9/1/2021

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

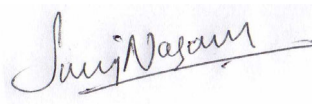
Tesla, Inc. requests that the EPA issue a Certificate of Conformity for the subject test group.

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:	NTSLEEVNNL3S
Test Group:	NTSLV00.0L3S
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 3 - Tri motors (front/rear (×2)) S - Model S Line of vehicles
Applicable Standards:	FEDERAL Tier 3 BIN 0 & CALIFORNIA ZEV
Carlines Covered by this certificate:	Model S Plaid (21" Wheels), Plaid (19" Wheels)

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
Sr. 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
Mr. Ray Wang, Sr Homologation Engineer - Vehicle Homologation
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 2022 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.

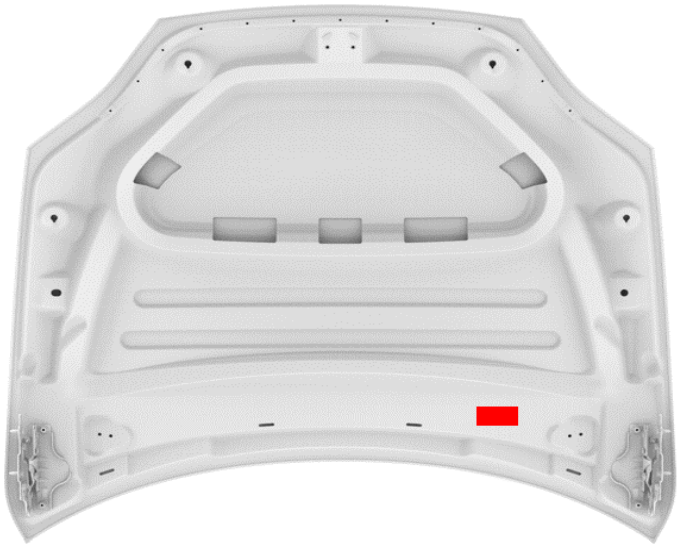
6.03 Lubricants and heater fuels

Heater fuel:	Not applicable
Transmission lubricant:	Factory Fill
Capacity	1.325 litres
Make	Exxon Mobile
Trade name	Dexron VI
Type	Mineral oil
Viscosity	11,500 cP at -40°C (-40°F)
Viscosity	5.8 cSt at 100°C (212°F)

Test Vehicle
Same as factory fill

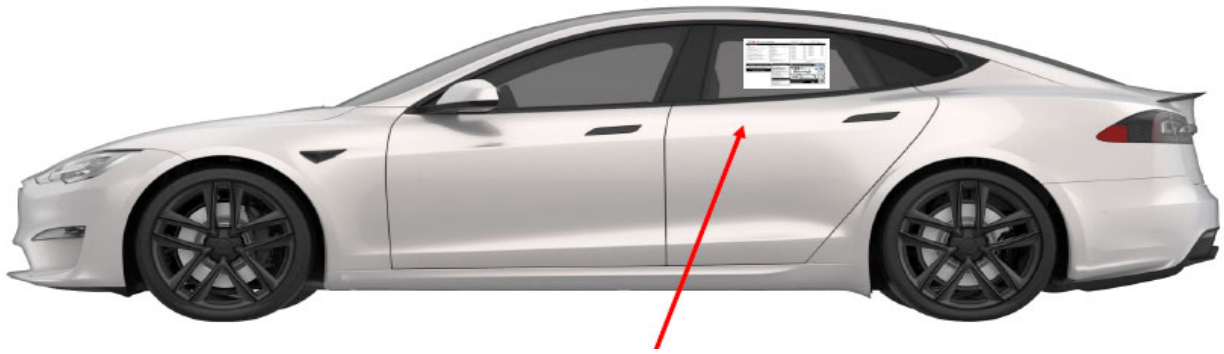
07.00 LABELS

07.01 Label locations
VECI Emission Label



See 07.02

Monroney Label



See 07.03

07.02 Emission Control Information label: 2022 Model Year
(Mandated in CFR Title 40, Part 86; §86.1807. Label format agreed with EPA

