHRT.pdf
- CBI_RLTXV03.5JHB_GENDES.pdf

## Attachment 5 – OBD Approval

CALIFORNIA AIR RESOURCES BOARD

Gavin Newsom, Governor
Yana Garcia, CalEPA Secretary
Liane M. Randolph, Chair

March 30, 2023 Reference No. E-23-085

Mr. Ian Cawdron
Lotus Cars Limited
Potash Lane, Hethel
Norwich, Norfolk, NR14 8EZ
ENGLAND

Confidential

Subject: Approval of Lotus Cars Limited's (Lotus) On-Board Diagnostics II (OBD II) System for the 2024 Model Year Test Group RLTXV03.5JHB

Dear Mr. Cawdron:

The California Air Resources Board's (CARB) On-Board Diagnostics Branch has received the OBD II system description submitted by Lotus for the 2024 model year test group listed above. Representations made in the application indicate that the system is compliant with the OBD II regulation[1]. Therefore, CARB approves the 2024 model year system design for the test group listed above with no deficiencies.

Should you have any comments or questions regarding this letter, please contact Sana Dadabhoy, Air Resources Engineer, at (951) 542-3521 or sana.dadabhoy@arb.ca.gov.

Sincerely,

Michael J. Regenfuss, Chief
On-Board Diagnostics Branch
Emissions Certification and Compliance Division

cc: Sana Dadabhoy
Air Resources Engineer
Emissions Certification and Compliance Division

[1] Unless otherwise noted, all regulation references are to title 13, California Code of Regulations, section 1968.2.

arb.ca.gov 4001 Iowa Avenue • PO Box 55009 • Riverside, California 92507 (800) 242-4450

### 9.3. 40 CFR Part 85 Subpart W

Lotus Cars Ltd confirms that all vehicles within this test group have a diagnostic system that is adequate for the performance warranty test described in 40 CFR Part 85, Subpart W. (86.1844-01(d)(9)(iv) refers)

### 9.4. §86.1813 Leak test procedure

This description of the leak test procedure is taken from the CBI_RLTXV03.5JHB_A-P.pdf compliance report.

**Attachment 6 – Leak test access points**

**D.11.1 Test Procedure**

A 0.020" orifice (o'Keefe Controls Co, B-20-SS) was installed in 3 different locations.

1. Fuel tank filler neck (Figure D.11-1)
2. At the charcoal canister (Purge out) (Figure D.11-1)
3. At the purge valve (Figure D.11-2)

Test Sequence:

1. Introduce fault
2. Clear DTCs (Mode $04)
3. Start engine and operate until the fault was detected (Pending DTC).
4. Stop engine
5. Start engine and operate until MIL illuminated (confirmed DTC)
6. Move fault to next location. Repeat steps 1 - 5.

