APPLICATION FOR CERTIFICATION

2017 Model Year

PART 1

HRMAV0.00MDP
APPLICATION FOR CERTIFICATION

Part 1

2017 Model Year

Durability Group:
HRMAEEVNNEV1

Evap. Family: N.A.

Test Group: HRMAV0.00MDP

Durability Group Description: Battery Electric Vehicle

Test Group Description: PC/LDV

Application Standards
Federal: Tier 3 Bin 0

Vehicles Covered
Concept_One (AWD, BEV)

Vehicle Tested:
Concept_One V39110HF7F2AB8004
Charge Depletion Test # 1B_1702010_004

Range Test Procedure:
The Multi-Cycle Range and Energy Consumption Test (MCT) SAE J1634 test procedure consists of four UDDS cycles and two HWFET cycles in a specified sequence including mid-test and end-of-test constant speed “depletion phases”

Application date: April 4, 2017

Manufacturer Requested Response Date May 14, 2017

For Questions, Contact Consultant:
Ed Ponagai (517) 414-2145
or
Rimac Automobili Contact:
Mirna Ristovski
(385) 91 336 113

All testing completed - Unconditional Cert Request according to §86.1835-01 (d)
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1.0 Correspondence and Communications

1.10 Mailing information

Name and Address of the person to whom the Certificate and the Executive Order should be mailed

Rimac Automobili d.o.o.
Mirna Ristovski
Documentation Engineer
Ljubljanska 7
10431 Sveta Nedelja
Croatia

Corporate Name and Address that should appear on the Certificate of Conformity and on the Executive Order

Rimac Automobili d.o.o.
Ljubljanska 7
10431 Sveta Nedelja
Croatia

Primary Certification contact in USA:
Name: Edward Ponagai (Consultant)
127 Castlewood Dr.
Brooklyn, MI 49230

Phone Number: 517 / 414-2145
Fax: 517 / 592-5895
E-Mail-Address: ed@vehee.com
1.20 Certification Information and Responsible Official

Persons authorized to communicate with EPA:

<table>
<thead>
<tr>
<th>Name</th>
<th>First Name</th>
<th>Area of Responsibility</th>
<th>Phone Number</th>
<th>Email</th>
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<tr>
<td>Rima</td>
<td>Mate</td>
<td>CEO</td>
<td>..........................</td>
<td><a href="mailto:mate@rimac-automobili.com">mate@rimac-automobili.com</a></td>
</tr>
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<td>Monika</td>
<td>COO</td>
<td>00385 91 300 2703</td>
<td><a href="mailto:monika@rimac-automobili.com">monika@rimac-automobili.com</a></td>
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</tr>
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<td>Edward</td>
<td>Consultant</td>
<td>(517) 414-2145</td>
<td><a href="mailto:ed@vehee.com">ed@vehee.com</a></td>
</tr>
</tbody>
</table>

The preceding company representatives can be reached by mail:

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10431 Sveta Nedelja
Croatia

1.30 Name of agent for service located in the United States

Vehicle Environmental Engineering, Inc.
Edward Ponagai (Consultant)
127 Castlewood Dr.
Brooklyn, MI 49230
(517) 414-2145
ed@vehee.com
2.0 Confidential Information

2.10 Rimac Automobili d.o.o. considers sections 2.00-20.00 confidential. All pages constitute confidential business information and trade secrets of Rimac Automobili d.o.o.

DURATION OF CONFIDENTIALITY

FOI Application Until issuance of Certification of Conformity
CBI Application Permanent

Anyone who gets in touch with this document and information is applied the confidentiality

ALL PORTIONS OF THIS DOCUMENT, AND ALL INFORMATION CONTAINED HEREIN, ARE DEEMED CONFIDENTIAL INFORMATION OF RIMAC AUTOMOBILI D.O.O.

Use, publication or release of this confidential information by unauthorized persons is not permitted without the express written consent from Rimac Automobili d.o.o.

2.20 Test Vehicle Selection

Make & Model: Rimac, Concept_One
Test Group: HRMAV0.00MDP
Displacement: 0.00
Fuel: Electricity
Vehicle Class Covered: PC/LDV
Emission Standards Class: Tier 3 Bin 0
Test Vehicle ID: V39110HF7F2AB8004
Configuration #: 1
Engine Code: AA1
Transmission: Automated Manual-Selectable, 2nd gear standard mode, 1st gear requires manual select
Shift Schedule: N.A.
ETW (lbs): 4750
GVWR: 4850
Engine Rated hp: 1088
Axle Ratio: 1:1
N/V: 52.6
Drive Wheel Configuration: AWD
Test Mode: 2 WD
Tires: Front - 245/35R20, Rear - 295/30R20
Evaporative/Refueling Family: N.A.
Rechargeable energy storage system: Refer to section 11.30
Capable of off-board charging: Refer to section 11.80

One manufacturer vehicle configuration - "Worst case" test vehicle selection does not apply.
2.30 Test Parameters

Rimac applied good engineering judgment to remove the two front drive shafts prior to conducting SAE J2263 Road Load Measurement Using Onboard Anemometry and Coast-down Techniques.

**EV Electric Range Test Sequence for the Concept_One**

The Multi-Cycle Range and Energy Consumption Test (MCT) SAE J1634 test procedure consists of four UDDS cycles and two HWFET cycles in a specified sequence including mid-test and end-of-test constant speed “depletion phases” shall be followed for all EV testing.