VEHICLE EMISSION CONTROL INFORMATION

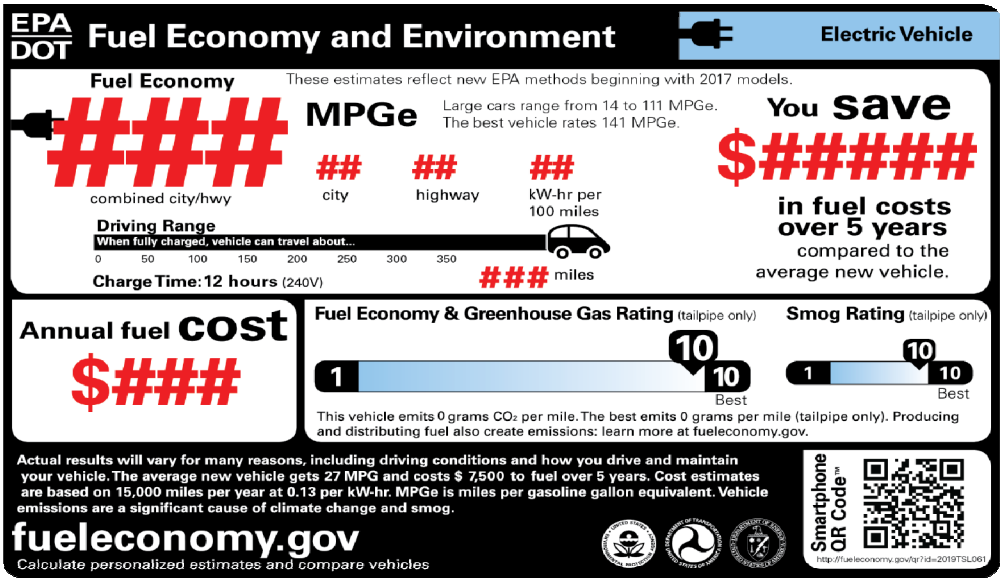
THIS VEHICLE CONFORMS TO U.S. EPA REGULATIONS APPLICABLE TO 2022 MODEL YEAR NEW TIER 3 BIN 0 LIGHT-DUTY VEHICLES AND TO CALIFORNIA REGULATIONS APPLICABLE TO ZEV PASSENGER CARS AND IS CERTIFIED FOR SALE IN CALIFORNIA.

MODEL: 2022 TESLA MODEL S
MOTOR: 3 PHASE AC
TEST GROUP: NTSLV00.0L3S
EVAPORATIVE FAMILY: NTSLR0000L3S

07.03 California Environmental Performance Index label: 2022 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)

FE Label



07.04 Projected sales information (Confidential)

08:00 GENERAL TECHNICAL DESCRIPTION

08.01 DESCRIPTION OF PROPULSION SYSTEM

Front Drive Unit:
Traction motor × 1,
Fixed ratio gearbox,
Drive inverter

Rear Drive Unit:
Traction motor × 2,
Fixed ratio gearbox,
Drive inverter

8.02 DESCRIPTION OF MOTOR(s)

Front Motor:
3-phase AC internal permanent magnet motors utilizing a six-pole, high-frequency design with inverter-controlled magnetic flux.

Rear Motor:
3-phase AC internal permanent magnet motors utilizing a six-pole, high-frequency design with inverter-controlled magnetic flux.

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.

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).

8.06 DESCRIPTION OF CLIMATE CONTROL SYSTEM

General Specifications:

The Model S climate control modes include Defrost, Panel and Floor (or any combination of these three). The system consists of two 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 heat pump, drawing HV electrical energy from the battery pack High Voltage.

Tesla Model S's heat pump reduces the energy required by the HVAC system in both heating and cooling scenarios. The energy required to heat the cabin varies by weather and occupant comfort needs, but on-average consumes approximately 10% of the total energy available for driving. However, even moderately cold weather (0°C), consumption can increase to 25% or more. A heat pump consumes a small amount of electrical energy to thermodynamically "upgrade" low-temperature (less useful) thermal energy to higher-temperature (more useful) thermal energy, making it suitable for occupant comfort. That is, for a given electrical power input, a heat pump will return 1 to 5x in useful heating power; an electrical cabin heater provides 1:1 in heating power, and therefore is far less efficient.

Typically, this is accomplished using conventional refrigeration system components, e.g., compressors, valves, heat exchangers and so on, configured or connected together in a specific way. Tesla's heat pump uses conventional components with unconventional flexibility or cycle configuration. A heat pump must generally have a low-temperature source from which to draw energy. Tesla's system enables the heat pump source to be either the power-train coolant loop, e.g., low-temperature waste heat produced naturally by the vehicle while driving, ambient air, the battery thermal mass, the cabin thermal mass, or combinations thereof. Another advantage of this architecture is the ability to reject heat into the battery pack via a liquid-cooled condenser for a limited amount of time during cabin cooling scenarios when the temperature of the battery is modest. Therefore, for most startups with AC on, the relatively cool, well-coupled, large thermal mass serves to lower discharge pressure and therefore reduces compressor input power relative to a conventional air-cooled condenser setup.

