



9/13/2020

Mr. Tristin Rojeck
Vehicle Programs and Compliance Division
Environmental Protection Agency
2000 Traverwood,
Ann Arbor, MI 48105

Subject: Request for issuance of a new Certificate of Conformity – Initial application

Tesla, Inc. requests that the EPA issue a Certificate of Conformity for the subject test group.

Attached to this request is the Part 1 Application. Tesla believes that the test group complies with all applicable regulations contained within Title 40 of the CFR, California Amendments to Subparts B, C, and S, Part 86 and Part 88, Title 40 of the CFR and Title 13 of the California Code of Regulations

Vehicle Category:	Light Duty Vehicle (< 8000 lbs. GVW)
Durability Group:	MTSLEEVNNL2S
Test Group:	MTSLV00.0L2S
Summary Sheet No:	NA
Durability Group Description:	NA
Durability Vehicle:	NA
OBD Group:	NA
Test Group Description:	Tesla differentiates test groups based on: 1) battery type, 2) number of drive motors, and 3) vehicle line. L - Lithium Ion Battery 2 - Dual AC induction motors –base version (front / rear) & performance version (front/rear (big)) S - Model S Line of vehicles
Applicable Standards:	FEDERAL Tier 3 BIN 0 & CALIFORNIA ZEV
Carlines Covered by this certificate:	Model S Performance (19" Wheels), Performance (21" Wheels), Long Range Plus

Your early review and issuance of the certificate will be greatly appreciated. If you have any questions, please contact me at our office at (510) 249 8749

Sincerely,

Suraj Nagaraj
Director - Vehicle Homologation

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1 COMMUNICATIONS

1.01 Mailing information

01.01.01 Certification information

Tesla, Inc
3500 Deer Creek Road
Palo Alto, CA 94304

01.01.02 Responsible officials

01.01.03 - Primary Contact

Mr. Suraj Nagaraj, Sr Director- Vehicle Homologation
Telephone 510 249 8749

01.01.04 - Secondary Contact

Al Prescott, VP - Legal
Telephone 240-994-5639

3 FACILITIES, EQUIPMENT AND TEST PROCEDURES

Internal range test reports are on file at Tesla

3.01 Procedure to determine mass emissions of the fuel-fired heater

Not applicable; vehicle not equipped with a fuel fired heater.

3.02 Battery pre-conditioning procedures

The lithium ion battery cells are cycled by the battery cell manufacturer before they are assembled into battery packs. There is no further pre-conditioning necessary.

3.03 Vehicle Configurations and sub configurations

Refer to Appendix 03.03

3.04 TEST PROCEDURES

SAE J1634 (as revised 2012-10) was followed for all Range testing and SAE J2263 (as issued 1996-10) was followed for Road load measurement.

SPECIAL TEST INSTRUCTIONS

- See attachment

04.00 Statement of Compliance

This vehicle conforms to US EPA Federal Tier 3 Bin 0 and State of California regulations applicable to 2021 Model Year new ZEV Light-duty Vehicles

05.00 RESERVED

06.00 MAINTENANCE

6.01 Test vehicle scheduled maintenance

Not applicable.

6.02 Recommended customer maintenance schedule

See Owner Hand Book.

6.03 Lubricants and heater fuels

Heater fuel:

Not applicable

Transmission lubricant:

Capacity

Factory Fill

Make

1.325 litres

Trade name

Exxon Mobile

Type

Dexron VI

Viscosity

Mineral oil

Viscosity

11,500 cP at -40°C (-40°F)

5.8 cSt at 100°C (212°F)

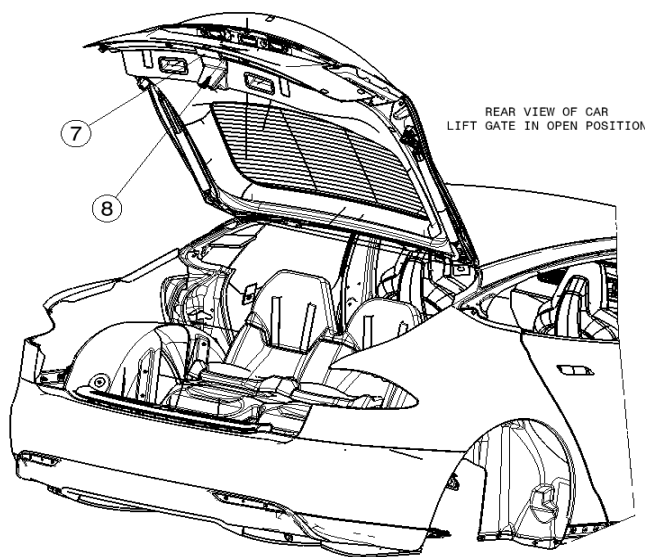
Test Vehicle

Same as factory fill

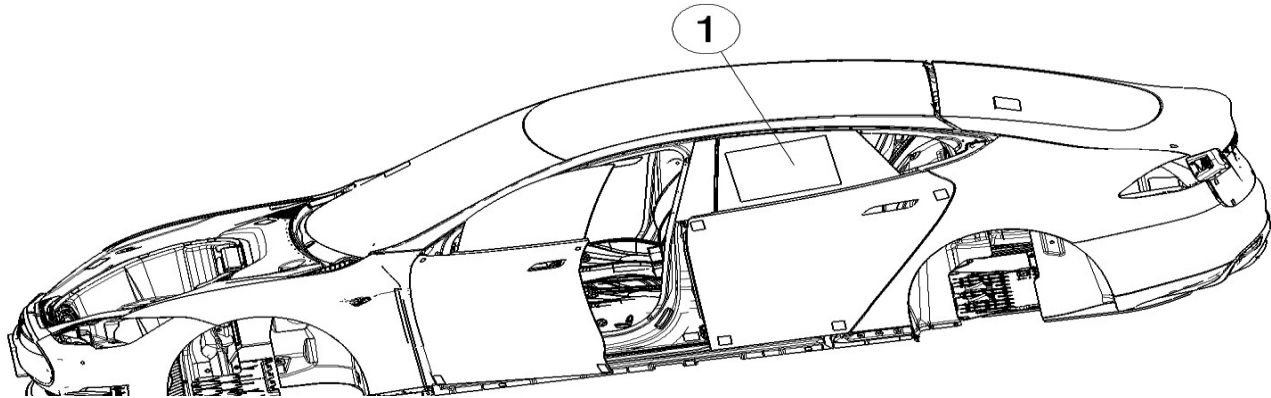
07.00 LABELS

07.01 Label locations

VECI Emission Label



See 07.02



See 07.03

07.02 Emission Control Information label: 2021 Model Year

(Mandated in CFR Title 40, Part 86; §86.1807. Label format agreed with EPA)

VEHICLE EMISSION CONTROL INFORMATION / INFORMATIONS SUR LE CONTRÔLE DES ÉMISSIONS DU VÉHICULE THIS VEHICLE CONFORMS TO U.S. EPA REGULATIONS APPLICABLE TO 2021 MODEL YEAR NEW TIER 3 BIN 0 LIGHT DUTY VEHICLES AND TO CALIFORNIA REGULATIONS APPLICABLE TO 2021 MODEL YEAR NEW ZEV PASSENGER CARS. CE VÉHICULE EST CONFORME AUX NORMES DE L'USEPA APPLICABLES AUX VÉHICULES LÉGERS TIER 3 BIN 0 DE L'ANNÉE-MOÛLE 2021 ET AUX NORMES CALIFORNIENNES APPLICABLES AUX VÉHICULES À ZÉRO ÉMISSIONS DE L'ANNÉE-MOÛLE 2021.	MODEL/MOÛLE : 2021 TESLA MODEL S MOTOR/MOTEUR : 3 PHASE AC TEST GROUP/GROUPE D'ESSAI : MTSLV00.0L2S EVAPORATIVE FAMILY/ FAMILLE DE GAZ D'ÉVAPORATION : MTSLR0000L2S ZERO EMISSION VEHICLE/ VÉHICULES À ZÉRO ÉMISSIONS
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07.03 California Environmental Performance Index label: 2021 Model Year

(Mandated in California Environmental Performance Label Specifications for 2009 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Passenger Cars. Label format agreed with EPA/ CARB)

Model S Long Range Plus - FE Label

EPA DOT Fuel Economy and Environment		Electric Vehicle
Fuel Economy combined city/hwy MPGe city highway kW-hr per 100 miles Driving Range When fully charged, vehicle can travel about... 0 50 100 150 200 250 300 350 Charge Time: 12 hours (240V) ### miles	These estimates reflect new EPA methods beginning with 2017 models. Large cars range from 14 to 111 MPGe. The best vehicle rates 141 MPGe. You save \$##### in fuel costs over 5 years compared to the average new vehicle.	
Annual fuel cost \$###	Fuel Economy & Greenhouse Gas Rating (tailpipe only) 1 10 10 Best This vehicle emits 0 grams CO ₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions: learn more at fuelconomy.gov . Smog Rating (tailpipe only) 1 10 Best	
Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$ 7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at 0.13 per kW-hr. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog. fuelconomy.gov Calculate personalized estimates and compare vehicles		

07.04 Projected sales information (Confidential)

08:00 GENERAL TECHNICAL DESCRIPTION

08.01 DESCRIPTION OF PROPULSION SYSTEM

The Tesla Model S propulsion system consists of two drive units and a high voltage battery pack. Each drive unit contains a traction motor, a fixed gearbox, and the drive inverter.