<table>
<thead>
<tr>
<th>Curb Weight (lbs)</th>
<th>Gross Weight (lbs)</th>
<th>Equivalent Test Weight (lbs)</th>
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<td>4561</td>
<td>4850</td>
<td>4750</td>
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</table>

Dynamometer loading Information, 48 inch, single roll electric dynamometer

Vehicle drive system: AWD, tested in rear 2 WD

Transmission: Automated Manual-Selectable, 2nd gear standard mode, (e.g. automated manual with paddles) 1st gear requires manual selection

Transmission test mode: Automated, 2nd gear standard mode

Tires, only tires available: Pirelli P-Zero
Front - 245/35R20 Serv. Desc: 95Y XL, UTQG: 220 AA A, DOT XT 52 V174

Tire Pressure: 34.8 psi.

Electric Dynamometer Target Coefficients:

<table>
<thead>
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<tbody>
<tr>
<td>73.42</td>
<td>0.2787</td>
<td>0.018741</td>
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</table>

RLHP @ 50mph: 2.2Kw

ETW (lbs): 4750

Regenerative braking setting: Regenerative on throttle set to high is the default mode set in the factory and the vehicle is delivered to the customer in that mode. This is the recommended regenerative mode under normal circumstances by a typical driver and this is how the vehicle was tested.
Electric Dynamometer Set Coefficients:

<table>
<thead>
<tr>
<th>A [ lbf ]:</th>
<th>B [ lbf/mph ]:</th>
<th>C [ lbf/mph² ]:</th>
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<tbody>
<tr>
<td>36.057</td>
<td>0.75157</td>
<td>-0.003264</td>
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</tbody>
</table>

For complete vehicle description, refer to Vehicle information submitted to the Verify information system or to Summary Sheet enclosed at 15.0 of this Application. Selection of vehicles carried out according to 40 CFR § 86.1828-01(a).

2.40 Vehicle Test Settings

To change the vehicle settings, select “Settings” on the touch screen display and then select “Overview”. Please make sure the general settings are as follows:
- Creep: OFF
- Suspension: LOW
- Regen with throttle: HIGH

For testing, a custom vehicle mode should be defined, by tapping on “Custom 1” in the settings>Overview menu. Please make sure the Custom mode settings are as follows:
- Torque Vectoring: OFF
- Gearbox: COMFORT
- Steering: COMFORT
- Throttle Response: DIRECT
- Torque distribution: Front 0%, Rear 100%
- Brake balance: Front 50%, Rear 50%
- Kers with brake: 100%

When the setting have been set up as defined above, tap Save.

Before starting the test, turn the Mode knob on the central console so that the vehicle is in “Custom 1” mode. Check if the vehicle is in the correct mode by looking at the cluster display – the current mode is displayed in the center of the screen, above the range estimation bar and below the speed readout.

At -20 seconds of the UDDS press the brake pedal and the power on button, the vehicle will enter Drive ready mode. When in Drive ready mode, the vehicle can be in Park or Neutral mode.

Once the vehicle is started, the Instrument cluster will display the vehicle status on battery power, doors, lights, current driving mode and selected gear.

The official end of test criteria is when the vehicle is unable to maintain the drive trace, error occurs (-two miles per hour with 1 second of given time), per SAE J1634.
2.50 Traction Control

There is a combination of vehicle modes and button presses which disables the traction control system. Please follow these steps:

1. On the settings screen, define a custom mode. Make sure that Torque Vectoring is off. set regen balance to 50%, KERS to 100% and front and rear torque to 50%.
2. Turn the Mode knob on the central console so that the custom mode you defined is selected as the active mode.
3. Switch the vehicle into neutral gear, then turn on the powertrain by pressing the main central console button.
4. Switch the vehicle into manual gear, then press the right gearshift paddle to make sure you are in second gear.
5. Press the brake pedal.
6. Turn the TV knob on the central console full left (the IVI display and cluster display will show TV mode: Snow).
7. Turn the TV knob on the central console full right (the IVI display and cluster display will show TV mode: Track).
8. Turn the TV knob on the central console full left (the IVI display and cluster display will show TV mode: Snow).
9. Turn the TV knob on the central console full right (the IVI display and cluster display will show TV mode: Track).
10. The cluster display will show a yellow vehicle icon with skid marks under it, along with the word OFF.

As long as the vehicle remains in a custom mode and in manual gear, the traction control system will remain disabled. If the powertrain is turned off, the vehicle will exit manual gear. All the settings are remembered by the vehicle except the traction control setting and manual gear. They will have to be manually adjusted every time the powertrain is turned off. Make sure traction control is disabled by checking the indicator light described in step 10, and then press the right gearshift paddle to make sure the transmission is in second gear.

2.60 Test Instructions

When battery is fully charged disconnect the charger just prior to moving the vehicle to the test cell site.

Charge time: Minimum charge time of 12 hours 240V AC continuous charge.

Prior to Test, all accessories shall be turned off for the test.

Fixed speed fan turned on at start of test.

Hood open during UDDS, HFEDS, and CSC.

No battery charger connected during UDDS, HFEFS, or SCS.
Hood closed/Vehicle cooling fan off, engine off and in park during 15 sec, 10 minute, and 30 minute soak

2.70 Projected EPA Annual Model-year Sales:

3.0 Facilities, Equipment and Test Procedures

3.10 Test Facility: IDIADA Automotive Technology SA, Equipment comply with the related regulations, including 40 CFR Subpart B, §86.108-00(b)(2) [Oct. 22, 1996].