Modern automotive heat pump systems using an HFC/HFO refrigerant suffer from low heating capacity in extremely cold ambient conditions, e.g., minus 10°C and below. Therefore, these conventional systems retain an expensive high-voltage cabin heater to cover heating deficits whenever the heat pump capacity is insufficient. Tesla's heat pump system also provides ways to remove a cabin air high voltage PTC heater completely by using the compressor as an electrical heater in specific scenarios. In fact, the electrical power draw capability of the compressor significantly exceeds a typical HV cabin PTC heater capability. This last point is accomplished via Tesla's unique architecture – the cycle is configured in such a way to provide a controlled environment for the compressor, regardless of ambient conditions, and ultimately unlocks the full electrical input power. Therefore, Tesla's thermal system can sometimes operate like a heat pump (heat efficiently) and sometimes like an electrical heater when heat pump capacity is not sufficient for comfort – using the same compressor.

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

Vehicle Controller printed circuit boards activate actuators and responds to evaporator air outlet temperature sensor, heat pump condenser 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 DESCRILPTION 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 DESCTIPTION OF DYNO MODE

Tesla, Inc. implementated 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.

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 steps in the driver's guide.
Dyno Mode can be deactivated by the user by pressing the “Power Off” button within the Safety & Security tab of the UI.

8.13 DESCTIPTION OF COASTDOWN MODE
To engage Coastdown Mode:
1. Press and hold Model S icon 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.

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 2022, 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 2022, each vehicle will earn 4 credits or below per vehicle.

Variant	UDDS Range (Miles) / Credits per Vehicle
Model S Plaid (21" Wheels)	459 / 4
Model S Plaid (19" Wheels)	529 / 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 Plaid (21" Wheels)	ST321-430686
CD UDDS Test	MTSL10070306
AC Recharge Energy, kWh	116
(AER) Unadjusted, Miles	459.42

CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)
CD Highway Test	MTSL10070307
AC Recharge Energy, kWh	116
(AER) Unadjusted, Miles	442.85
CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)
Model S Plaid (19" Wheels)	ST321-433418
CD UDDS Test	MTSL10070679
AC Recharge Energy, kWh	115
(AER) Unadjusted, Miles	529.32
CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)
CD Highway Test	MTSL10070680
AC Recharge Energy, kWh	115
(AER) Unadjusted, Miles	497.48
CO2 Composite Adjusted	0 g/mi (factors into 0 g/mi on FE label)

2022 MODEL-YEAR AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
ZEV-PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM DUTY VEHICLES

Model S Plaid (21" Wheels)

Manufacturer	Tesla, Inc
Engine Family	NTSLV00.0L3S
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	537
Total Battery Volume, m3	0.400
Battery Specific Energy, Wh/Kg	186
Number of Batteries or modules per vehicle	1
Total Battery Voltage, Nominal	410
Charger(s)	On-Board
Charger(s)	Conductive
Drive Motor (s) (Front)	Other (Specify) - AC Permanent Magnet
Drive Motor (s) (Rear) × 2	Other (Specify) - AC Permanent Magnet
Rated Motor Power, kW	250 (Front) / 250 (Rear)× 2
Number of Drive Motor (s)	3
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 Plaid (21" Wheels)
Transmission Type: M5, A4 (if applicable)	AV/1
GVWR, lbs	5657
Curb Weight, 33%, lbs	4765
Loaded Vehicle Weight	5065
ETW or Test Weight, lbs	5000
DPA / RLHP or Dyno Set Coefficient, a= , lbf	-13.83
DPA / RLHP or Dyno Set Coefficient, b= , lbf/mph	0.2519
DPA / RLHP or Dyno Set Coefficient, c= , lbf/mph^2	0.0104

Range Test Results

Vehicle ID	ST321-430686
Transmission	AV/1
ETW	5000
RLHP	12.84
City Range, miles	459.42
System AC, Wh/mile	253.24
System DC, Wh/mile	228.17
Vehicle DC, Wh/mile	216.11
Highway Range, miles	442.85
System AC, Wh/mile	262.71
System DC, Wh/mile	236.71
Vehicle DC, Wh/mile	224.20
Battery Test Results - Specific Energy, wh/kg	185
Fuel-Fired Heater Emission Results, g/mile	Not applicable

Model S Plaid (19" Wheels)

Manufacturer	Tesla, Inc
Engine Family	NTSLV00.0L3S
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	537
Total Battery Volume, m3	0.400
Battery Specific Energy, Wh/Kg	186
Number of Batteries or modules per vehicle	1
Total Battery Voltage, Nominal	410
Charger(s)	On-Board
Charger(s)	Conductive
Drive Motor (s) (Front)	Other (Specify) - AC Permanent Magnet
Drive Motor (s) (Rear) × 2	Other (Specify) - AC Permanent Magnet
Rated Motor Power, kW	250 (Front) / 250 (Rear)× 2
Number of Drive Motor (s)	3
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 Plaid (19" Wheels)
Transmission Type: M5, A4 (if applicable)	AV/1
GVWR, lbs	5657
Curb Weight, 33%, lbs	4765
Loaded Vehicle Weight	5065
ETW or Test Weight, lbs	5000
DPA / RLHP or Dyno Set Coefficient, a= , lbf	-9.01
DPA / RLHP or Dyno Set Coefficient, b= , lbf/mph	0.3786
DPA / RLHP or Dyno Set Coefficient, c= , lbf/mph^2	0.0086