The Model S front drive unit is connected to the front wheels via a fixed ratio transmission through the independent suspension-equipped front axle.

The Model S rear drive unit is connected to the rear wheels via a fixed ratio transmission through the independent suspension-equipped rear axle.

8.02 DESCRIPTION OF MOTOR(s)

The Tesla Model S frontal motor is a 3-phase AC internal permanent magnet motor utilizing a six-pole, high-frequency design with inverter-controlled magnetic flux.

The rear motor is a 3-phase AC induction motors utilizing a four-pole, high- frequency design with inverter-controlled magnetic flux. Two versions of the motor are available; the Base motor and a sport motor.

8.03 DESCRIPTION OF BATTERIES

The battery packs used in the Tesla Model S is one of the largest and technically most advanced lithium-ion battery packs in the world. Using customized automotive grade lithium-ion cells, the Tesla battery achieves unmatched energy density and enables the long range capability of the vehicle. The low-profile flat packaging enables an efficient and functional occupant area. The battery has a replaceable fuse that is accessible with the battery removed from the vehicle and a set of contactors inside the pack that disconnect high voltage from the positive and negative terminals on the battery pack. To disable contactors from closing during vehicle service, the 12V power feed can be disconnected in the vehicle fuse box. The battery control system consists of the 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 Battery Monitor Boards (BMBs) installed on each of the many modules. The battery is rated at 400V and is capable of delivering in excess of 1000 Amperes. The battery mass is greater than 500 kg.

08.03.01 Battery charging capacity

The battery when fully charged contains the approximate amount of energy based on the type of battery fitted onto the vehicle.

08.03.02 Self-discharge information

The self-discharge rate of the battery is likely to be less than 4% per month.

08.03.03 Description of thermal management system

The Tesla battery pack contains an integrated cooling system to ensure that the individual cells are maintained at, or close to, their optimum operating temperature. Incorporated in the vehicle system is an inline heating element to raise and a chiller to lower the pack temperature, when required.

08.03.04 Definition of end-of-life

The battery pack end-of-life shall be determined by Tesla's local service centers with Proper inspection and test methods.

08.03.05 Description of battery disposal plan

Tesla's 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 Tesla plans to recycle all battery packs removed from vehicles.

Tesla highly recommends that all battery packs be taken to local Tesla service facilities and recycled by Tesla or Tesla authorized agencies, so that the battery packs can be recycled in a safe and efficient manner.

If disposing independently, without return to Tesla, then the owner must assume responsibility for recycling in a safe and legal manner. If an owner does assume this responsibility, Tesla 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.

For more information on the recycling of Tesla custom battery packs, please call Tesla Customer Service at 1-877-79TESLA (1-877-798-3752).

08.04 DESCRIPTION OF CONTROLLER / INVERTER

The drive inverter performs several critical functions in the Tesla Model S including torque control, power and torque limit enforcement, and status monitoring. The drive inverter is an integral part of the drive unit.

08.05 DESCRIPTION OF TRANSMISSION

The Tesla Model S transmission is a fixed ratio, mechanical, transversely mounted gearbox with integral final drive unit (transaxle configuration).

The shift lever is mounted to the steering column. The lever has four detents—one reverse, one drive, and two neutral positions. Selecting either forward or reverse position enables drive current to the motor to generate the appropriate torque. There is no physical reverse gear needed.

In addition, the lever has a park button which is used to operate the electrically-actuated park brake.

8.06 DESCRIPTION OF CLIMATE CONTROL SYSTEM

General Specifications:

The Model S climate control is a Dual Zone system with Automatic Temperature control. The modes include Defrost (Panel, Floor and any combination of these three). The system consists of four panel vents, two front row floor vents, defroster vent, second row floor vents, second row console vents with positive air shut off and turning vane manual control.

08.06.01 Electric cabin heater

The heater unit incorporating a variable speed electric fan is located in the front of the chassis tub with ducting directing the blown air to defrosting, face level and floor level vents in the passenger compartment. The heater element is of the positive temperature coefficient (PTC) type, drawing HV electrical energy from the battery pack High Voltage

08.06.02 Fuel-fired heater

Not applicable

08.06.03 Air conditioning

The Model S air conditioner system is an R134a refrigerant consists of a high voltage electric scroll type with integrated inverter with High Voltage Interlock Loop. The compressor Oil is Poly Olefin Ester oil that is non-conducting.

08.06.04 Climate control system logic

Remote Climate Control Module printed circuit board activates actuators and responds to evaporator air outlet temperature sensor, PTC heater outlet temperature sensor and air duct temperature sensors, as well as user demands from center display.

08.06.05 Tamper resistance of climate control system that includes a fuel-fired heater

Not applicable

08.07 DESCRIPTION OF REGENERATIVE BRAKING SYSTEM

Regenerative braking (RGB) occurs when the driver lifts their foot from the accelerator pedal while the vehicle is moving; the experience is analogous to engine braking on a gasoline-powered car with a conventional manual transmission. The friction braking system of the Tesla Model S is independent of RGB.

The amount of RGB torque generated is proportional to accelerator pedal position – full torque when the accelerator pedal is fully released; less as the pedal is depressed, reaching zero torque when the pedal reaches its neutral torque position (a position that is in fact a function of vehicle speed). The max RGB deceleration also varies depending on vehicle speed. The maximum RGB profile is defined as a target total deceleration rate as a function of vehicle speed. The max RGB profile is tailored to everyday driving conditions, which typically exhibit higher deceleration rates at lower speeds.

When the battery pack is near maximum capacity, regenerative braking function will be limited to ensure the maximum capacity of the battery is not exceeded. Any RGB limiting will be ramped in gradually to allow the driver to adapt to the changing RGB performance. When the battery pack is below 0 degrees, RGB will not be allowed because the batteries are not rated to accept charge below this temperature. Any RGB limiting will be ramped in gradually to allow the driver to adapt to the changing RGB performance. The vehicle notifies the driver of any limits of the regenerative braking function.

08.08 DESCRIPTION OF VEHICLE ELECTRICAL SUPPLY EQUIPMENT (CHARGER)

The Tesla Model S is capable of accepting energy either from a permanent facility installed at the owners location or from many readily available power outlets when ‘on the road’.

The dedicated High Power Connector (HPC) can be purchased separately from the vehicle and a certified electrician will confirm the capabilities of the residential supply circuit at the vehicle owner’s location. Confirmation of a satisfactory residential electrical Supply will lead to the installation of a hard-wired HPC unit, this will expedite vehicle charging at the most efficient rate. The HPC can supply available current up to a maximum of 80 amps and incorporates electronic systems that communicate with the vehicle control systems to indicate the maximum available current so that the vehicle can determine the amount and rate of charge required.

Charging at rates lower than 80A can also be achieved via a mobile connector. The universal mobile connector is included as standard in the purchase of every Model S and is an individual cable that connects the vehicle to any available domestic power outlet and can deliver current to a maximum of 40 amps. The Mobile Connector incorporates the same electronic circuitry as the HPC to communicate with the vehicle and manage the charging process.

The vehicle is also capable of accepting DC current up to 225A from an off-board charger (Supercharger).

08.08.01 Proper recharging procedures

The charging system adjusts automatically to the available AC line voltage, frequency and current, within limits. The charging system in the vehicle works in conjunction with either of the three external charging stations; the permanently installed HPC, the permanently installed supercharger or the portable Mobile Connector.

Anytime the EV Inlet door is opened, the vehicle will prepare to enter CHARGE state. Once the user connects either supply cable to the vehicle, the charging system signals to the vehicle that it is ready to deliver the charge. The vehicle locks the cable onto the vehicle and then indicates that it is ready to accept energy and charging will commence. Failure of any of these steps will result in fault condition and lack of charge.

Prepare to charge state



Charging Indication



If the battery temperature is near or below freezing temperatures, normal charging will not occur. The vehicle will identify this condition and will begin heating the battery coolant and circulating the coolant to raise the battery temperature to enable charge. When the pack temperature rises to a temperature within the allowable charging range, heating will reduce or stop and charging will commence.

08.08.02 Power requirements necessary to recharge vehicle

Model S comes with one on-board charger that is capable of a maximum of 72A

08.10 OTHER UNIQUE FEATURES (i.e. solar panels)

Not applicable; vehicle is not equipped with any such features.

08.11 DESCRIPTION OF WARNING SYSTEM(S) FOR MAINTENANCE / MALFUNCTION

The Tesla Model S is equipped with a tell-tale lamp located in the instrument pack to indicate battery malfunctions; the lamp illuminates yellow for a minor defect and red for a major fault.

The tell-tale is complemented by more detailed information exhibited on the Center Display. An additional driver aid which indicates the nature of the malfunction as well as a wide range of additional vehicle data, such as when maintenance is needed.

08.11.01 Cut-off terminal voltages for prevention of battery damage

The control electronics inside of the Drive Unit and Charger are programmed not to allow the unit to drive the voltage of the battery above or below hard voltage limits. If the battery pack is unable to achieve a desired response from these systems and the voltage reaches above or below a set limit, the two contactors inside the battery pack will open, disabling the entire high voltage system in the car.