3.20 Proving Grounds: FT Techno of America, LLC Conducted road-load coast down testing SAE J2263 procedure Rimac applied good engineering judgment to remove the two front drive shafts prior to conducting SAE J2263 Road Load Measurement Using Onboard Anemometry and Coasting Techniques.

3.30 Equipment: 48 inch, single roll electric dynamometer

3.40 Range Test Procedure:

Range Test Procedure: The Multi-Cycle Range and Energy Consumption Test (MCT) SAE J1634 test procedure consists of four UDDS cycles and two HWFET cycles in a specified sequence including mid-test and end-of-test constant speed “depletion phases”. The range and efficiency values are estimated by applying a correction factor of 0.7 to the UDDS and HWFET results to estimate the effect of the three supplementary cycles.

3.50 Regenerative Braking:

The 4-wheel regenerative carbon-ceramic braking system braking delivers up to 400 kW. The driver can chose to disable regenerative braking and use friction brakes only. The throttle-off regenerative braking function can be adjusted separately.

Enabled – regenerative with throttle is set to high and regent torque is set to 100%. With this setting, the vehicle is maximally braking regenerative and minimally using hydraulic brakes during deceleration. This setting is providing maximum energy returned to the battery pack.

Regenerative on throttle set to high is the default mode set in the factory and the vehicle is delivered to the customer in that mode. This is the recommended regenerative mode under normal circumstances by a typical driver.
3.60 **Battery and Vehicle Pre-Conditioning Procedures:**

The HV battery and vehicle does not require any pre-conditioning to enable the vehicle system. However, Rimac followed CD-15-4 and accumulated 4,528 miles on the vehicle and tires prior to conducting J2263 testing.

3.70 **Procedure to Determine Mass Emissions of Fuel Fired Heater**

Not applicable, since Fuel Fired Heater not offered for this vehicle.

3.80 **Special Test Instructions:**

Please contact Rimac Automobili Homologation Department for instructions on vehicle setup required for testing on a 2WD dynamometer.

Please contact Rimac Automobili Homologation Department for additional instructions on attaching battery state of charge (SOC) measurement equipment for testing or set-up.
There is only one vehicle configuration in the test group certified to Tier 3 Bin 0.

**Evaporative Family:** N.A.
**Test Group Name:** HRMAV0.00MDP
**Engine displacements covered:** Electric
**Arrangement and number of cylinders:** Electric
**Vehicle class covered:** LDV
5.0 Durability Group Description

- Durability Group Name: HMAEEVNNEV1
- Combustion Cycle: N.A.
- Engine Type: Front motors 500 kW Rear motors 600 kW Electric
- Fuel Used: Electricity
- Basic Fuel Metering System: N.A.
- Catalyst Construction: N.A.
- Battery Manufacture: Refer Section 11.30
- Battery Chemistry: Refer Section 11.30
- Battery Capacity: Refer Section 11.3.1
- Battery Self Discharge Information: Refer Section 11.3.2
- Battery Thermal System: Refer Section 11.3.3
- Battery Disposal Plan: Refer Section 11.3.5
- Battery Duty Cycle Usage: 120/240V 15A/32A
- Battery Construction: Refer Section 11.30
- Durability Vehicle: 7F2AB8004

6.0 Evaporative/Refueling Family
- Not Applicable

7.0 OBD System Description
- Not Applicable

8.0 AECD Description
- Not Applicable

9.0 Maintenance

9.10 Test Vehicle Scheduled Maintenance:
- Not applicable (same as “Recommended Customer Maintenance Schedule” in next section 9.20).

9.20 Recommended Customer Maintenance Schedule
- The Maintenance Schedules and the required maintenance intervals are located in the Owner's manual and Warranty and Service Booklet.
9.30 **Lubricants and heater fuels, if any.**

Fuel Fired Heater not applicable on this vehicle

<table>
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<tr>
<th>COMPONENT</th>
<th>CAPACITY</th>
<th>MAKE</th>
<th>TRADE NAME</th>
<th>TYPE</th>
<th>VISCOSITY</th>
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<tr>
<td><strong>FRONT MOTOR LUBRICANT</strong></td>
<td>2.9</td>
<td>Fuchs</td>
<td>TITAN ATF 6000 SL (Dextron VI)</td>
<td>Semi-synthetic</td>
<td>12,000 cP @ -40°C (-40°F)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>6.1 cSt @ 100°C (212°F)</td>
</tr>
<tr>
<td><strong>REAR MOTOR LUBRICANT</strong></td>
<td>3.2 litres</td>
<td>Fuchs</td>
<td>TITAN ATF 6000 SL (Dextron VI)</td>
<td>Semi-synthetic</td>
<td>12,000 cP @ -40°C (-40°F)</td>
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<tr>
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<td></td>
<td>6.1 cSt @ 100°C (212°F)</td>
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<td><strong>FRONT GEARBOX LUBRICANT (EACH)</strong></td>
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<td>Fuchs</td>
<td>TITAN CYTRAC LD SAE 75W-80</td>
<td>Synthetic</td>
<td>147,000 cP @ -40°C (-40°F)</td>
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<td>9.2 cSt @ 100°C (212°F)</td>
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<td><strong>REAR GEARBOX LUBRICANT (EACH)</strong></td>
<td>1.8 litres</td>
<td>Fuchs</td>
<td>TITAN CYTRAC LD SAE 75W-80</td>
<td>Synthetic</td>
<td>147,000 cP @ -40°C (-40°F)</td>
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<td></td>
<td></td>
<td></td>
<td>9.2 cSt @ 100°C (212°F)</td>
</tr>
<tr>
<td><strong>SUSPENSION HYDRAULIC LIFTING SYSTEM AND GEARBOX SHIFTING SYSTEM</strong></td>
<td>1 L</td>
<td>Ravenol</td>
<td>TS 32</td>
<td>Mineral</td>
<td>33.2 cSt @ 40°C (104°F)</td>
</tr>
</tbody>
</table>

Test Vehicle: Same as production lubricants
10.0 Vehicle Emission Control Information (VECI) and Fuel Economy and Environment Labels

10.10 VECI Label Locations:

The Vehicle Emissions Control Information label (VECI) is located on the underside of the hood. Below is this vehicle VECI label.