Range Test Results

Vehicle ID	ST321-433418
Transmission	AV/1
ETW	5000
RLHP	11.40
City Range, miles	529.32
System AC, Wh/mile	218.13
System DC, Wh/mile	196.53
Vehicle DC, Wh/mile	187.73
Highway Range, miles	497.48
System AC, Wh/mile	232.08
System DC, Wh/mile	209.11
Vehicle DC, Wh/mile	199.75
Battery Test Results - Specific Energy, wh/kg	185
Fuel-Fired Heater Emission Results, g/mile	Not applicable

3.03 Vehicle Configuration and sub-configurations

Make	Tesla
Carline	Model S
Type	Battery Electric Vehicle
Test Group	NTSLV00.0L3S
Final Drive ratio	1
Emission Control	NA (BEV)
Exhaust	NA (BEV)
Evap	NA (BEV)
Model Type	**Model S Plaid (19" Wheels)**
Basic Engine code (F/R)	L3S
Transmission Type / Code	AV/1
Vehicle ID tested	ST321-433418
Vehicle Configuration #	0
Gross Vehicle Weight (lbs)	5657
33% Curb Mass (lbs)	4765
Loaded Vehicle Weight (lbs)	5065
Equivalent Test Weight (lbs)	5000
Base wheel / Tire (F&R)	F: 255/45R19 R: 285/35R19
Target Road Load A lbf	29.64
B lbf/mph	0.6164
C lbf/mph^2	0.0100
RLHP @ 50mph	11.40

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	Tesla
Carline	Model S
Type	Battery Electric Vehicle
Test Group	NTSLV00.0L3S
Final Drive ratio	1
Emission Control	NA (BEV)
Exhaust	NA (BEV)
Evap	NA (BEV)
Model Type	**Model S Plaid (21" Wheels)**
Basic Engine code (F/R)	L3S
Transmission Type / Code	AV/1
Vehicle ID tested	ST321-430686
Vehicle Configuration #	0
Gross Vehicle Weight (lbs)	5657
33% Curb Mass (lbs)	4765
Loaded Vehicle Weight (lbs)	5065
Equivalent Test Weight (lbs)	5000
Base wheel / Tire (F&R)	F: 265/35R21 R: 295/30R21
Target Road Load A lbf	43.30
B lbf/mph	0.5143
C lbf/mph^2	0.0109
RLHP @ 50mph	12.84

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.

Certification Summary Information Report

Manufacturer	Tesla, Inc.	**Manufacturer Code**	TSL
Test Group	NTSLV00.0L3S	**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**	08/31/2021 04:58:36 PM
Model Year	2022		

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	NTSLEEVNNL3S	**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**	NTSLV00.0L3S
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	MY2022 certification for Model S Tri-motor carlines.		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**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	59 - Model S Plaid (21" Wheels)	Federal	All Wheel Drive	Automatic	1	No
Tesla, Inc.	1 - Tesla Motors	60 - Model S Plaid (19" Wheels)	Federal	All Wheel Drive	Automatic	1	No
Tesla, Inc.	1 - Tesla Motors	59 - Model S Plaid (21" Wheels)	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No
Tesla, Inc.	1 - Tesla Motors	60 - Model S Plaid (19" Wheels)	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	--	--	--	--	--	--	--	--	--	--

Official Charge Depleting Test Numbers

Test Group Fuel	UDDS	Highway
Electricity	MTSL10070306	MTSL10070307
Electricity	MTSL10070679	MTSL10070680

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

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	410	**Battery Energy Capacity**	256
Battery Specific Energy	186	**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)	3		
Motor/Generator Type 1	AC 3 PHASE PERMANENT MAGNET	**Rated Motor/Generator Power**	250
Motor/Generator Type 2	AC 3 PHASE PERMANENT MAGNET	**Rated Motor/Generator Power**	250
Motor/Generator Type 3	AC 3 PHASE PERMANENT MAGNET	**Rated Motor/Generator Power**	250
Mfr Fuel Cell Description	--		
Fuel Cell On-Board H2 Storage Capacity (kg)	--	**Usable H2 Fill Capacity (kg)**	--
Mfr Hybrid Electric/ Electric Vehicle Comments	2 carline (Plaid (21" Wheels), Plaid (19" Wheels)) is available for 2022 MY Model S Tri-motor vehicles. Plaid: Front - 250 kW; Rear - 250 kW * 2		

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Emission Data Vehicle Information