8.12 DESCRIPTION OF DYNO MODE

Tesla, Inc. completed the implementation of user interface (UI) features that enable access to our “Dyno Mode” for all users. This feature is required to be enabled to maintain representative driving controls while testing on a chassis dynamometer. Access to Dyno Mode has been introduced at the start of production on October 7th, 2019, and has been deployed to the entire Tesla fleet in version 2019.40 over the month of October 2019.

In order to preserve the proper driving functionality and behavior, Dyno Mode executes the following features:

- Disable Stability Control to ensure no false interaction with the dyno.
- Disable Traction Control to ensure no false interaction with the dyno.
- Disable Active Drive Line Damping to avoid inducing oscillations in the dyno.
- Force the torque split to be as it would be under normal straight-line driving conditions
- Disable Brake Disk Wipe

When the Stability Control and Traction Control systems become faulted, as is the case on a dynamometer where driving is detected but movement is not, regenerative braking is disabled so that unintended braking torque does not lead to loss of traction or control on low friction surfaces. Disabling Stability Control and Traction Control prevents those systems from disrupting regenerative braking behavior, maintaining the most representative driving energy consumption.

Dyno Mode can be activated by the user, according to the following steps:

1. Vehicle must be in Park.
2. While holding down left (turn signal) stalk, press and hold the Tesla "T" logo at the top of the screen.
3. Enter the Dyno Mode activation password, "dynotest".

Dyno Mode can be deactivated by the user by pressing the "Power Off" button within the Safety & Security tab of the UI.

The Dyno Mode feature for installation has been completed in all new production vehicles by October 7th, 2019. Over the month of October, we rolled out this feature to our US fleet, enabling all Tesla vehicles to enter Dyno Mode.

8.13 DESCRIPTION OF COASTDOWN MODE

To engage Coastdown Mode:

1. Press and hold Tesla T to bring up Access Code prompt
2. Type "coastdown"

Vehicle Behavior:

UI will send out a binary signal in the message on the right bus. The thermal controller should consume this message and unconditionally close the louver and turn off the refrigerant system.

Display "COASTDOWN" in cluster where we display other mode info like "VALET" and "CHILL"

Coastdown Mode will turn OFF after drive cycle is complete.

8.14 DESCRIPTION OF ONE-PEDAL DRIVING MODE

Regenerative braking decelerates Model S whenever you release the accelerator pedal when driving. You can choose what you want Model S to do once the driving speed has been reduced to a very low speed (almost at a stop) and both the accelerator pedal and brake pedal are released. While in Park, touch Controls > Driving > Stopping Mode and choose from these options:

CREEP: When close to, or at, a complete stop, the motor continues to apply torque, moving Model S slowly forward (in Drive) or backwards (in Reverse), similar to a conventional vehicle with an automatic transmission. In some situations, such as on a steep hill or driveway, you may need to press the accelerator pedal to continue moving or to prevent Model S from moving in the opposite direction.

HOLD: Maximizes range and reduces brake wear by continuing to provide regenerative braking at speeds lower than with the Creep and Roll settings. When Model S stops, the brakes are automatically applied without you having to put your foot on the brake pedal. Whether stopped on a flat surface or a hill, Vehicle Hold keeps the brake applied, provided your foot remains off the accelerator and brake pedals.

ROLL: When close to, or at, a complete stop, Model S becomes free rolling like a vehicle in Neutral. Therefore, if stopped on a slope, Model S will roll downward. The brake does not engage, and the motor does not apply torque (until the accelerator pedal is pressed).

09.00 RUNNING CHANGE VEHICLE DESCRIPTION

Refer to appendix 09.00, if applicable

10.00 ROAD LOAD DATA

See Verify application

11.00 STARTING AND SHIFTING SCHEDULES

11.01 Starting

The Model S does not have a traditional starter switch and instead has a smart entry system for greater safety and customer convenience. The smart entry system comprises of a smart key, a weight sensor embedded into the driver seat, and the brake pedal. When the driver enters the vehicle with the smart key and sits on the driver's seat, the vehicle controller, attempts to validate the unique key code by reading the key code. If successful interaction between the coded key and vehicle controller occurs, the system deactivates the immobilizer. The vehicle then enters accessory mode analogous to a "ACC" position on a conventional IC engine. In this mode, low voltage (12V) is supplied to the vehicle allowing operation of the radio and other accessories connected to the accessory rail. High Voltage (HV) necessary to enable vehicle propulsion is enabled only by the closing of the contactors, which can only be triggered when the following conditions are both satisfied,

1. Smart key is detected and key code is validated AND
2. Brake pedal is depressed.

By requiring brake pedal activation, along with the appropriate key code, this system ensures the safety of vehicle occupants by not allowing self mobility of the vehicle without the driver providing proper control inputs (i.e., service brake activation) and appropriate driver authorization (i.e., presence of the key code). If either the service brake is not activated or the key code not present, the vehicle controller will not close the connectors and self-mobility is not possible.

If the brake pedal is depressed and the proper key code present, the drive rail will activate and allows the transmission to be shifted out of Park.

11.02 SHIFTING

Not applicable – the vehicle has a single-speed transmission.

12:00 -16:00 RESERVED

17:00 CALIFORNIA REQUIREMENTS

17:01 Statement of Compliance

17.01.01 General Statement

The production vehicles which are subject to registration or sale in the State of California will be, in all material respects, substantially the same in construction as test vehicles which are certified by the California Air Research Board; and will meet all the applicable emissions standards which are promulgated by the California Air Research Board in accordance with Section 43101 of the Health and Safety Code.

Tesla attests that the vehicle emission control label complies with the label durability requirements of the "California Motor Vehicle Emission Control and Smog Index Label Specifications", Title 13, CCR, Section 1965.

17.01.02 Drivability statement

This statement is no longer included in the California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles (as of January 01 2006); as was the case in previous versions.

17.02 Supplemental data and certification review sheets

See attached

17.03 Engineering evaluation of zero evaporative emissions under any and all operating conditions (for vehicles equipped with fuel-fired heater only)

Not applicable; vehicle is not equipped with fuel-fired heater.

17.04 Credits

17.04.01 Description of multi-manufacturer arrangements

Not applicable; Tesla has no such agreements in place.

17.04.02 Credit calculation

Tesla a manufacturer that produces only pure battery electric vehicles is not required to produce a percentage of annual production volume as ZEV's and therefore will earn such credit on all 2013 to 2021, inclusive, model year vehicles. This vehicle is a full function ZEV with a range depending on the battery pack option chosen by the customer. Based on the UDDS of range shown in the table below, all variants will be classified as a Type III ZEV and Under the table in 13 CCR 1962.1(d)(5)(C), this means 2013 to 2021, each vehicle will earn 4 credits or below per vehicle.

Variant	UDDS Range (Miles)	/	Credits per Vehicle
Model S Long Range Plus		567 / 4	
Model S Performance (19" Wheels)		538 / 4	
Model S Performance (21" Wheels)		463 / 4	

17.05 VEHICLE SAFETY

17.05.01 All Information for safe operation of vehicle

Tesla will submit a copy of the finalized vehicle owner's handbook by separate letter when it becomes available.

17.05.02 Information on safe handling of battery system

HANDLING

Do not short circuit, puncture, incinerate, crush, immerse, force discharge, or expose the battery pack to temperatures outside the specified maximum storage temperature range of -20°C to 60°C.

The battery pack has a nominal operating voltage of 400 VDC. The battery pack is sealed in a rigid metal case and its exterior is isolated from high voltage. Handling the battery pack is electrically safe provided the enclosure remains closed.

The battery pack contains hermetically sealed lithium ion cells that contain a number of chemicals and materials of construction. Risk of exposure to electrode materials and Liquid electrolyte will only occur in cases of mechanical or thermal abuse of the battery Pack.

STORAGE

Do not store the battery pack in a manner that allows terminals to short circuit. Do not place near heating equipment, nor expose to direct sunlight for long periods. The battery pack should only be stored in approved packaging and stacked no more than two (2) packages high. To maintain service life, the battery pack should be stored at a state of charge (SOC) of 15 to 50%.

TRANSPORT

Lithium ion batteries are regulated as Class 9 Miscellaneous dangerous goods (also known as "hazardous materials") pursuant to the International Civil Aviation Organization.

(ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air, International Air Transport Association (IATA) Dangerous Goods Regulations, the International Maritime Dangerous Goods (IMDG) Code, European Agreements concerning the International Carriage of Dangerous Goods by Rail (RID) and Road (ADR), and applicable national regulations such as the USA's hazardous materials regulations (see 49 CFR 173.185). These regulations contain very specific packaging, labelling, marking, and documentation requirements. The regulations also require that individuals involved in the preparation of dangerous goods for transport be trained on how to properly package, label, mark and prepare shipping documents.

17.05.03 Description of emergency procedures

HIGH VOLTAGE EXPOSURE

If one of the Tesla products has been visibly damaged or its enclosure compromised, then practice appropriate high voltage preventative measures until the danger has been assessed (and dissipated if necessary).