Label according to 40 CFR § 86.1807-01

10.20 Sample VECI label.

10.30 Sample fuel economy and environment label

The Fuel Economy Label is installed on the passenger side front door window. The label is affixed in such a manner that appearance and legibility are maintained until after the vehicle is delivered to the ultimate consumer. The Monroney Label now includes the EPA/DOT Fuel Economy and Environment Section (GHG, Smog Rating) based on the template published by EPA in May 2011. See below for label template to be used for this vehicle (The real FE label for this vehicle is not available at this time)
10.50 **Statement of Compliance**

This vehicle conforms to US EPA Tier 3 Bin 0 vehicle regulations applicable to 2017 model year new motor vehicles.

Rimac Automobili states that in regard to the vehicles control systems and all related parameters the production vehicles will be identical to the test vehicle that was used for certification testing.

The vehicles (BEV) comply with all the requirements of § 86.1829-15 instead of submitting test data. Tailpipe emissions of regulated pollutants from vehicles powered solely by electricity are deemed to be zero.

Emission Compliance Statements (in lieu of conducting emission testing)

These BEV comply with all the testing requirements of Part 86, subpart S

10.60 **Emission Testing Waiver Statement**

Rimac Automobili d.o.o. provides a statement instead of test data under section § 86.1829-15 Durability and Emission Testing Requirements; waivers. Based on appropriate information on electrical vehicles and on good engineering judgment tailpipe emissions of regulated pollutants from vehicles powered solely by electrical are deemed to be zero.

11.0 **General Technical Descriptions**

11.10 **Description of Propulsion System**

The powertrain is divided into four sub-systems. Each system consists of a separate electric powertrain with an independent inverter, motor and gearbox for each wheel.

Propulsion system consists of a high voltage battery pack and two drive units.

The front drive unit contains two independent electric motors, each driving one wheel through a single speed gearbox. Each motor is controlled through a drive inverter.

The rear drive unit contains two electric motors, each driving one wheel through a two speed and double clutch gearbox. The motors are also controlled by two drive inverters. The gearboxes are controlled and synchronized via a hydraulic control system.

The vehicle is equipped with a Lithium Nickel Manganese Cobalt Oxide (LiNiMnCoO2) high voltage battery that is used to power the electric powertrain systems and the vehicle electrical system.

11.20 **Description of Motor**

Type (winding, excitation): Internal Permanent Magnet Synchronous Motors Rotor and stator oil cooling.
Front: High speed dual permanent magnet oil cooled motors, 500 kW peak, 12,000 RPM, up to 97% efficiency. Maximum hourly output: 706 kW, operating voltage: 605 V

Rear: High speed dual permanent magnet oil cooled motors, 600 kW peak, 12,000 RPM, up to 97% efficiency. Rotor and stator oil cooling, maximum hourly output: 706 kW, operating voltage: 605 V

Maximum power: 1088 hp (800 kW)
Maximum torque: 1600 Nm from 0 to 6500 rpm

11.30 Description of Battery

The battery pack is one of the most advanced lithium nickel manganese cobalt oxide (LiNiMnCoO2) high voltage battery packs in the world. Using high performance lithium-ion cells, the battery achieves unmatched power and energy density and enables the long range capability of the vehicle. The battery Power Distribution Unit (PDU) has a replaceable fuse and a set of contactors that are easily accessible from the car trunk. The battery control system consists of the Master Battery Monitoring System (BMS) which controls the contactors; measures pack current and voltages, electrical isolation of the battery from chassis ground and monitors cell brick voltages, module temperatures, and faults from the slave BMS installed on each of the modules. There is a safety disconnect systems in case of a crash.

The battery is designed to deliver 1000 kW or 1MW of power during acceleration and to absorb 400 kW during braking.

The Lithium-ion high voltage battery is used to power the electric powertrain systems and the 12 volt vehicle electrical system.

Type of Cells: Sony US18650VTC5 Lithium Ion Rechargeable Battery
Number of cells: 8232
Number of Battery Modules: 168
Battery Capacity: 127.4 Ah (Amp-hours)
Maximum Battery Voltage: 700
Voltage: 650V nominal
Capacity: 82 kWh
Battery Weight (lbs): 1,080
Battery Specific Energy: 146 Wh/kg for 1C discharge @ 77° F or
154 Wh/kg for 1/3C discharge at 77° F

11.3.1 Battery Charging Capacity

The battery when fully charged contains approximately 82 kWh of energy

On-board charger: 22 kW

DC-Combo fast charger: up to 120kW
Time for full re-charge: 16 hrs @ 120 V/15 A; 5 hrs @ 240V/32A
11.3.2 Self-discharge information

The self discharge of the battery is temperature dependent. We estimate an average of 5% per month.