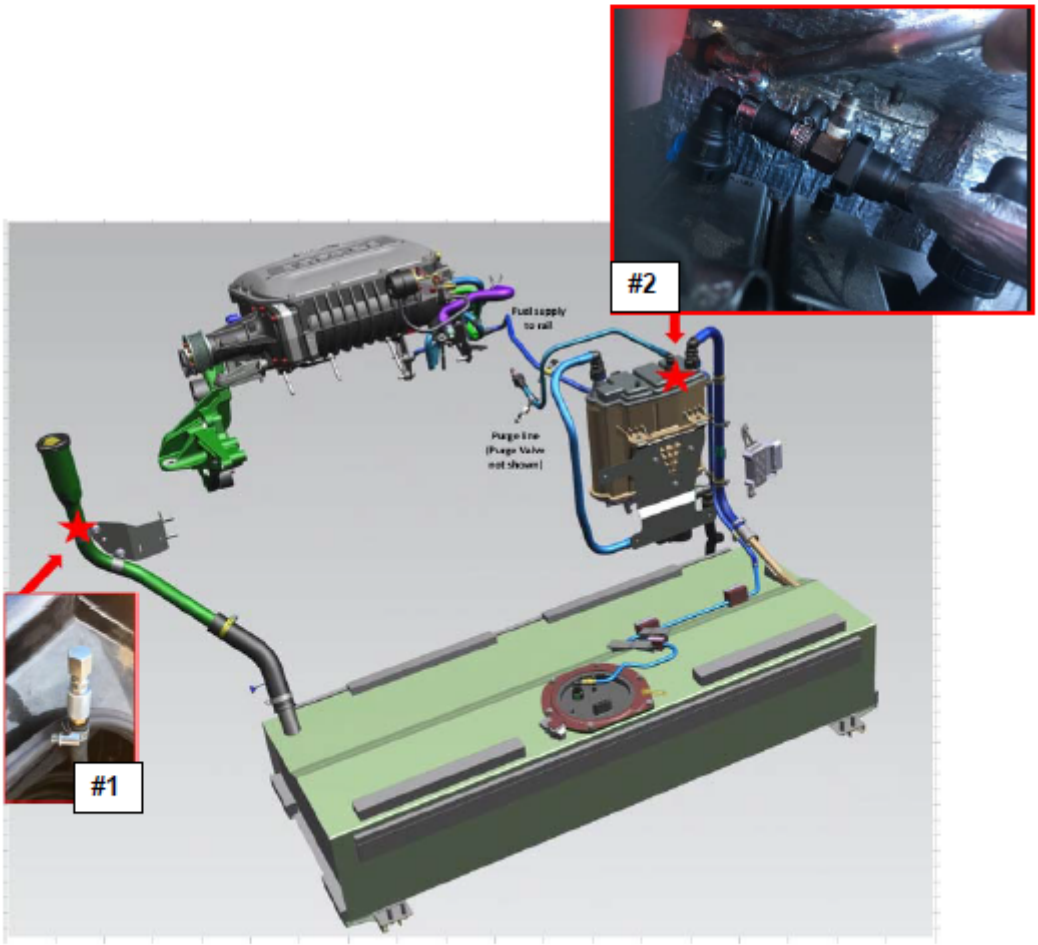



**Figure D.11-1**

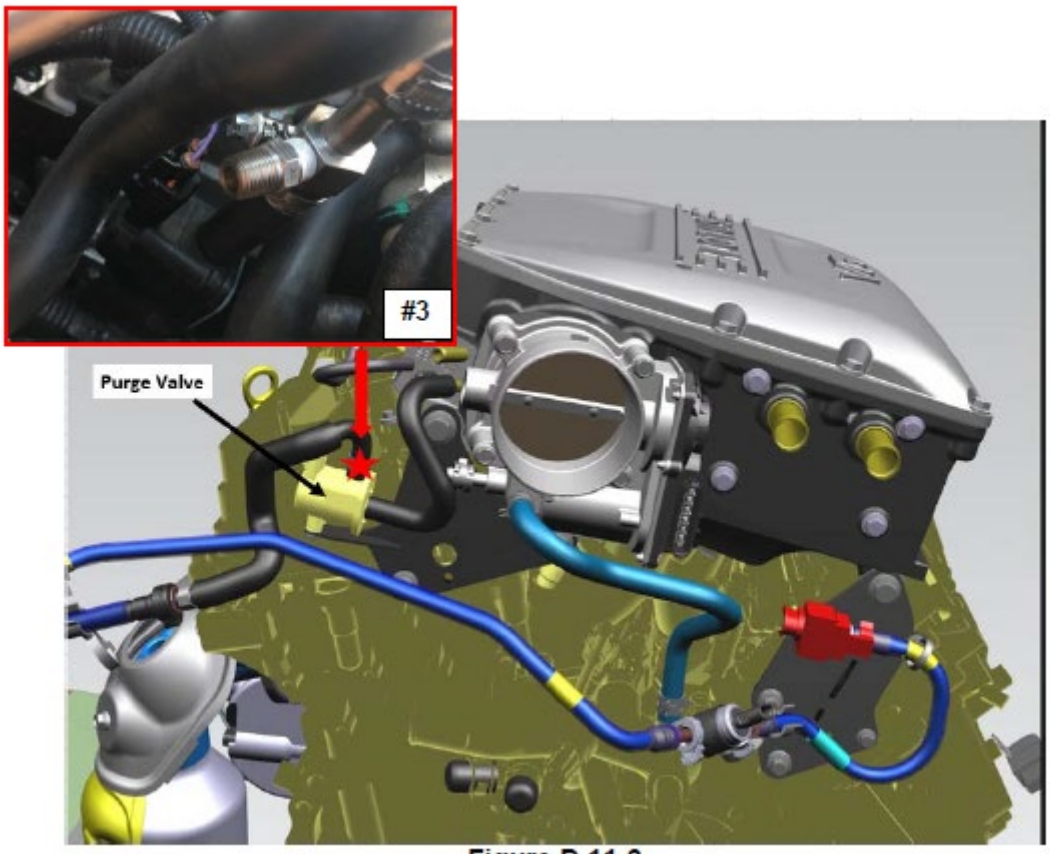
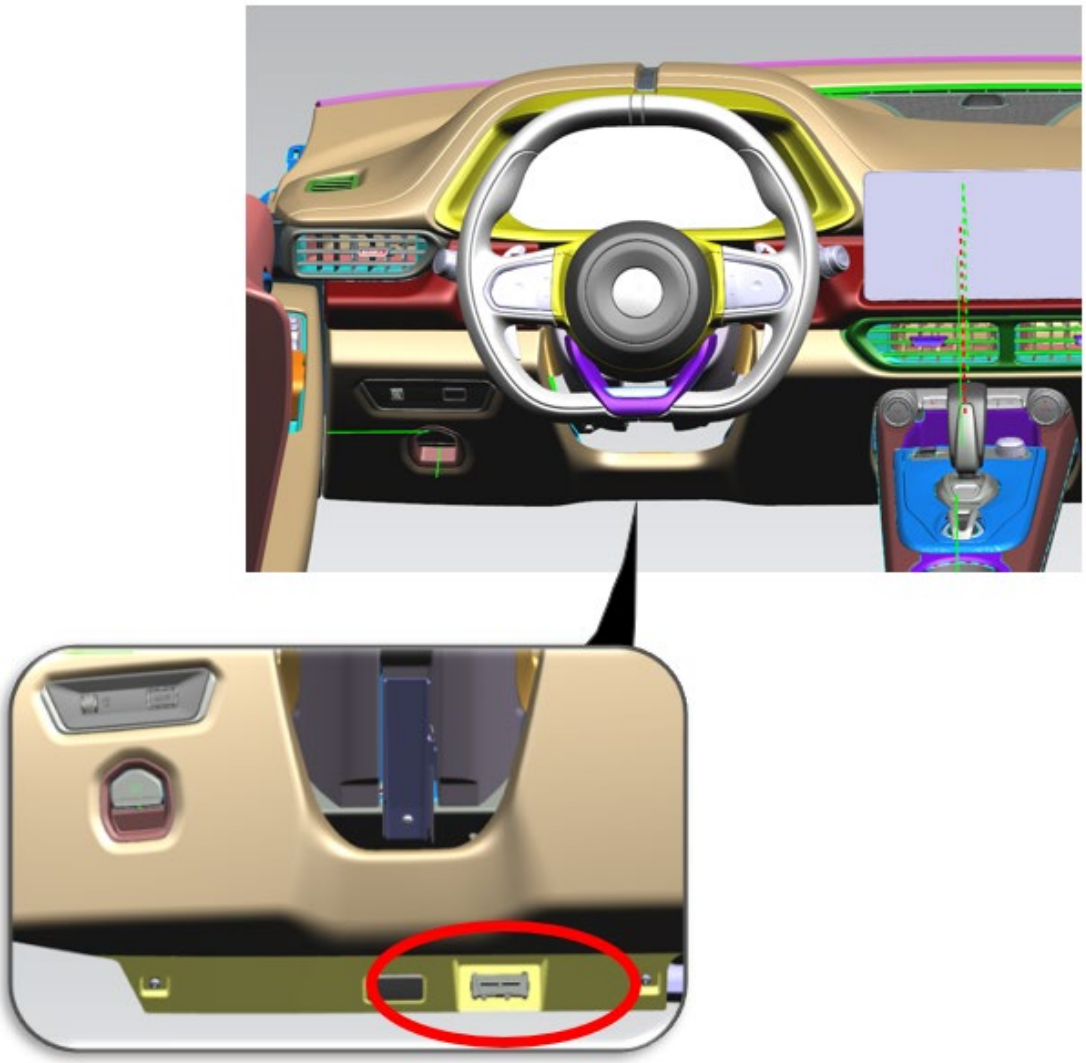



**Figure D.11-2**

## Attachment 7 Emira LHD Diagnostic Link Connector



## 10. DESCRIPTION OF ALTERNATE FUEL VEHICLES

Lotus Cars Ltd offers no alternate fuel vehicles for sale.