Vehicle ID / Configuration	ST321-430686 / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	MTSLV00.0L3S	**Original Evaporative/Refueling Family**	--
Original Test Vehicle Model Year	2021		

Vehicle Model

Represented Test Vehicle Make	Tesla	**Represented Test Vehicle Model**	Model S Plaid (21" Wheels)

Leak Family Details

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

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Electric Motor	Electricity

Hybrid Indicator	No		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	1	**Odometer Correction Factor**	1
Odometer Correction Sign	- = System Miles is equal to (Test odometer reading - Initial system miles) * Correction factor		
Odometer Correction Units	Miles		
Engine Code	L2S	**Rated Horsepower**	1006
Displacement (liters)	0.001		
Air Aspiration Method	Naturally Aspirated	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	--	**Air Aspiration Device Configuration**	--
Charge Air Cooler Type	--	**Drive Mode While Testing**	4-Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	4765	**Equivalent Test Weight (pounds)**	5000
GVWR (lbs)	5657	**N/V Ratio**	90.3
Axle Ratio	7.56		
Transmission Type	Direct Drive	**# of Transmission Gears**	1
Transmission Lockup	No	**Creeper Gear**	No

Dynamometer Coefficients:

	Target Coefficients			Set Coefficients			
Coefficient Category	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients**
City/Highway/Evap	43.3	0.5143	0.0109	-13.83	0.2519	0.0104	12.8
Cold CO	47.63	0.5657	0.012	-15.92	0.1193	0.0121	N/A

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Emission Control Device Comments	No emissions control Device - Pure Electric Vehicle
Manufacturer Test Vehicle Comments	This is a Model S Plaid with 21" wheels configuration. Individual HP is 250kW (Front); 250kW * 2 (Rear)

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070308**	**Test Procedure**	**2 - CVS 75 and later (w/o can. load)**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	Electricity
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)	1.2087	--
DT-EER (Drive Trace Energy Economy Rating)	0.8309	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.9051	--
MFR FE (Manufacturer Fuel Economy)	21.6123	155.9297252
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 Plaid (21" Wheels). AC wh/mi @ 50 % SOC: Bag1FE75 243.1 Bag2FE75 215.8 Bag3FE75 234.5 Bag4FE75 211.7

Certification Summary Information Report

Test Group NTSLV00.0L3S **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	--	--	--	0	--	0	0	Pass
CA	150,000 miles	California ZEV	CO	0.0	--	--	--	--	1	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	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070309**	**Test Procedure**	**3 - HWFE**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	N/A
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	N/A	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)	9.2559	--
DT-EER (Drive Trace Energy Economy Rating)	2.2951	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	11.5236	--
MFR FE (Manufacturer Fuel Economy)	22.0986	152.4983483
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 Plaid (21" Wheels). The HFET result from the full discharge MCT is used for the 2-part and 5-part calculations. AC wh/mi: HFETFE 221.0

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070311**	**Test Procedure**	**90 - US06**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	N/A
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	N/A	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)	-0.5294	--
DT-EER (Drive Trace Energy Economy Rating)	-1.486	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-1.3751	--
MFR FE (Manufacturer Fuel Economy)	29.5852	113.9083055
NOX (Nitrogen Oxide)	0	--
NMOG (Non-methane organic gases)	0	--

Manufacturer Test Comments Internal Test results (US 06) for MY2021 Model S Plaid (21" Wheels). US 06 AC wh/mi @ 50% SOC: US06CityFE 295.9 US06HwyFE 274.5

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070312**	**Test Procedure**	**95 - SC03**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	N/A
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	N/A	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)	1.3489	--
DT-EER (Drive Trace Energy Economy Rating)	1.1491	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	2.4783	--
MFR FE (Manufacturer Fuel Economy)	26.44	127.4583964
NOX (Nitrogen Oxide)	0	--
NMOG (Non-methane organic gases)	0	--

Manufacturer Test Comments Internal Test results (SC 03) for MY2021 Model S Plaid (21" Wheels). AC wh/mi @ 50% SOC: SC03FE95 264.4

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070306**	**Test Procedure**	**81 - Charge Depleting UDDS**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	N/A
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	N/A	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)**	116.344
Charge Depleting Range (Calculated miles)	459	**Charge Depleting Range (Actual miles)**	459
All Electric Range Unadjusted (miles)	--	**Derived 5-Cycle Coefficient Model Year**	--
Equivalent All Electric Range (miles)	459		
Number of Charge Depleting Bags/Phases Conducted	4	**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	1.7031
5	Drive Trace Energy Economy Rating	1.1366
6	Drive Trace Inertia Work Ratio Rating	2.8257
7	Manufacturer Fuel Economy	133.1
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	99.287
13	System Start State of Charge Watt-hours	0

Manufacturer Test Comments Internal Test results for MY2021 Model S Plaid (21" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC 99287 wh (system gave error limited to 4 digits). MCT dc wh/mi is attached with EPA application. Added NMOG Test results.