11.3.3 Description of thermal management system

The battery pack consists of two separate pieces, back pack and tunnel pack. Both are cooled with galden through the pipe system shown below. Battery Monitoring System (BMS) monitors temperatures inside the battery pack, there are 16 temperature sensors. Depending on the values registered from the temperature sensors, the temperature is controlled with the use of the galden pump and cooling compressor.

When the battery temperature is below 81°F (27°C) battery cooling is not required. This temperature is based on the cell with the highest temperature. When the temperature reaches 81°F (27°C) the pump will start the circulation cooling system. When the temperature reaches 86°F (30°C), temperature monitoring of the galden (on the exit of the cooler) will start and the temperature will be maintained according to the diagram shown below.

Temperature regulation is managed through rpm of the compressor. If the temperature is higher than shown below, the freon circulation will be increased to cool the galden. Once the vehicle is powered off, it takes approximately 10 minutes to cool down the battery pack.
11.3.4 Definition of end-of-life

The battery end of life is described as approximately 70% remaining capacity (30% capacity loss) after approximately 10 years of use. The battery pack end-of-life shall be determined by Rimac Automobili Service Center with proper inspection and test methods.

11.3.5 Description of battery disposal plan

The lithium ion battery packs do not contain heavy metals such as lead, cadmium, or mercury. They are exempt from hazardous waste disposal standards in the USA under the Universal Waste Regulations. However, they do contain recyclable materials, and we plan to recycle all battery packs removed from vehicles.

Rimac Automobili highly recommends that all battery packs be taken to Rimac service facilities so that they can be recycled in a safe and efficient manner.

If disposing independently, without return to Rimac, then the owner must assume responsibility for recycling in a safe and legal manner. If an owner does assume this responsibility, Rimac recommends consulting with the appropriate local, state or federal authorities to determine the appropriate methods for disposal and recycling. Keep in mind that disposal regulations may vary dependent on location.
All batteries removed from the vehicle will be collected by any dealer and recycled by the manufacturer.

11.40 Description of Controller/Inverter

There are four inverters of propulsion type in the vehicle. Each inverter containing 250 kW to convert the DC power from the battery to the 3-phase AC required by the motor. They are controlled by the Vehicle Control Unit (VCU).

- DC voltage 50-800 V
- Max DC voltage (non-operating) 900V
- Motor current continuous 450 A
- Motor current peak 600 A
- Output power peak 460 kVA

11.50 Description of Transmission

Automated Manual-Selectable, 2nd gear standard mode, (e.g. automated manual with paddles) 1st gear requires manual selection
Method of control: Hydraulically actuated, electronically controlled
Front: single speed mechanical gearbox
Rear: hydraulically actuated dual speed mechanical gearbox
Maximum vehicle speed in 2nd gear, 190 mph, electronically limited

<table>
<thead>
<tr>
<th>Gear ratios</th>
<th>Internal</th>
<th>Final</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Front gearbox</strong></td>
<td>4.1</td>
<td>-</td>
<td>4.1</td>
</tr>
<tr>
<td>Reverse</td>
<td>4.1</td>
<td>4.1</td>
<td>Reverse</td>
</tr>
<tr>
<td><strong>Transmissions rear</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.54</td>
<td>3.3</td>
<td>8.4</td>
</tr>
<tr>
<td>2</td>
<td>1.24</td>
<td>3.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Reverse</td>
<td>2.54</td>
<td>3.3</td>
<td>8.4</td>
</tr>
</tbody>
</table>

The front gearbox’s are fixed ratio, mechanical, transversally mounted gearboxes consisting of one gear pair per gearbox.

The rear two speed transmissions are hydraulically actuated two clutch shifting system. The transmissions are transversally mounted, each driving one rear wheel independently.

The drive selector is mounted on the vehicle's central counsel, between the two seats. It has five positions; parking, reverse, neutral, drive and manual. The parking position is used to operate the electrically actuated rear gearbox lock. In the automatic mode the transmission is in 2nd gear.

The automated manual transmission can be engaged in manual mode, there are two shifting paddles on steering wheel to operate rear gearbox shifting. Left one shifts to first gear, and right one to second gear.
11.60 **Description of climate control system**

Air conditioning system offers air ventilation, automatic climate control, eco mode, air recirculation, defroster/demister and seat heating. All is controlled through the central display. For ventilation and automatic climate control is integrated control bar through which user can set the desired temperature. Temperature is displayed on the the top of the climate control screen.

There are several available options for the air flow- Body level and defroster/defogger, Body level, Body and foot level, Foot level, Foot level and defroster/defogger and Defroster/defogger air flow.  Eco mode is ECO mode is activated when the automatic air conditioning system is set to mode when the system actually should not be working.

When the interior temperature is higher than the temperature set for heating on the air conditioning system, ECO mode will be activated. When the interior temperature is lower than the temperature set for cooling on the air conditioning system, ECO mode will be activated.

A/C Compressor: electric: power 2160 W, cooling power 6260 W
Passenger Compartment Heater: electric: 2000 W
Air conditioner system is an R134a refrigerant

11.6.1 **Electric Heat Pump- Electric cabin heater**

The heater unit is electric coolant heater using the coolant from front motor cooling circuit. Hot coolant is pumped through the heater core in the ventilation box heating the air. It is using HV electrical energy from main HV battery.