FIREFIGHTING MEASURES

If a fire or explosion occurs when the battery pack is charging, shut off power to the charger. In case of burning lithium ion fires, flood the area with water. The water may not extinguish them, but will cool the adjacent batteries and control the spread of the fire. CO₂, dry chemical and foam extinguishers are preferred for small fires, but also may not extinguish burning lithium ion batteries. Burning batteries will burn themselves out. Virtually all fires involving lithium ion batteries can be controlled with water. When water is used, however, hydrogen gas may be a by-product which can form an explosive

Mixture with air. LITH-X (powdered graphite) or copper powder fire extinguishers, sand, dry ground dolomite or soda ash may also be used. These materials act as smothering agents.

Damaged or opened cells or batteries can result in rapid heating (due to exothermic reaction of constituent materials) and the release of flammable vapors. Water (and other items listed above) disperses heat when applied in sufficient quantity to a fire. Extended heat exposure can lead to ignition of adjacent cells with a potential complete envelopment of the battery pack if not cooled. An extinguished lithium ion battery fire can re-ignite due to the exothermic reaction of constituent materials from broken or damaged cells. To avoid this, remove sources of ignition and cool the burned mass by flooding with (or immersing in) water. Fire-fighters should wear self-contained breathing apparatus. Cells or batteries may flame or leak potentially hazardous organic vapors if exposed to excessive heat, fire or over voltage conditions. These vapors include HF, oxides of carbon, aluminum, lithium, copper, and cobalt. Additionally, volatile phosphorus pentafluoride may form at temperatures above 230° Fahrenheit. Never cut into the sealed battery pack enclosure due to the high voltage and electrocution risks.

If a decision is made to fight a battery fire aggressively, then large amounts of water should be applied from a safe distance with the intent of flooding the battery pack enclosure as completely as possible. Alternatively, if a decision is made to fight a battery fire defensively, then the fire crew should pull back a safe distance and allow the battery to burn itself out. Fire crews may choose to utilize a water stream or fog pattern to protect exposures or control the path of smoke.

FIRST AID MEASURES

Under normal conditions of use, the constituent battery cells are hermetically sealed. Contents of an open (broken) constituent battery cell can cause skin irritation and/or chemical burns. If materials from a ruptured or otherwise damaged cell or battery contact skin, flush immediately with water and wash affected area with soap and water. For eye contact, flush with significant amounts of water for 15 minutes and see physician at once. Avoid inhaling any vented gases. If a chemical burn occurs or if irritation persists, seek medical assistance. Seek immediate medical assistance if an electrical shock or electrocution has occurred (or is suspected).

17.06 Description of fuel-fired heater / fuel tank evaporative system

Not applicable; vehicle is not equipped with fuel-fired heater.

18.00 FUEL ECONOMY DATASETS

Model S Long Range Plus

CD UDDS Test	SD220-381503
AC Recharge Energy, kWh	MTSL10066812
(AER) Unadjusted, Miles	118
CO2 Composite Adjusted	566.92
	0 g/mi (factors into 0 g/mi on FE label)

CD Highway Test	MTSL10066813
AC Recharge Energy, kWh	118
(AER) Unadjusted, Miles	538.08
CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)

Model S Performance (19" Wheels)

CD UDDS Test	SD221-405432
AC Recharge Energy, kWh	MTSL10066814
(AER) Unadjusted, Miles	118
CO2 Composite Adjusted	537.80
	0 g/mi (factors into 0 g/mi on FE label)

CD Highway Test	MTSL10066815
AC Recharge Energy, kWh	118
(AER) Unadjusted, Miles	503.91
CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)

Model S Performance (21" Wheels)

CD UDDS Test	SD221-405432
AC Recharge Energy, kWh	MTSL10066816
(AER) Unadjusted, Miles	118
CO2 Composite Adjusted	462.57
	0 g/mi (factors into 0 g/mi on FE label)

CD Highway Test	MTSL10066817
AC Recharge Energy, kWh	118
(AER) Unadjusted, Miles	436.45
CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)

E.O.#:

Page:

2021 MODEL-YEAR AIR RESOURCES BOARD
SUPPLEMENTAL DATA SHEET
ZEV-PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM DUTY VEHICLES

Model S Long Range Plus

Manufacturer	Tesla, Inc
Engine Family	MTSLV00.0L2S
Vehicle Class (es)	Passenger Car
Number of ZEV Credits per vehicle	4
Fuel Type (s)	Electro-Chemical Battery
Battery Type (s)	Lithium Ion
Total Battery Weight, Kg	625
Total Battery Volume, m3	0.400
Battery Specific Energy, Wh/Kg	165
Number of Batteries or modules per vehicle	1
Total Battery Voltage, Nominal	360
Charger(s)	On-Board
Charger(s)	Conductive
Drive Motor (s) (Front)	Other (Specify) - AC Permanent Magnet
Drive Motor (s) (Rear)	AC Induction
Rated Motor Power, kW	179 (Front) / 186 (Rear)
Number of Drive Motor (s)	2
Drive	4WD-FT
Regenerative Braking	Yes
Regenerative Braking	AW
Driver Controlled Regen Braking	No
Coast Regen Braking	Yes
Air Conditioning	Yes
Fuel-Fired Heater	No

Vehicle Models (If coded, see attachments)	Model S Long Range Plus
Transmission Type: M5, A4 (if applicable)	AV/1
GVWR, lbs	5939
Curb Weight, 33%, lbs	4815
Loaded Vehicle Weight	5115
ETW or Test Weight, lbs	5000
DPA / RLHP or Dyno Set Coefficient, a= , lbf	-5.9170
DPA / RLHP or Dyno Set Coefficient, b= , lbf/mph	0.2421
DPA / RLHP or Dyno Set Coefficient, c= , lbf/mph^2	0.0101

Range Test Results

Vehicle ID	SD220-381503
Transmission	AV/1
ETW	5000
RLHP	11.35

City Range, miles	566.92
System AC, Wh/mile	208.79
System DC, Wh/mile	188.12
Vehicle DC, Wh/mile	183.26

Highway Range, miles	538.08
System AC, Wh/mile	219.98
System DC, Wh/mile	198.20
Vehicle DC, Wh/mile	193.08

Battery Test Results - Specific Energy, wh/kg	165
Fuel-Fired Heater Emission Results, g/mile	Not applicable

Model S Performance (19" Wheels)

Manufacturer	Tesla, Inc
Engine Family	MTSLV00.0L2S
Vehicle Class (es)	Passenger Car
Number of ZEV Credits per vehicle	4
Fuel Type (s)	Electro-Chemical Battery
Battery Type (s)	Lithium Ion
Total Battery Weight, Kg	625
Total Battery Volume, m3	0.400
Battery Specific Energy, Wh/Kg	165
Number of Batteries or modules per vehicle	1
Total Battery Voltage, Nominal	360
Charger(s)	On-Board
Charger(s)	Conductive
Drive Motor (s) (Front)	Other (Specify) - AC Permanent Magnet
Drive Motor (s) (Rear)	AC Induction
Rated Motor Power, kW	149 (Front) / 276 (Rear)
Number of Drive Motor (s)	2
Drive	4WD-FT
Regenerative Braking	Yes
Regenerative Braking	AW
Driver Controlled Regen Braking	No
Coast Regen Braking	Yes
Air Conditioning	Yes
Fuel-Fired Heater	No

Vehicle Models (If coded, see attachments)	Model S Performance (19" Wheels)
Transmission Type: M5, A4 (if applicable)	AV/1
GVWR, lbs	5997
Curb Weight, 33%, lbs	4929
Loaded Vehicle Weight	5229
ETW or Test Weight, lbs	5250
DPA / RLHP or Dyno Set Coefficient, a= , lbf	-16.6581
DPA / RLHP or Dyno Set Coefficient, b= , lbf/mph	0.1236
DPA / RLHP or Dyno Set Coefficient, c= , lbf/mph^2	0.0131

Range Test Results

Vehicle ID	SD221-405432
Transmission	AV/1
ETW	5250
RLHP	12.02

City Range, miles	537.80
System AC, Wh/mile	219.73
System DC, Wh/mile	197.97
Vehicle DC, Wh/mile	193.34

Highway Range, miles	503.91
System AC, Wh/mile	234.50
System DC, Wh/mile	211.29
Vehicle DC, Wh/mile	206.34

Battery Test Results - Specific Energy, wh/kg	165
Fuel-Fired Heater Emission Results, g/mile	Not applicable

Model S Performance (21" Wheels)

Manufacturer	Tesla, Inc
Engine Family	MTSLV00.0L2S
Vehicle Class (es)	Passenger Car
Number of ZEV Credits per vehicle	4
Fuel Type (s)	Electro-Chemical Battery
Battery Type (s)	Lithium Ion
Total Battery Weight, Kg	625
Total Battery Volume, m3	0.400
Battery Specific Energy, Wh/Kg	165
Number of Batteries or modules per vehicle	1
Total Battery Voltage, Nominal	360
Charger(s)	On-Board
Charger(s)	Conductive
Drive Motor (s) (Front)	Other (Specify) - AC Permanent Magnet
Drive Motor (s) (Rear)	AC Induction
Rated Motor Power, kW	149 (Front) / 276 (Rear)
Number of Drive Motor (s)	2
Drive	4WD-FT
Regenerative Braking	Yes
Regenerative Braking	AW
Driver Controlled Regen Braking	No
Coast Regen Braking	Yes
Air Conditioning	Yes
Fuel-Fired Heater	No