## 11. EMISSIONS COMPONENTS, AUXILIARY EMISSIONS CONTROL DEVICES & EMISSIONS CONTROL STRATEGIES

Please refer to confidential submission.


Lotus Cars Ltd, Hethel, Norwich, Norfolk, England NR14 8EZ Tel: 01953 608000 Fax: 01953 608300

## 12. DESCRIPTION OF VEHICLES COVERED BY CERTIFICATION & TEST PARAMETERS

Durability Group: RLTXGPGNNEV1
Test Group: RLTXV03.5JHB
Evaporative Family: RLTXR0130JHB
Emission Control System:
Eng Code 2GR-3.5S (SC Manual): SFI/SC/2HO2S(2)/2WU-WC/TWC/CAC

| Carline | Model | Veh. Class | C-ratio | Idle RPM | Eng Config/Displace | Eng Code | Valves/cyl | Sales Area | Tire Size | Trans | ETW | Tank Cap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Emira | Emira | LDV | 10.8 | 700 | V6/3.5L | 2GR-3.5S | 4 | 50S | Front: 245/35 ZR20 Rear: 295/30 ZR20 | M6 | 3625 | 62.0 L |

### 12.1. Test Parameters

#### 12.1.1. Starting procedure

**Attachment 8 – Starting procedure**

**STARTING AND DRIVING**

**Starting the Engine**
- Ensure the keyfob is in the front seat area.
- Manual vehicles: Check that the transmission is in neutral and depress the clutch or brake pedal, see page 188.
- Automatic vehicles: Select P - Park or N - Neutral and apply light foot pressure to the brake pedal, see pages 189 and 195.

- Lift the rear of the START/STOP ENGINE button flip cover.
- Press and release the START/STOP ENGINE button, the autostart function will operate the starter motor until the vehicle starts.

**WARNING:** To maintain vehicle control, ensure that the driving seat, steering wheel and door mirrors are adjusted correctly.

**WARNING:** If necessary, adjust the driving seat to ensure that the brake pedal can be fully depressed.

**WARNING:** Ensure that you and any passenger in the vehicle fastens their seatbelt before driving.

**WARNING:** Never remove the keyfob from the vehicle or press the START/STOP ENGINE button when the vehicle is moving. This could stop the engine and cause an accident.

**CAUTION:** Do not accelerate a cold engine immediately after starting. Oil may not lubricate all engine components and could cause engine damage.

**Emergency Starting**
A message is shown in the driver display if the keyfob battery is low and cannot be detected.

**Key not in car**

If this message is shown and the engine will not turn over then:
- Place the keyfob in the recess towards the rear of the storage area within centre console arm rest.
- Press the start button.
- The alarm siren will silence and the alarm is deactivated.

### 12.1.2. EPA Standard Shift Speeds (Manual Transmission)

15 – 25 - 40 – 45 – 50 mph

### 12.1.3 Shift schedule (Manual Transmission)

ID: FT6, H

### 12.1.4 RLHP Information

RLHP information, including coefficients, generated by coast-down procedure in accordance with SAE J2263:

Durability Group: RLTXGPGNNEV1
Test Group: RLTXV03.5JHB

| Carline | Model Code | Engine Code | Trans Type/Code | Curb Weight | LVW | ETW | Axle Ratio | N/V | Tyre Size | Tyre Mfr. | Tyre Model | Coastdown Time | RLHP @ 50mph | Target Coeff 70F (lbf) | | | Target Coeff 20F (lbf) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | A | B | C | A | B | C |
| 8 | 11 | 1 | M6 | 3225lbs | 3391lbs | 3625lbs | 1st - 4th: 3.777<br>5th - 6th: 3.238 | 35.5 | Front: 245/35 ZR20<br>Rear: 295/30 ZR20 | Michelin | PS CUP 2 | N/A | 14.5 | 37.419 | 0.55691 | 0.01741 | 41.1609 | 0.612601 | 0.01915 |