11.6.2 *(Reserved)*

11.6.3 **Climate control system logic**

An electronic control unit controls actuators which direct the air flow from the outside and heat-cores into the interior of the vehicle. The control unit measures the external air temperature, ventilation box temperature, cabin temperature, coolant temperatures and controls all systems based on the user's inputs via the touch-screen interface. Additionally, it takes parameters like HV battery and compressor status into account. The control unit also controls the electric cabin heater and AC compressor.

11.70 **Description of Regenerative Braking System**

Regenerative Braking System is system which uses the generator mode of electric motors and allows energy recovery. Apart from extending vehicle range, the regenerative braking system also causes less wear of hydraulic brake pads and discs. In normal driving it is possible to
recover up to 25% of total spent battery energy. Braking power is limited to 400 kW of regenerative braking.

It is possible to adjust what kind of regenerative braking the driver wants and the amount of braking force produced. There are two situations where regenerative braking acts:

1. Coast Regeneration – (Foot off throttle but not on brake pedal)

The Motor/Generator acts to gradually slow down the vehicle (to simulate a conventional vehicle behavior) with minimum energy recuperated. The system is driver-adjustable through three modes of operation: High, Low and Off.

2. Brake Regeneration – (Foot on brake pedal)

During light brake pedal application, the Motor/Generator slows down the car, without activating the friction brake. With heavier brake pedal application, the conventional friction brakes also come into play. This system is also driver-adjustable. The braking force can be adjusted in 5% increments, from no braking force to maximum allowable braking force.

11.7.1 Control logic

Regenerative Braking works in harmony with hydraulic brakes, hydraulic ABS system and R-AWTV, allows safe braking with minimum braking distance in all conditions. Very precisely motor control allows always maximum braking forces on each wheel. The system monitoring speed signals of each wheel behavior of vehicle and send optimum amount of braking torque to each wheel.

11.7.2 Percentage of braking performed on road by each axle

The front to rear friction brake distribution for the vehicle is approximately 64% Front and 36% Rear at maximum braking of 1.2g.

11.80 Description of charger

There are two on-board chargers in the vehicle connected in parallel providing maximum input current of 32 A. The vehicle is equipped with the industry standard SAE J1772 charge receptacle for both AC (120V) and AC (240V) charging. The vehicle comes with (AC 120V) charging cable. The cable is used to charge the battery and plugs into any standard AC grounded outlet (NEMA 15-40P receptacle).

The vehicle can be charged from an external electric vehicle charging station (EVCS). Charging current can be set up to 32 A.
11.8.1 **Power recharging procedures**

Prior to vehicle charging, the powertrain must be off or the charging will be disabled.

Before connecting the charging cable to the vehicle, connect all necessary cables and plug them into power socket.

Gently press the covers left side of the charging socket on the vehicle, it will automatically open. Press the safety switch of the charging socket to open it. Once it is open, insert the charging connector into the charging socket so the charging starts. Proper charging is signaled by turning the lights on the vehicle (optional). Charging current can be changed through the Central display.

On the vehicles Instrument cluster will appear the screen showing the charging status.
11.8.2 **Power requirements necessary to recharge vehicle**

There are two on-board chargers in the vehicle connected in parallel providing maximum input current of 32 A with input voltage range 100-264 V.

11.90 **Accessories which draw energy from the batteries**

The power electronics module converts high voltage power to the low voltage electrical system and provides 12 V power and current up to 250 amps to support all the vehicle low voltage electrical accessories. The vehicle has an electric air conditioning compressor. The air conditioning compressor is powered by the high voltage battery system.

Power Steering System Electro-hydraulic servo system Voltage: 12V Max current: 80A

A/C Compressor: electric: power 2160 W, cooling power 6260 W
Passenger Compartment Heater: electric: 2000 W

11.9.1 **Other unique features** (e.g. solar panels)

Not Available

11.9.2 **Description of warning system(s) for maintenance/malfunction**

There are two warning systems for malfunction-tell tales and warning message display.

Tell tales are located on the Instrument panel. The lamp illuminates yellow for a minor defect and red for a major fault.

<table>
<thead>
<tr>
<th>Indicator icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Steering function icon" /></td>
<td>Steering function</td>
</tr>
<tr>
<td><img src="image" alt="Brake system malfunction icon" /></td>
<td>Brake system malfunction</td>
</tr>
<tr>
<td><img src="image" alt="Antilock brake system malfunction icon" /></td>
<td>Antilock brake system malfunction</td>
</tr>
<tr>
<td><img src="image" alt="Parking brake icon" /></td>
<td>Parking brake Displayed on the cluster means Parking brake is engaged.</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| ![Traction control active](image) | Traction control active  
Displayed on the cluster means ESC is currently active. |
| ![Traction control turned off](image) | Traction control turned off  
Displayed on the cluster means ESC is inactive. |
| ![Main beam headlamp](image) | Main beam headlamp  
Displayed on the cluster means Main beam headlamp is turned on. |
| ![Dipped beam headlamp](image) | Dipped beam headlamp  
Displayed on the cluster means Dipped beam headlamp is turned on. |
| ![Position lamp (rear)](image) | Position lamp (rear)  
Displayed on the cluster means Position lamp is turned on. |
| ![Rear fog lamp](image) | Rear fog lamp  
Displayed on the cluster means Rear fog lamp is turned on. |
| ![Seat belt](image) | Seat belt  
Seat belt for occupied seat is not fastened. |
| ![Windscreen washing system](image) | Windscreen washing system |
| ![Electric motor engaged](image) | Electric motor engaged |
| ![External cord connected](image) | External cord connected |
| ![Battery charging condition](image) | Battery charging condition |
| ![Propulsion battery failure](image) | Propulsion battery failure |
| ![Battery failure](image) | Battery failure |
| ![Electric motor failure](image) | Electric motor failure |
| ![Limited performance mode](image) | Limited performance mode |
| ![Icy road condition](image) | Icy road condition |
| ![Door(s) ajar-left, right](image) | Door(s) ajar-left, right  
Displayed on the cluster means Doors are opened. |
The tell tales are complemented by more detailed information provided through the Center Display. Once the error/malfunction occurs, there will be a brief description on the Central Display. To return to regular Central display it is required to press the Acknowledged button. More information on error type can be found under the Vehicle icon, Error tab.