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070307**	**Test Procedure**	**84 - Charge Depleting Highway**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	Electricity
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)**	116.344
Charge Depleting Range (Calculated miles)	443	**Charge Depleting Range (Actual miles)**	443
All Electric Range Unadjusted (miles)	--	**Derived 5-Cycle Coefficient Model Year**	--
Equivalent All Electric Range (miles)	443		
Number of Charge Depleting Bags/Phases Conducted	2	**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	3.9182
5	Drive Trace Energy Economy Rating	1.2421
6	Drive Trace Inertia Work Ratio Rating	4.9515
7	Manufacturer Fuel Economy	128.3
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	99.287
13	System Start State of Charge Watt-hours	0

Manufacturer Test Comments Internal Test results for MY2021 Model S Plaid (21" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC - 99287 wh (System error limited to 4 digits). MCT dc wh/mi is attached with application.

Certification Summary Information Report

Test Group NTSLV00.0L3S **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	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070310**	**Test Procedure**	**86 - Charge Depleting 20 Degree F FTP**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	06/02/2021	**Fuel**	N/A
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	N/A	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2075	**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)**	109.602
Charge Depleting Range (Calculated miles)	290	**Charge Depleting Range (Actual miles)**	290
All Electric Range Unadjusted (miles)	--	**Derived 5-Cycle Coefficient Model Year**	--
Equivalent All Electric Range (miles)	290		
Number of Charge Depleting Bags/Phases Conducted	39	**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	1.655
5	Drive Trace Energy Economy Rating	1.1808
6	Drive Trace Inertia Work Ratio Rating	3.0119
7	Manufacturer Fuel Economy	32.2399
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	93.534
13	System Start State of Charge Watt-hours	0

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Manufacturer Test Comments

Internal Test results(Cold UDDS) for Model S Plaid (21" Wheels). END SOC is 93534 wh (System error limited to 4 digits) for full discharge. 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. AC wh/mi: Bag1FE20 420.7 Bag2FE20 412.1 Bag3FE20 376.8 Bag4FE20 381.6

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Emission Data Vehicle Information

Vehicle ID / Configuration	ST321-433418 / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	MTSLV00.0L3S	**Original Evaporative/Refueling Family**	--
Original Test Vehicle Model Year	2021		

Vehicle Model

Represented Test Vehicle Make	Tesla	**Represented Test Vehicle Model**	Model S Plaid (19" Wheels)

Leak Family Details

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

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Electric Motor	Electricity

Hybrid Indicator	No		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	1	**Odometer Correction Factor**	1
Odometer Correction Sign	- = System Miles is equal to (Test odometer reading - Initial system miles) * Correction factor		
Odometer Correction Units	Miles		
Engine Code	L2S	**Rated Horsepower**	1006
Displacement (liters)	0.001		
Air Aspiration Method	Naturally Aspirated	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	--	**Air Aspiration Device Configuration**	--
Charge Air Cooler Type	--	**Drive Mode While Testing**	4-Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	4765	**Equivalent Test Weight (pounds)**	5000
GVWR (lbs)	5657	**N/V Ratio**	90.3
Axle Ratio	7.56		
Transmission Type	Direct Drive	**# of Transmission Gears**	1
Transmission Lockup	No	**Creeper Gear**	No

Dynamometer Coefficients:

	Target Coefficients			Set Coefficients			
Coefficient Category	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**A (lbf)**	**B (lbf/mph)**	**C (lbf/mph**2)**	**EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients**
City/Highway/Evap	29.64	0.6164	0.01	-9.01	0.3786	0.0086	11.4

Emission Control Device Comments No emissions control Device - Pure Electric Vehicle

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Manufacturer Test Vehicle Comments This is a Model S Plaid with 19" wheels configuration. Individual HP is 250kW (Front); 250kW * 2 (Rear)

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070679**	**Test Procedure**	**81 - Charge Depleting UDDS**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	07/02/2021	**Fuel**	N/A
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	N/A	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2278	**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)**	115.457
Charge Depleting Range (Calculated miles)	529	**Charge Depleting Range (Actual miles)**	529
All Electric Range Unadjusted (miles)	--	**Derived 5-Cycle Coefficient Model Year**	--
Equivalent All Electric Range (miles)	529		
Number of Charge Depleting Bags/Phases Conducted	4	**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	0.305
5	Drive Trace Energy Economy Rating	0.3939
6	Drive Trace Inertia Work Ratio Rating	0.5727
7	Manufacturer Fuel Economy	154.52
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	99.371
13	System Start State of Charge Watt-hours	0

Manufacturer Test Comments Internal Test results for MY2021 Model S Plaid (19" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC 99371 wh (system gave error limited to 4 digits). MCT dc wh/mi is attached with EPA application. Added NMOG Test results.