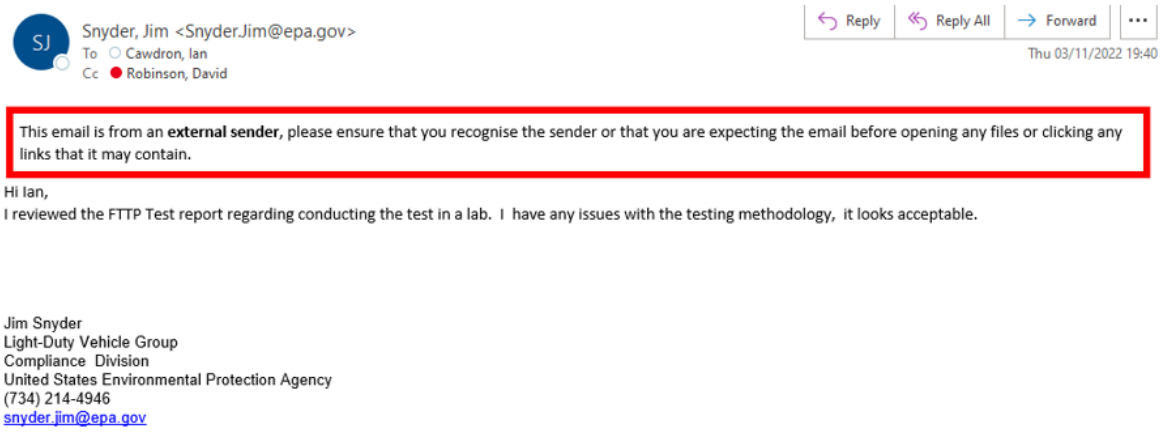
Test Report References:

Emira MT:  IDIADA LME2203014_01

### 12.1.5 FTTP

Lotus conducted FTTP testing at Highly Marelli UK Limited. This was presented to the EPA (Lotus Emira FTTP Test Report Highly Marelli CWT_290922) and approval was granted November 3rd 2022.

**Attachment 9 – FTTP Approval**



Snyder, Jim <Snyder.Jim@epa.gov>
To Cawdron, Ian
Cc Robinson, David

Reply | Reply All | Forward | ...
Thu 03/11/2022 19:40

This email is from an **external sender**, please ensure that you recognise the sender or that you are expecting the email before opening any files or clicking any links that it may contain.

Hi Ian,
I reviewed the FTTP Test report regarding conducting the test in a lab. I have any issues with the testing methodology, it looks acceptable.

Jim Snyder
Light-Duty Vehicle Group
Compliance Division
United States Environmental Protection Agency
(734) 214-4946
snyder.jim@epa.gov

### 12.1.6 Canister Loading

As per EPA process.

## 13. VEHICLES PRODUCED FOR US SALE

Please refer to confidential submission.

## 14. STATEMENT OF COMPLIANCE and REQUEST FOR CERTIFICATE OF CONFORMITY

### 14.1. Statement of Compliance

Lotus Cars Ltd states that any element of design, system, or emission control device installed on or incorporated in Lotus Cars Ltd's new motor vehicles or new motor vehicle engines for the purpose of complying with standards prescribed under section 202 of the Clean Air Act, will not, to the best of Lotus Cars Ltd's information and belief, cause the emission into the ambient air, pollutants in the operation of its motor vehicles or motor engines which cause or contribute to an unreasonable risk to public health welfare except as specifically permitted by the standards prescribed under section 202 of the Clean Air Act. Lotus Cars Ltd further states that any element of design, system, or emission control device installed or incorporated in Lotus Cars Ltd's new Motor vehicle engines, for the purpose of complying with standards prescribed under section 202 of the Clean Air Act, will not, to the best of Lotus Cars Ltd's information and belief, cause or contribute to an unreasonable risk to public safety.

The term pollutant means:

a. Diesel Particles
b. Nickel
c. NMT combustion products
d. Ammonia
e. Sulphates
f. Hydrogen sulphide
g. Hydrogen cyanide
h. Ruthenium combustion products
i. Nitrosamines

or any other pollutant which Lotus Cars Ltd has identified which can reasonably be expected to be emitted from these vehicles. All vehicles have been tested in accordance with good engineering practice to ascertain that such test vehicles meet the requirement of this section for the useful life of the vehicle.