![Central Display Image]

11.9.3 **Cut off terminal voltages for prevention of battery damage**

The control electronics inside of the Power Distribution Unit are programmed not to allow the voltage of the battery above or below voltage limits. Upper limit: 4.22 V, Lower limit: 2.7 V

There are two levels of the protection, warning and error. Warnings are provided through the Central display. If the warning is ignored, when error occurs, the main relays will open disabling the entire high voltage system in the vehicle.

12.0 **Starting and Shifting Schedules**

12.1 **Starting Procedure**

The Remote Control Key communicates with the vehicle and is recognized within 65 feet of the vehicle. When the key is within 3 feet of the vehicle, it will unlock the vehicle automatically and the vehicle is ready for starting. The transmission must be in the PARK or NEUTRAL position before you can start the vehicle.

Once the key is recognized, it is needed to follow the instructions displayed
on the Instrument cluster. Press the brake pedal and press the Start button on the Central console.

When the vehicle is powered off and the key is not in use, the vehicle is in *Shutdown mode*. When the key is recognized the vehicle will enter *Hibernation mode*. In this mode the subsystems will begin to initialize, while the displays remain powered off. When unlocking the vehicle through the remote control key, all turning lights will flash and power on button will be flashing. However, but the vehicle will remain in hibernation mode.

The vehicle will move from Hibernation mode to *Awake mode* when the driver opens the doors, by pressing the display or by pressing any button on the Central console. In Awake mode, all displays are powered on and functional and the vehicle can perform all functionalities except driving.

By pressing the brake pedal and the power on button, the vehicle will enter *Drive ready mode*. When in Drive ready mode, the vehicle can be in Park or Neutral mode.

Once the vehicle is started, the Instrument cluster will display the vehicle status on battery power, doors, lights, current driving mode and selected gear.

If the vehicle is in Drive ready mode and the driver powers off the power train, the vehicle will enter Awake mode. Every action performed in Awake mode will reset the Awake mode timer. If there is no action for 10 minutes, the vehicle will move to Hibernation mode. If no action is performed using the remote control key for 2 minutes, the vehicle will move to Shutdown mode. This implies even walking away and approaching the vehicle.

12.2 **Shifting Procedure**

This vehicle uses an automatic shifter rotating button on the center console as in a conventional automatic transmission vehicle (move button to “D” for Drive or “R” for Reverse) and “M” for manual mode. Apply the brakes before placing the transmission into any position.
If in manual mode (M), shifting gears is done by pulling the paddles positioned on the steering wheel. First gear is on the left paddle and second gear is on the right paddle. Shifting from first to second gear is done at approximately 93 mph.

It is important to know that it is not possible to switch driving modes by jumping to desired driving mode. It is necessary to follow the order displayed on the Central console.

13.0 Description of Vehicles Covered by Certification

List of Vehicles
Durability Group: HRMAEEVNNEV1
Test Group: HRMAV0.00MDP

<table>
<thead>
<tr>
<th>Model</th>
<th>Trans.</th>
<th>Engine Code</th>
<th>Fuel</th>
<th>ETW (lbs)</th>
<th>Sales Area</th>
<th>SIL</th>
<th>Battery Capacity (kWh)</th>
<th>Vehicle Class</th>
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<tbody>
<tr>
<td>Concept_One</td>
<td>Auto</td>
<td>AA1</td>
<td>Electricity</td>
<td>4750</td>
<td>FA</td>
<td>N.A.</td>
<td>82</td>
<td>LDV</td>
</tr>
</tbody>
</table>

Description of:
Propulsion system: Refer to section 11.10
Motor: Refer to section 11.20
Battery: Refer to section 11.30
Controller/Inverter: Refer to section 11.40
Transmission: Refer to section 11.50
Regenerative: Braking Refer to section 11.70
Charger: Refer to section 11.80

14.0 Additional Information

14.1 Filing Fee Form
Application for Certification
HRMAV0.00MDP

US EPA Fee Form

General Information:
Date: 03/01/2017
Submit New Filing Fee Form
Manufacturer Code: RMA
Manufacturer Name: Rimac Automobili d.o.o.