Vehicle Models (If coded, see attachments)	Model S Performance (21" Wheels)
Transmission Type: M5, A4 (if applicable)	AV/1
GVWR, lbs	5997
Curb Weight, 33%, lbs	4929
Loaded Vehicle Weight	5229
ETW or Test Weight, lbs	5250
DPA / RLHP or Dyno Set Coefficient, a= , lbf	-6.5127
DPA / RLHP or Dyno Set Coefficient, b= , lbf/mph	0.2603
DPA / RLHP or Dyno Set Coefficient, c= , lbf/mph^2	0.0125

Range Test Results

Vehicle ID	SD221-405432
Transmission	AV/1
ETW	5250
RLHP	13.80

City Range, miles	462.57
System AC, Wh/mile	254.24
System DC, Wh/mile	229.07
Vehicle DC, Wh/mile	223.71

Highway Range, miles	436.45
System AC, Wh/mile	269.45
System DC, Wh/mile	242.77
Vehicle DC, Wh/mile	237.10

Battery Test Results - Specific Energy, wh/kg	165
Fuel-Fired Heater Emission Results, g/mile	Not applicable

3.03 Vehicle Configuration and sub-configurations

Make Carline Type Test Group Final Drive ratio Emission Control Exhaust Evap Model Type Basic Engine code (F/R) Transmission Type / Code Vehicle ID tested	Tesla Model S Battery Electric Vehicle MTSLV00.0L2S 9.34 (F) / 9.73 (R) NA (BEV) NA (BEV) NA (BEV) Model S Long Range Plus L2S AV/1 SD220-381503
Vehicle Configuration # Gross Vehicle Weight (lbs) 33% Curb Mass (lbs) Loaded Vehicle Weight (lbs) Equivalent Test Weight (lbs) Base wheel / Tire (F&R) Target Road Load A lbf B lbf/mph C lbf/mph^2 RLHP @ 50mph	0 5939 4815 5115 5000 245/45R19 33.40 0.5032 0.0106 11.35
Sub configuration # Gross Vehicle Weight (lbs) 33% Curb Mass (lbs) Loaded Vehicle Weight (lbs) Equivalent Test Weight (lbs) Wheel / Tire Target Road Load A lbf B lbf/mph C lbf/mph^2 Road Load HP @ 50mph	1 5939 4815 5115 5000 245/35 R21 (F) 265/35 R21 (R) 52.68 0.2060 0.0161 13.77

Fuel Economy Data Vehicle (FEDV) Selection Justification – FEDV curb mass vehicle accounts for options that have a greater than 33% take rate and highest sold wheel/tire combination that collectively represents a vehicle configuration / sub configuration that has the largest sales volume within that Model Type. Tesla affirms that the road load power, and the target coefficients are those that are appropriate for the ETW of the vehicle.

3.03 Vehicle Configuration and sub-configurations

Make Carline Type Test Group Final Drive ratio Emission Control Exhaust Evap Model Type Basic Engine code (F/R) Transmission Type / Code Vehicle ID tested	Tesla Model S Battery Electric Vehicle MTSLV00.0L2S 9.34 (F) / 9.73 (R) NA (BEV) NA (BEV) NA (BEV) Model S Performance (19" Wheels) L2S AV/1 SD221-405432
Vehicle Configuration # Gross Vehicle Weight (lbs) 33% Curb Mass (lbs) Loaded Vehicle Weight (lbs) Equivalent Test Weight (lbs) Base wheel / Tire (F&R) Target Road Load A lbf B lbf/mph C lbf/mph ² RLHP @ 50mph	0 5997 4929 5229 5250 245/45R19 34.60 0.4888 0.0125 12.02

Fuel Economy Data Vehicle (FEDV) Selection Justification – FEDV curb mass vehicle accounts for options that have a greater than 33% take rate and highest sold wheel/tire combination that collectively represents a vehicle configuration / sub configuration that has the largest sales volume within that Model Type. Tesla affirms that the road load power, and the target coefficients are those that are appropriate for the ETW of the vehicle.

3.03 Vehicle Configuration and sub-configurations

Make Carline Type Test Group Final Drive ratio Emission Control Exhaust Evap Model Type Basic Engine code (F/R) Transmission Type / Code Vehicle ID tested	Tesla Model S Battery Electric Vehicle MTSLV00.0L2S 9.34 (F) / 9.73 (R) NA (BEV) NA (BEV) NA (BEV) Model S Performance (21" Wheels) L2S AV/1 SD221-405432
Vehicle Configuration # Gross Vehicle Weight (lbs) 33% Curb Mass (lbs) Loaded Vehicle Weight (lbs) Equivalent Test Weight (lbs) Base wheel / Tire (F&R) Target Road Load A lbf B lbf/mph C lbf/mph ² RLHP @ 50mph	0 5997 4929 5229 5250 245/35 R21 (F) 265/35 R21 (R) 45.43 0.5052 0.0131 13.80

Fuel Economy Data Vehicle (FEDV) Selection Justification – FEDV curb mass vehicle accounts for options that have a greater than 33% take rate and highest sold wheel/tire combination that collectively represents a vehicle configuration / sub configuration that has the largest sales volume within that Model Type. Tesla affirms that the road load power, and the target coefficients are those that are appropriate for the ETW of the vehicle.

SPECIAL TEST INSTRUCTIONS

This vehicle shall only be tested on a 4 wheel dyno.

Instrumentation

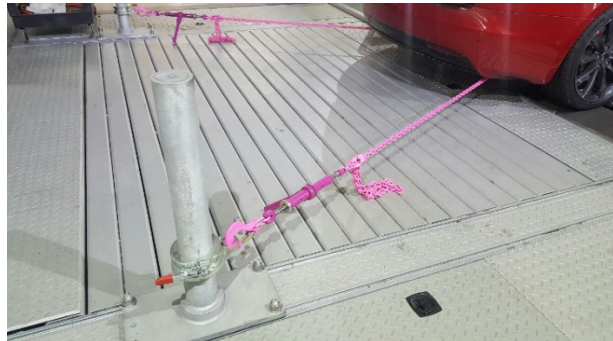
- Battery voltage and Current measurement – Hioki 3390-10
- AC recharge – Hioki 3390-10

Lock car upon exit

Pic of Car on Dyno - Tesla Facility



Rear: soft straps to rear sub frame



Vehicle Settings:

Modes	Selection
Ride height	M3/Y: No ride height adjustment (Coil springs) MS/X: Standard mode (Air suspension)
Stopping Mode	Hold
Acceleration	Base: Standard Performance: Sport
Steering	Standard
Autopilot: Full Self-Driving Visualization Preview	On
Lights	Off

EPA EV Multicycle Calculator (SAE J1634 Oct 2012)

Manufacturer: Tesla Inc.
Carline: Model S Long Range Plus
Model Year 2021
Vehicle SD220-381503
Test Number
Comments:
Lab Tesla Lab - Fremont
Test Date 8/18/2020

As used by EPA laboratory

D.Good March 8, 2016

Cycle	Energy (Wh)	Distance (mi)	ECdc_cyc	Kuwt	Kwt	Recharge AC WattHrs
UDDS1	1560	7.46	209.10	52.27	3.14	
UDDS2	1406	7.44	189.05	47.26	62.07	118366
UDDS3	1329	7.43	178.80	44.70	58.71	
UDDS4	1344	7.44	180.73	45.18	59.34	
HWY1	2006	10.24	195.82	97.91		
HWY2	1953	10.26	190.34	95.17		
SS1	86029	373.93	230.07			
SS2	8264	35.84	230.61			
TOTAL	103891.86	460.042				

K-Factors	UDDS1	UDDS2	UDDS3	UDDS4	HWY1	HWY2
Unweighted	0.250	0.250	0.250	0.250	0.500	0.500
Weighted	0.015	0.328	0.328	0.328	NA	NA

Results	Range (mi)	AC Wh/mi	MPGe	kWh/100mi	EPA version kWh/100mi
UDDSu	548.47	215.81			
UDDSw	566.92	208.79	161.4320	20.8788	20.87876
HWY	538.08	219.98	153.2205	21.9977	21.99771

Note:

1. Fill in yellow shaded areas to compute range and AC wh/mi results
2. Weighted results based on SAE J1634 calculations
3. Final values in green shaded area should be rounded to appropriate significant digits

EPA EV Multicycle Calculator (SAE J1634 Oct 2012)

Manufacturer: Tesla Inc.
Carline: Model S Performance (19" Wheels)
Model Year 2021
Vehicle SD221-405432
Test Number
Comments:
Lab Tesla Lab - Fremont
Test Date 8/28/2020

As used by EPA laboratory

D.Good March 8, 2016

Cycle	Energy (Wh)	Distance (mi)	ECdc_cyc	Kuwt	Kwt	Recharge AC WattHrs
UDDS1	1644	7.48	219.90	54.97	3.48	
UDDS2	1483	7.47	198.47	49.62	65.11	118169
UDDS3	1403	7.44	188.46	47.12	61.83	
UDDS4	1425	7.43	191.79	47.95	62.92	
HWY1	2149	10.27	209.19	104.59		
HWY2	2086	10.25	203.49	101.74		
SS1	84866	345.17	245.86			
SS2	8921	35.92	248.39			
TOTAL	103976.59	431.432				

K-Factors	UDDS1	UDDS2	UDDS3	UDDS4	HWY1	HWY2
Unweighted	0.250	0.250	0.250	0.250	0.500	0.500
Weighted	0.016	0.328	0.328	0.328	NA	NA