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Test #	**MTSL10070680**	**Test Procedure**	**84 - Charge Depleting Highway**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	62 - Electricity
Test Date	07/02/2021	**Fuel**	Electricity
Fuel Batch ID	--	**Fuel Calibration Number**	--
Vehicle Class	LDV/Passenger Car	**DF Type**	Mfr. Assigned
Verify Test Lab ID	Tesla Kato		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	2278	**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)**	115.457
Charge Depleting Range (Calculated miles)	497	**Charge Depleting Range (Actual miles)**	497
All Electric Range Unadjusted (miles)	--	**Derived 5-Cycle Coefficient Model Year**	--
Equivalent All Electric Range (miles)	497		
Number of Charge Depleting Bags/Phases Conducted	2	**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	1.0085
5	Drive Trace Energy Economy Rating	0.3476
6	Drive Trace Inertia Work Ratio Rating	1.2895
7	Manufacturer Fuel Economy	145.23
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	99.371
13	System Start State of Charge Watt-hours	0

Manufacturer Test Comments Internal Test results for MY2021 Model S Plaid (19" Wheels). Range determined by using SAE J1634 Multi-cycle test procedure. END-SOC - 99371 wh (System error limited to 4 digits). MCT dc wh/mi is attached with application.

Certification Summary Information Report

Test Group NTSLV00.0L3S **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	--	--

Fuel Properties

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**Evaporative/Refueling Family**	--

Consolidated List of Standards

Exhaust Standards

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

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	NTSLV00.0L3S	**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	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

Certification Summary Information Report

Test Group	NTSLV00.0L3S	**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	NTSLV00.0L3S	**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	NTSLV00.0L3S	**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

Model S Driver's Guide

Basic functions

Starting vehicle

1. Make sure the key is in the left wireless charging slot
2. Press the brake pedal to turn on the vehicle
3. If successful, the PRND should illuminate on the instrument cluster.

Basic functions

Switching gears

To switch gears, use the following method. Make sure the vehicle is ON and brake pedal is pushed in prior to attempting. Slide right on the dotted area on the left side of the screen to bring up quick access.

1. Slide the car icon up to go into drive or back to go into reverse
2. Press to go into park
3. Press and hold to go into neutral

Basic functions

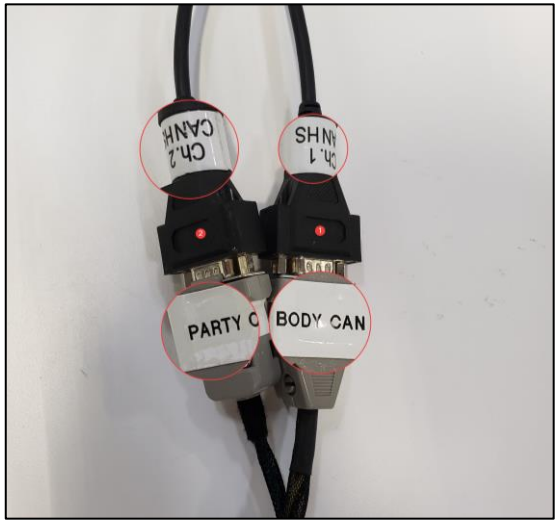
Opening door

1. Press this button to unlatch the door
2. Pulling this lever upwards will manually open the door

Setup / Test notes

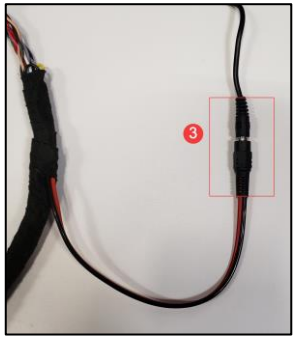
- Before restraining the vehicle on the dyno, set ride height to standard from the user interface controls and then turn on the dyno mode.
  - Refer to slide 11 and 24.
- If using a 500 A clamp, caution should be taken during the initial acceleration for the constant speed sections of MCT as the discharge current might go beyond 500 A. As previously recommended, utilize 1 min of time to accelerate to 65 mph as allowed in the regulation.
- Refer to slide 24 on how to enable/disable speed limiter

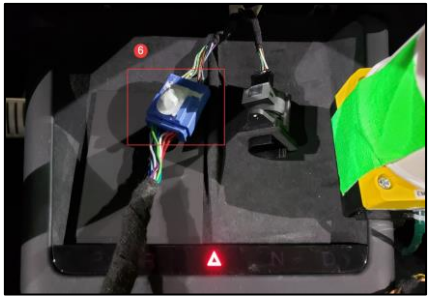
CAN harness & Memorator



1. Channel 1 connects to BODY CAN
2. Channel 2 connects to PARTY CAN
3. External power is needed for harness to power memorator
4. Power LED should flash green while traffic LED's will be solid yellow when recording
5. Red traffic LED's can be caused by SD card inserted incorrectly, misconfigured SD card or loose connections
6. Harness 1 plug in location
7. Harness 2 plug in location