Manufacturer Contact:
Name: Hrvoje Puapac
Email Address: hrvoje@rimac-automobili.com
Phone: +385913336139
Calendar Year complete application submitted to EPA: 2017
Engine Family / Evaporative Family / Test Group: HRMAV0.00MDP

Certificate Request Type (Industry Sector Code):
- On-Highway LTV, LTO, NNV, HDV Chassis Cert (Federal) (A, B, D, I, T, V)
- On-Highway HEV, HEV Cert (Federal) (F, H)
- On-Highway LC, MDP, IC, HDV IC (A, B, D, I, T, V)
- On-Highway Motorcycle (C)
- On-Highway TV, TVC, TVC (California-Only) (A, B, D, I, T, V)
- Nonroad I (I)
- Nonroad II (II, I)
- Locomotive (C, G)
- All Nonroad (Recreational, excluding Marine engines) (X, Y)
- All Marine (Including IMC) (A, N, W)
- Component Certification for Evaporative Emissions (P)

IMO Name (Required for Dual US/IMO Marine Only):
ICN VIN Number (Required for ICs Only):
Do you qualify for a Reduced Fee (RF)?
What is the total number of vehicles, engines, or units covered?: 1
What is the aggregate total retail value of the vehicles, engines or units covered?: 1,200,000

Payment Information:
Amount Owed: 12,000.00
Payment Type: Online Credit Card

Comments:
LDV, BEV, Federal Certificate

EPA Form Number 3520-29
OMB Control No. 2060-0545
Approval expires 12/31/2019

The public reporting and recordkeeping burden for this collection of information is estimated to average 20 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (J6227), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any

14.2 Receipt
15.0 Test Results

15.1 EPA Certification Summary Information Report (CSI) (Attached)
16.0 Federal Requirements

16.1 Request for certificate

17.0 (Reserved)

18.0 Application Revisions

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Page Number</th>
<th>Date</th>
<th>Comments</th>
<th>R/C Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>All</td>
<td>April 14, 2017</td>
<td>Initial 2017 MY</td>
<td></td>
</tr>
</tbody>
</table>
Mr. Tom Anderson  
Certification Division  
Mobile Sources Pollution Control  
U.S. Environmental Protection Agency  
2000 Traverwood Drive  
Ann Arbor, Michigan 48105

April 03, 2017

Rimac Automobili d.o.o.  
Ljubljanska 7  
10431 Sveta Nedelja  
Croatia

Dear Mr. Anderson,

Subject: 2017 Model Year PC/LDV/EV Certificate of Conformity Request

Rimac Automobili d.o.o. (Rimac) submits its Part 1 Application for Certification for 2017 model year battery electric powered light-duty vehicles (LDVs) contained in Rimac Federal test group HRMAV0.00MDP. This test group complies with EPA Tier 3 Bin 0 certification.

This Part 1 application for certification has been organized in accordance with the standardized format recommended by EPA via #CD-14-19 (LDV/LDT/ICI/LIMO) subject: “Certification Application Reporting Guidance” dated November 24, 2014. The Test Group complies with all applicable regulations contained in of 40 CFR 86.1844-01 (d) (14) including the provisions of 40 CFR Part 85, 86 and 600. Rimac requests that a Certificate of Conformity be issued for the EV LDV test group listed in this Application for Certification.

A copy of the Certification filing fee is contained in section 14 of the electronic application. All testing has been completed and Rimac requests an Unconditional Cert according to §86.1835-01 (d).

Please contact Ed Ponagai on (517) 414-2145 if you have any questions regarding this submission.

Sincerely,

Mirna Ristovski,  
Documentation engineer  
Vehicle Certification Programs

[Signature]
Application for Emissions Certification Part 2

2017 Model Year

Durability Group:
HRMAEEVNNEV1

Evap. Families:
n.a.

Test Group:
HRMAV0.00MDP

Durability Group Description:
Battery Electric

Test group Description:
PC/LDV

Applicable Standards:
Federal: Tier 3 Bin 0

Carlines Covered:
Concept_One

Issue Date: 04-14-2017

For Questions, Contact:
Ed Ponagai, (517) 414-2145
19.0 Vehicle Emission Control Information Label, Calibration Part Numbers

19.1 VECI Part Number: RA-LAB-010408
19.2 Part Numbers

<table>
<thead>
<tr>
<th>Component</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCU (vehicle control unit)</td>
<td>PP001147</td>
</tr>
<tr>
<td>Slave BMS (battery management system)</td>
<td>PP002084</td>
</tr>
<tr>
<td>PDU (power distribution unit)</td>
<td>PP000081</td>
</tr>
<tr>
<td>BCU (BCUC) central (body control unit)</td>
<td>PP001337</td>
</tr>
<tr>
<td>BCU front/rear:</td>
<td>ECU-0001</td>
</tr>
<tr>
<td>Inverters (INV):</td>
<td>PM007344</td>
</tr>
<tr>
<td>Central Display (CD):</td>
<td>PP002097</td>
</tr>
<tr>
<td>Charger:</td>
<td>PM001656</td>
</tr>
<tr>
<td>Battery Part Number:</td>
<td>PP02458</td>
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</table>

20.0 Calibration Information

Initial Application Calibration

<table>
<thead>
<tr>
<th>VCU</th>
<th>BMS</th>
<th>PDU</th>
<th>BCUC</th>
<th>BCU</th>
<th>INV</th>
<th>CD</th>
<th>Charger</th>
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</thead>
<tbody>
<tr>
<td>PP001147</td>
<td>PP002084</td>
<td>PP000081</td>
<td>PP001337</td>
<td>ECU-0001</td>
<td>PM007344</td>
<td>PP002097</td>
<td>PM001656</td>
</tr>
</tbody>
</table>

21.0 Description of Vehicle Covered by Certification – Refer to Section 2.20

22.0 Final US Sales: Will be update before January 1, 2018

23.0 Service Manuals, Service Bulletins Information provided directly at the time they are available to the public and updated as appropriate throughout the useful life of the vehicle.

Owner’s Manuals and Warranty Booklets provided under separate cover.