Results	Range (mi)	AC Wh/mi	MPGe	kWh/100mi	EPA version kWh/100mi
UDDSu	520.78	226.91			
UDDSw	537.80	219.73	153.3957	21.9726	21.97258
HWY	503.91	234.50	143.7296	23.4503	23.45028

Note:

1. Fill in yellow shaded areas to compute range and AC wh/mi results
2. Weighted results based on SAE J1634 calculations
3. Final values in green shaded area should be rounded to appropriate significant digits

EPA EV Multicycle Calculator (SAE J1634 Oct 2012)

Manufacturer: Tesla Inc.
Carline: Model S Performance (21" Wheels)
Model Year 2021
Vehicle SD221-405432
Test Number
Comments:
Lab Tesla Lab - Fremont
Test Date 8/30/2020

As used by EPA laboratory

D.Good March 8, 2016

Cycle	Energy (Wh)	Distance (mi)	ECdc_cyc	Kuwt	Kwt	Recharge AC WattHrs
UDDS1	1868	7.44	251.12	62.78	4.53	117602
UDDS2	1696	7.43	228.15	57.04	74.68	
UDDS3	1619	7.44	217.63	54.41	71.23	
UDDS4	1660	7.42	223.84	55.96	73.27	
HWY1	2435	10.25	237.57	118.79		
HWY2	2425	10.25	236.62	118.31		
SS1	83617	303.50	275.51			
SS2	8161	28.97	281.70			
TOTAL	103481.66	382.699				

K-Factors	UDDS1	UDDS2	UDDS3	UDDS4	HWY1	HWY2
Unweighted	0.250	0.250	0.250	0.250	0.500	0.500
Weighted	0.018	0.327	0.327	0.327	NA	NA

Results	Range (mi)	AC Wh/mi	EPA version	
			MPGe	kWh/100mi
UDDSu	449.55	261.60	132.5723 125.0885	25.4239 26.9449
UDDSw	462.57	254.24		
HWY	436.45	269.45		

Note:

1. Fill in yellow shaded areas to compute range and AC wh/mi results
2. Weighted results based on SAE J1634 calculations
3. Final values in green shaded area should be rounded to appropriate significant digits

Certification Summary Information Report

Manufacturer	Tesla, Inc.	Manufacturer Code	TSL
Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Certificate Number	--	CARB Executive Order #	--
Certificate Issue Date	--	Certificate Revision Date	--
Certificate Effective Date	--	Conditional Certificate	--
CSI Revision #	--	CSI Submission/Revision Date	09/13/2020 08:39:44 PM
Model Year	2021		

Test Group Information

CSI Type	New	Running Change Reference Number	--
GHG Exempt Status	Not Exempt		

Drive Sources and Fuel(s)

Drive Source #1: Electric Motor

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Electricity	--	--

Hybrid Indicator	No		
Multiple Fuel Storage	--	Rechargeable Energy Storage System Indicator	Yes
Multiple Fuel Combustion	--	Off-board Charge Capable Indicator	Yes
Fuel Cell Indicator	No	EPA Vehicle Class	LDV
Federal Clean Fuel Vehicle	Yes	Federal Clean Fuel Vehicle Standard	ZEV
Federal Clean Fuel Vehicle ILEV	Yes	California Partial Zero Emissions Vehicle Indicator	--
Durability Group Name	MTSLEEVNNL2S	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	Tier 3	SFTP Tier 2 Composite CO Option	--
SFTP LEV-III Composite Compliance Indicator	Yes		
OBD Compliance Type	CARB	OBD Demonstration Vehicle Test Group	MTSLV00.0L2S
Test Group OBD Compliance Level	Full - no deficiencies	Number of Test Group OBD Deficiencies	0
OBD Deficiencies Comments	Battery Electric Vehicle - No OBD requirements		
Mfr Test Group Comments	MY2020 certification for Model S AWD carlines.		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group		MTSLV00.0L2S		Evaporative/Refueling Family		--					
Models Covered by this Certificate											
Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	- # of Gears	Trans - Lockup				
Tesla, Inc.	1 - Tesla Motors	69 - Model S Performance (19" Wheels)	Federal	All Wheel Drive	Automatic	1	No				
Tesla, Inc.	1 - Tesla Motors	61 - Model S Long Range Plus	Federal	All Wheel Drive	Automatic	1	No				
Tesla, Inc.	1 - Tesla Motors	70 - Model S Performance (21" Wheels)	Federal	All Wheel Drive	Automatic	1	No				
Tesla, Inc.	1 - Tesla Motors	70 - Model S Performance (21" Wheels)	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No				
Tesla, Inc.	1 - Tesla Motors	69 - Model S Performance (19" Wheels)	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No				
Tesla, Inc.	1 - Tesla Motors	61 - Model S Long Range Plus	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No				
Engine Description											
Hybrid Type		--		Hybrid Description		--					
Engine Type		--		Mfr Engine Description		--					
Engine Block Arrangement		--		Mfr Engine Block Arrangement Description		--					
Camless Valvetrain Indicator		--		Oil Viscosity/Classification							
Number of Cylinders/Rotors		--		Mechanically Variable Compression Ratio Indicator		--					
After Treatment Device(s) (ATD)											
Mfr After Treatment Device (ATD) Comments		--									
Direct Ozone Reduction (DOR) Device		--									
Mfr Emission Control Device Comments		--									
Official Test Numbers											
Test Group	Fuel	FTP	US06	SC03	Cold CO	Highway	EPA City Litmus Value	EPA City Litmus Threshold	EPA Highway Litmus Value	EPA Highway Litmus Threshold	CREE Weighting Factor
Electricity	--	--	--	--	--	--	--	--	--	--	--

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
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Official Charge Depleting Test Numbers

Test Group Fuel	UDDS	Highway
Electricity	MTSL10066814	MTSL10066815
Electricity	MTSL10066812	MTSL10066813
Electricity	MTSL10066816	MTSL10066817

Hybrid Electric Vehicle And Fuel Cell Information

Rechargable Energy Storage System	Battery(s)	Rechargable Energy Storage System, if Other	--
Battery Type	Lithium Ion	Number of Battery Packs	1
Total Voltage of Battery Packs	360	Battery Energy Capacity	305
Battery Specific Energy	165	Battery Charger Type	On-Board
Number of Capacitors	--	Capacitor Rating (In Farads)	--
Mfr Capacitor Comments	--		
Hydraulic System Description	--		
Regenerative Braking Type	Electrical Regen Brake		
Regenerative Braking Source	Both	Driver Controlled Regenerative Braking	No
Mfr Regenerative Braking Description	--		
Drive Motor(s)/Generator(s)	4		
Motor/Generator Type 1	AC 3 PHASE PERMANENT MAGNET	Rated Motor/Generator Power	149
Motor/Generator Type 2	AC 3 PHASE PERMANENT MAGNET	Rated Motor/Generator Power	179
Motor/Generator Type 3	AC Induction	Rated Motor/Generator Power	186
Motor/Generator Type 4	AC Induction	Rated Motor/Generator Power	276
Mfr Fuel Cell Description	--		
Fuel Cell On-Board H2 Storage Capacity (kg)	--	Usable H2 Fill Capacity (kg)	--
Mfr Hybrid Electric/ Electric Vehicle Comments	3 carlines (Long Range Plus, Performance (21" Wheels), Performance (19" Wheels)) are available for 2021 MY Model S vehicles. Base Front - 179 kW; Rear - 186 kW Perf Front - 149 kW; Rear - 276 kW		

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Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Manufacturer Test Vehicle Comments	This is a Long Range Plus configuration. Individual HP is 179 kW Front / 186 KW Rear Axle Ratio: Front Motor 9.34 Rear Motor 9.73		

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--																																									
Test #	MTSL10066812	Test Procedure	81 - Charge Depleting UDDS																																									
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																																									
Test Date	08/18/2020	Fuel	N/A																																									
Fuel Batch ID	--	Fuel Calibration Number	--																																									
Vehicle Class	N/A	DF Type	Mfr. Assigned																																									
Verify Test Lab ID	Kato Dyno																																											
E10 Evaporative Test Measurement Method	--																																											
Test Start Odometer Reading	1455	Odometer Units	M																																									
4WD Test Dyno	Yes	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																																									
PHEV/EV Charge Depleting Test Information																																												
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	118.366																																									
Charge Depleting Range (Calculated miles)	567	Charge Depleting Range (Actual miles)	567																																									
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--																																									
Equivalent All Electric Range (miles)	567																																											
Number of Charge Depleting Bags/Phases Conducted	4	Transition Bag/Phase Number	--																																									
Charge Depleting Bag/Phase																																												
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Manufacturer Test Comments	Internal Test results for MY2021 Model S Long Range Plus. Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC 103892 wh (system gave error limited to 4 digits). MCT dc wh/mi is attached with EPA application. Added NMOG Test results. Test Start Odometer Reading 6837 Test Start Propulsion System Mileage 1455																																											