The test vehicles, with respect to which data are submitted, are in all material respects as described in the application for certification and have been tested in accordance with the applicable test procedures utilising the fuels and equipment described in the application for certification. They meet the requirement of such tests, and on the basis of such tests, they conform to the requirements of the regulations in 40 CFR, Part 86, Subpart S.

The vehicles for which certification is requested conform to the requirements in 86.1810-17 (a) and the description of the tests performed to ascertain compliance with the general standards in 86.1810-17 (a) and the data derived from such tests are available.

The testing described under 86.1824-08 has been designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under 86.1848-10 will meet the evaporative emission standards in 86.1811-17 for the useful life of the vehicle.

## 14.2. Request for Certificate of Conformity

This Part 1 submission from Lotus Cars Ltd (Lotus) constitutes a final application and the request for the issue of a Certificate of Conformity for the following Test Group:

| **Test Group** | **Standards** | **Sales Area** |
|---|---|---|
| RLTXV03.5JHB | Tier 3 Bin 125 | Federal |
| | LEV III ULEV 125 | California |

All vehicles within this test group comply with all applicable regulations contained in 40 CFR Part 86 and with the compliance statements detailed in Sections 8 & 14 of this submission.

If you have any questions regarding this submission, please contact the undersigned.

Yours sincerely

David Robinson
Lead Engineer
Type Approval Department
Lotus Cars Ltd
Tel: +44(0)1953 608000
Email: drobinson@lotuscars.com

## 15. OTHER INFORMATION

### 15.1. Certification Fee Payment

One payment made for RLTXV03.5JHB Emira ($32,726).

**Attachment 10 – Fee Filing Form**

**US EPA Fee Form**

Help and EPA Instructions

* Required Field

General Information

Date: 07/31/2023

Process Code *

Submit New Fee Filing Form

Manufacturer Code *

LTX

Manufacturer Name *

Lotus Cars Ltd

Contact Name *

David Robinson

Contact Email Address *

drobinson@lotuscars.com

Contact Phone *

00441953 608000

Calendar Year complete application submitted to EPA *

2023

PLEASE NOTE: These fees apply to complete certification applications received by EPA from January 1, 2023, through December 31, 2023. The applicable fee is determined by the calendar year in which the complete certification application is received, not the model year.

Engine Family / Evaporative Family / Test Group *

RLTXV03.5JHB

**Certificate Request Type (Industry Sector Code)**

Certificate Request Type *

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

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

ICI VIN Number (Required for ICIs Only)

Do you qualify for a Reduced Fee? *

No

**Payment Information**

Amount Owed

$32,726.00

Payment Type *

Offline Wire

## Attachment 11 - Certification Fee Payment

| **Payment Information** | |
|---|---|
| Status: | Despatched |
| Date registered: | 04/09/2023 at 11:48 |
| Registered by: | csmouton |
| Transaction reference: | 51342824 |

| **Payment Details** | |
|---|---|
| Debit account: | |
| Account alias: | |
| Payment date: | 05/09/2023 |
| Payment currency & amount: | USD 32,726.00 |
| Indicative debit amount: | USD 32,726.00 |
| Debit account reference: | RLTXV03.5JHB |
| Destination country: | UNITED STATES |
| Priority: | SWIFT |
| Payment method: | Electronic |

| **Beneficiary Details** | |
|---|---|
| Beneficiary name: | Motor Vehicle & Engine Compliance |
| Beneficiary customer address: | |
| SWIFT/Bank Identification Code(BIC): | FRNYUS33XXX |
| Beneficiary account number: | 868010099013 |
| Indicative credit amount: | USD 32,726.00 |
| Credit Account Reference: | Lotus Cars Ltd (Code LTX)<br>RLTXV03.5JHB (Test Group) |

## 16. EXHAUST SYSTEM STATEMENT

Lotus Cars Ltd attests that the exhaust system for the 2024MY Engine Family RLTXV03.5JHB has been analysed and designed to provide a durable and leak free exhaust system for the whole vehicle life. The exhaust system components, up to post catalyst joint, are 100% leak free tested at the component supplier. The exhaust system design is based on ease of installation and to enable repairs to be performed with commonly available tools to provide and maintain a leak free status.