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--																																										
Test #	MTSL10066813	Test Procedure	84 - Charge Depleting Highway																																										
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																																										
Test Date	08/18/2020	Fuel	Electricity																																										
Fuel Batch ID	--	Fuel Calibration Number	--																																										
Vehicle Class	LDV/Passenger Car	DF Type	Mfr. Assigned																																										
Verify Test Lab ID	Kato Dyno																																												
E10 Evaporative Test Measurement Method	--																																												
Test Start Odometer Reading	1455	Odometer Units	M																																										
4WD Test Dyno	Yes	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																																										
PHEV/EV Charge Depleting Test Information																																													
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	118.366																																										
Charge Depleting Range (Calculated miles)	538	Charge Depleting Range (Actual miles)	538																																										
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--																																										
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Manufacturer Test Comments	Internal Test results for MY2021 Model S Long Range Plus. Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC - 103892 wh (System error limited to 4 digits). MCT dc wh/mi is attached with application. Test Start Odometer Reading 6837 Test Start Propulsion System Mileage 1455																																												

Certification Summary Information Report

Test Group		MTSLV00.0L2S			Evaporative/Refueling Family					--		
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 0	CO	0.0	--	--	--	0	--	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	150,000 miles	California ZEV	CO	0.0	--	--	--	0	--	0	0	Pass
CA	150,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--

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Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Manufacturer Test Vehicle Comments	This is a Performance (19" Wheels) configuration. Individual HP is 149 kW Front / 276 KW Rear Axle Ratio: Front Motor 9.34 Rear Motor 9.73		

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--																																									
Test #	MTSL10066814	Test Procedure	81 - Charge Depleting UDDS																																									
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																																									
Test Date	08/28/2020	Fuel	N/A																																									
Fuel Batch ID	--	Fuel Calibration Number	--																																									
Vehicle Class	N/A	DF Type	Mfr. Assigned																																									
Verify Test Lab ID	Kato Dyno																																											
E10 Evaporative Test Measurement Method	--																																											
Test Start Odometer Reading	1654	Odometer Units	M																																									
4WD Test Dyno	Yes	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																																									
PHEV/EV Charge Depleting Test Information																																												
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	118.169																																									
Charge Depleting Range (Calculated miles)	538	Charge Depleting Range (Actual miles)	538																																									
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--																																									
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Manufacturer Test Comments	Internal Test results for MY2021 Model S Performance (19" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC 103977 wh (system gave error limited to 4 digits). MCT dc wh/mi is attached with EPA application. Added NMOG Test results. Test Start Odometer Reading 1918 Test Start Propulsion System Mileage 1654																																											

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--																																									
Test #	MTSL10066815	Test Procedure	84 - Charge Depleting Highway																																									
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																																									
Test Date	08/28/2020	Fuel	Electricity																																									
Fuel Batch ID	--	Fuel Calibration Number	--																																									
Vehicle Class	LDV/Passenger Car	DF Type	Mfr. Assigned																																									
Verify Test Lab ID	Kato Dyno																																											
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Drive Cycle Speed Tolerance Criteria	Used Part 86 (+/- 2 mph, +/- 1 sec)	Road Speed Fan Usage	Yes																																									
PHEV/EV Charge Depleting Test Information																																												
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	118.169																																									
Charge Depleting Range (Calculated miles)	504	Charge Depleting Range (Actual miles)	504																																									
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--																																									
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Manufacturer Test Comments	Internal Test results for MY2021 Model S Performance (19" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC - 103977 wh (System error limited to 4 digits). MCT dc wh/mi is attached with application. Test Start Odometer Reading 1918 Test Start Propulsion System Mileage 1654																																											

Certification Summary Information Report

Test Group		MTSLV00.0L2S			Evaporative/Refueling Family					--		
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 0	CO	0.0	--	--	--	0	--	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	150,000 miles	California ZEV	CO	0.0	--	--	--	0	--	0	0	Pass
CA	150,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--

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Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Emission Control Device Comments	No emissions control Device - Pure Electric Vehicle		
Manufacturer Test Vehicle Comments	This is a Performance (21" Wheels) configuration. Individual HP is 149 kW Front / 276 KW Rear Axle Ratio: Front Motor 9.34 Rear Motor 9.73		

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Test #	MTSL10066818	Test Procedure	2 - CVS 75 and later (w/o can. load)
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/30/2020	Fuel	Electricity
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	LDV/Passenger Car	DF Type	Mfr. Assigned
Verify Test Lab ID	Kato Dyno		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2279	Odometer Units	M
4WD Test Dyno	Yes	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 (kilowatt-hour per 100 miles)
CO (Carbon Monoxide)	0	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	3.0961	--
DT-EER (Drive Trace Energy Economy Rating)	3.2981	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	5.3588	--
MFR FE (Manufacturer Fuel Economy)	22.3714	150.638762
NOX (Nitrogen Oxide)	0	--
NMOG (Non-methane organic gases)	0	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	0	0

Manufacturer Test Comments

Internal Test results (CVS-75 UDDS Ambient) for MY2021 Model S Performance (21" Wheels). AC wh/mi @ 50 % SOC - Bag 1 - 253.29; Bag 2- 220.65; Bag 3 - 241.96; Bag 4 - 217.19; Test Start Odometer Reading 2543 Test Start Propulsion System Mileage 2279

Certification Summary Information Report

Test Group		MTSLV00.0L2S			Evaporative/Refueling Family				--			
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 0	CO	0.0	--	--	--	--	1	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	CO	0.0	--	--	--	--	1	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	--	1	0	--	--
Fed	150,000 miles	Federal Tier 3 Bin 0	NMOG	0.0	--	--	--	--	1	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	NMOG+NOX	0.0	--	--	--	--	--	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	NOX	0.0	--	--	--	--	1	0	0	Pass
CA	150,000 miles	California ZEV	CO	0.0	--	--	--	--	1	0	0	Pass
CA	150,000 miles	California ZEV	CO	0.0	--	--	--	0	--	0	0	Pass
CA	150,000 miles	California ZEV	CREE	0	--	--	--	--	1	0	--	--
CA	150,000 miles	California ZEV	NMOG	0.0	--	--	--	--	1	0	0	Pass
CA	150,000 miles	California ZEV	NMOG+NOX	0.0	--	--	--	--	--	0	0	Pass
CA	150,000 miles	California ZEV	NOX	0.0	--	--	--	--	1	0	0	Pass

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

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Test #	MTSL10066819	Test Procedure	3 - HWFE
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/30/2020	Fuel	N/A
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	N/A	DF Type	Mfr. Assigned
Verify Test Lab ID	Kato Dyno		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2279	Odometer Units	M
4WD Test Dyno	Yes	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 (kilowatt-hour per 100 miles)
DT-ASCR (Drive Trace Absolute Speed Change Rating)	9.2301	--
DT-EER (Drive Trace Energy Economy Rating)	2.1017	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	11.6042	--
MFR FE (Manufacturer Fuel Economy)	23.1127	145.8072834
NOX (Nitrogen Oxide)	0	--
NMOG (Non-methane organic gases)	0	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	0	0

Manufacturer Test Comments

Internal Test results (HWY 3) for MY2021 Model S Performance (21" Wheels). The HFET result from the full discharge MCT is used for the 2-part and 5-part calculations. AC wh/mi - 231.13; Test Start Odometer Reading 2543 Test Start Propulsion System Mileage 2279

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Test #	MTSL10066822	Test Procedure	90 - US06
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/30/2020	Fuel	N/A
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	N/A	DF Type	Mfr. Assigned
Verify Test Lab ID	Kato Dyno		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2279	Odometer Units	M
4WD Test Dyno	Yes	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 (kilowatt-hour per 100 miles)
CO (Carbon Monoxide)	0	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.3536	--
DT-EER (Drive Trace Energy Economy Rating)	0.4931	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	2.6707	--
MFR FE (Manufacturer Fuel Economy)	32.679	103.1243306
NOX (Nitrogen Oxide)	0	--
NMOG (Non-methane organic gases)	0	--

Manufacturer Test Comments

Internal Test results (US 06) for MY2021 Model S Performance (21" Wheels). US 06 AC wh/mi @ 50% SOC - City:326.79; Hwy:294.66. Test Start Odometer Reading 2543 Test Start Propulsion System Mileage 2279

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Test #	MTSL10066821	Test Procedure	95 - SC03
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/30/2020	Fuel	N/A
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	N/A	DF Type	Mfr. Assigned
Verify Test Lab ID	Kato Dyno		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2279	Odometer Units	M
4WD Test Dyno	Yes	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 (kilowatt-hour per 100 miles)
CO (Carbon Monoxide)	0	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.9523	--
DT-EER (Drive Trace Energy Economy Rating)	-0.2044	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-0.9018	--
MFR FE (Manufacturer Fuel Economy)	32.8179	102.6878624
NOX (Nitrogen Oxide)	0	--
NMOG (Non-methane organic gases)	0	--

Manufacturer Test Comments

Internal Test results (SC 03) for MY2021 Model S Performance (21" Wheels). AC wh/mi - 328.18 at 50% SOC. Test Start Odometer Reading 2543
Test Start Propulsion System Mileage 2279

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--																																										
Test #	MTSL10066816	Test Procedure	81 - Charge Depleting UDDS																																										
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																																										
Test Date	08/30/2020	Fuel	N/A																																										
Fuel Batch ID	--	Fuel Calibration Number	--																																										
Vehicle Class	N/A	DF Type	Mfr. Assigned																																										
Verify Test Lab ID	Kato Dyno																																												
E10 Evaporative Test Measurement Method	--																																												
Test Start Odometer Reading	2279	Odometer Units	M																																										
4WD Test Dyno	Yes	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																																										
PHEV/EV Charge Depleting Test Information																																													
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	117.602																																										
Charge Depleting Range (Calculated miles)	463	Charge Depleting Range (Actual miles)	463																																										
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--																																										
Equivalent All Electric Range (miles)	463																																												
Number of Charge Depleting Bags/Phases Conducted	4	Transition Bag/Phase Number	--																																										
Charge Depleting Bag/Phase																																													
	<table border="1"> <thead> <tr> <th>Charge Depleting Bag/Phase #</th><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr> </thead> <tbody> <tr><td>1</td><td>Carbon Monoxide</td><td>0</td></tr> <tr><td>2</td><td>Carbon dioxide</td><td>0</td></tr> <tr><td>3</td><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr> <tr><td>4</td><td>Drive Trace Absolute Speed Change Rating</td><td>2.1617</td></tr> <tr><td>5</td><td>Drive Trace Energy Economy Rating</td><td>2.4691</td></tr> <tr><td>6</td><td>Drive Trace Inertia Work Ratio Rating</td><td>3.5511</td></tr> <tr><td>7</td><td>Manufacturer Fuel Economy</td><td>132.57</td></tr> <tr><td>8</td><td>Nitrogen Oxide</td><td>0</td></tr> <tr><td>9</td><td>Non-methane organic gases</td><td>0</td></tr> <tr><td>10</td><td>Non-methane organic gases plus Nitrogen Oxides</td><td>999.999</td></tr> <tr><td>11</td><td>Particulate Matter</td><td>0</td></tr> <tr><td>12</td><td>System End State of Charge Watt-hours</td><td>103.482</td></tr> <tr><td>13</td><td>System Start State of Charge Watt-hours</td><td>0</td></tr> </tbody> </table>	Charge Depleting Bag/Phase #	Test Result/Emission Name	Unrounded Test Result	1	Carbon Monoxide	0	2	Carbon dioxide	0	3	Carbon-Related Exhaust Emissions	0	4	Drive Trace Absolute Speed Change Rating	2.1617	5	Drive Trace Energy Economy Rating	2.4691	6	Drive Trace Inertia Work Ratio Rating	3.5511	7	Manufacturer Fuel Economy	132.57	8	Nitrogen Oxide	0	9	Non-methane organic gases	0	10	Non-methane organic gases plus Nitrogen Oxides	999.999	11	Particulate Matter	0	12	System End State of Charge Watt-hours	103.482	13	System Start State of Charge Watt-hours	0		
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13	System Start State of Charge Watt-hours	0																																											
Manufacturer Test Comments	Internal Test results for MY2021 Model S Performance (21" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC 103482 wh (system gave error limited to 4 digits). MCT dc wh/mi is attached with EPA application. Added NMOG Test results. Test Start Odometer Reading 2543 Test Start Propulsion System Mileage 2279																																												

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--																																										
Test #	MTSL10066817	Test Procedure	84 - Charge Depleting Highway																																										
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																																										
Test Date	08/30/2020	Fuel	Electricity																																										
Fuel Batch ID	--	Fuel Calibration Number	--																																										
Vehicle Class	LDV/Passenger Car	DF Type	Mfr. Assigned																																										
Verify Test Lab ID	Kato Dyno																																												
E10 Evaporative Test Measurement Method	--																																												
Test Start Odometer Reading	2279	Odometer Units	M																																										
4WD Test Dyno	Yes	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																																										
PHEV/EV Charge Depleting Test Information																																													
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	117.602																																										
Charge Depleting Range (Calculated miles)	436	Charge Depleting Range (Actual miles)	436																																										
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--																																										
Equivalent All Electric Range (miles)	436																																												
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Charge Depleting Bag/Phase #	Test Result/Emission Name	Unrounded Test Result																																											
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Manufacturer Test Comments	Internal Test results for MY2021 Model S Performance (21" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC - 103482 wh (System error limited to 4 digits). MCT dc wh/mi is attached with application. Test Start Odometer Reading 2543 Test Start Propulsion System Mileage 2279																																												

Certification Summary Information Report

Test Group		MTSLV00.0L2S			Evaporative/Refueling Family					--		
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 0	CO	0.0	--	--	--	0	--	0	0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	150,000 miles	California ZEV	CO	0.0	--	--	--	0	--	0	0	Pass
CA	150,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Test #	MTSL10066820	Test Procedure	86 - Charge Depleting 20 Degree F FTP
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/30/2020	Fuel	N/A
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	N/A	DF Type	Mfr. Assigned
Verify Test Lab ID	Kato Dyno		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2279	Odometer Units	M
4WD Test Dyno	Yes	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
PHEV/EV Charge Depleting Test Information			
Recharge Event Voltage	208	Recharge Event Energy (kiloWatt-hours)	111.182
Charge Depleting Range (Calculated miles)	297	Charge Depleting Range (Actual miles)	297
All Electric Range Unadjusted (miles)	--	Derived 5-Cycle Coefficient Model Year	--
Equivalent All Electric Range (miles)	297		
Number of Charge Depleting Bags/Phases Conducted	40	Transition Bag/Phase Number	--
Charge Depleting Bag/Phase			
Charge Depleting Bag/Phase #	Test Result/Emission Name	Unrounded Test Result	
1	Carbon Monoxide	0	
2	Carbon dioxide	0	
3	Carbon-Related Exhaust Emissions	0	
4	Drive Trace Absolute Speed Change Rating	0.006	
5	Drive Trace Energy Economy Rating	-0.014	
6	Drive Trace Inertia Work Ratio Rating	0.199	
7	Manufacturer Fuel Economy	32.8998	
8	Nitrogen Oxide	0	
9	Non-methane organic gases	0	
10	Non-methane organic gases plus Nitrogen Oxides	999.999	
11	Particulate Matter	0	
12	System End State of Charge Watt-hours	97.833	
13	System Start State of Charge Watt-hours	0	

Certification Summary Information Report

Test Group	MTSLV00.0L2S	Evaporative/Refueling Family	--
Manufacturer Test Comments	Internal Test results(Cold UDDS) for MY2021 Model S Performance (21" Wheels). END SOC is 97833 wh (System error limited to 4 digits) for full discharge. AC wh/mi - Bag 1 - 603.81; Bag 2 - 615.33; Bag 3 - 466.30; Bag - 4- 422.52; Tesla did not use external current measurement after the full cold discharge test, since AC energy is not used in any part of the 5-cycle consumption calculation. The stated recharge energy is an estimate using the DC energy from the cold discharge test and the round trip energy efficiency from the full discharge MCT. Test Start Odometer Reading 2543 Test Start Propulsion System Mileage 2279		
Fuel Properties			

Certification Summary Information Report

Test Group		MTSLV00.0L2S			Evaporative/Refueling Family			--	
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 ZEV	
Fuel		Electricity			Test Procedure			CVS 75 and later (w/o can. load)	
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	1	--	0
150,000 miles	CO	--	--	--	--	--	--	0	0
150,000 miles	CO-COMP	--	--	--	--	--	1	--	0
150,000 miles	CREE	--	--	--	--	--	1	--	0
150,000 miles	NMOG	--	--	--	--	--	1	--	0
150,000 miles	NMOG+NOX	--	--	--	--	--	1	--	0
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	1	--	0
150,000 miles	NOX	--	--	--	--	--	1	--	0
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Cert	
Vehicle Class		LDV/Passenger Car			Standard Level			California ZEV	
Fuel		Electricity			Test Procedure			Charge Depleting Highway	
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	0
150,000 miles	CO-COMP	--	--	--	--	--	--	0	0
150,000 miles	CREE	--	--	--	--	--	--	0	0
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0

Certification Summary Information Report

Test Group		MTSLV00.0L2S			Evaporative/Refueling Family			--	
Cert Region		Federal			Cert/In-Use Code			Cert	
Vehicle Class		LDV/Passenger Car			Standard Level			Federal Tier 3 Bin 0	
Fuel		Electricity			Test Procedure			CVS 75 and later (w/o can. load)	
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	1	--	0
150,000 miles	CO	--	--	--	--	--	1	--	0
150,000 miles	CO-COMP	--	--	--	--	--	1	--	0
150,000 miles	CREE	--	--	--	--	--	1	--	0
150,000 miles	NMOG	--	--	--	--	--	1	--	0
150,000 miles	NMOG+NOX	--	--	--	--	--	1	--	0
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	1	--	0
150,000 miles	NOX	--	--	--	--	--	1	--	0
Cert Region		Federal			Cert/In-Use Code			Cert	
Vehicle Class		LDV/Passenger Car			Standard Level			Federal Tier 3 Bin 0	
Fuel		Electricity			Test Procedure			Charge Depleting Highway	
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	0
150,000 miles	CO-COMP	--	--	--	--	--	--	0	0
150,000 miles	CREE	--	--	--	--	--	--	0	0
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0

Certification Summary Information Report

Test Group		MTSLV00.0L2S	Evaporative/Refueling Family		--
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	

Certification Summary Information Report

Test Group		MTSLV00.0L2S	Evaporative/Refueling Family		--
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				

Certification Summary Information Report

Test Group		MTSLV00.0L2S	Evaporative/Refueling Family		--
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	