Note: To start/stop memorator recording, connect/disconnect channel 1





Main Screen Settings

- Prior to derivations and multi-cycle testing, all vehicle settings must be confirmed. The vehicle settings should match all slide illustrations.
- On the main touchscreen the following should be checked.
    1. WIFI is **OFF**
    2. No Bluetooth device is connected
    3. HVAC is turned **OFF**
    4. Media Volume is turned **OFF**
- Once those settings are checked, additional vehicle settings should be checked by pressing the dotted area on the left side of the screen then pressing controls.

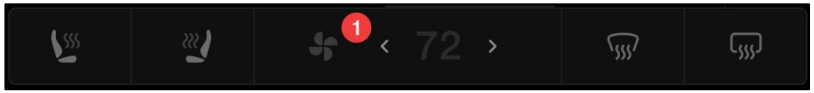
Main Screen Settings

Turning Wi-Fi OFF

1. Read instructions embedded on the snip below

Turning HVAC OFF

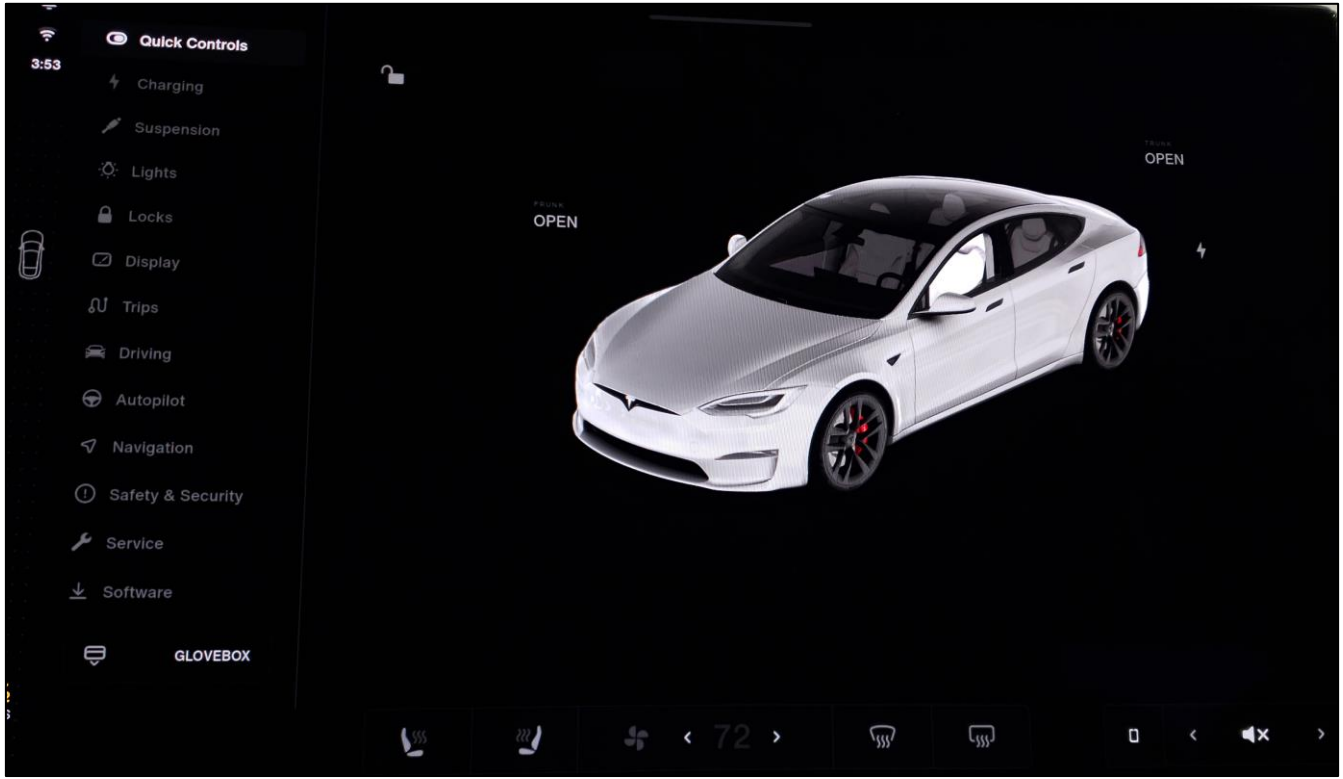
1. Verify HVAC is OFF by selecting the fan icon in the lower section of the touch screen.



*HVAC set temperature will be gray indicating HVAC is OFF

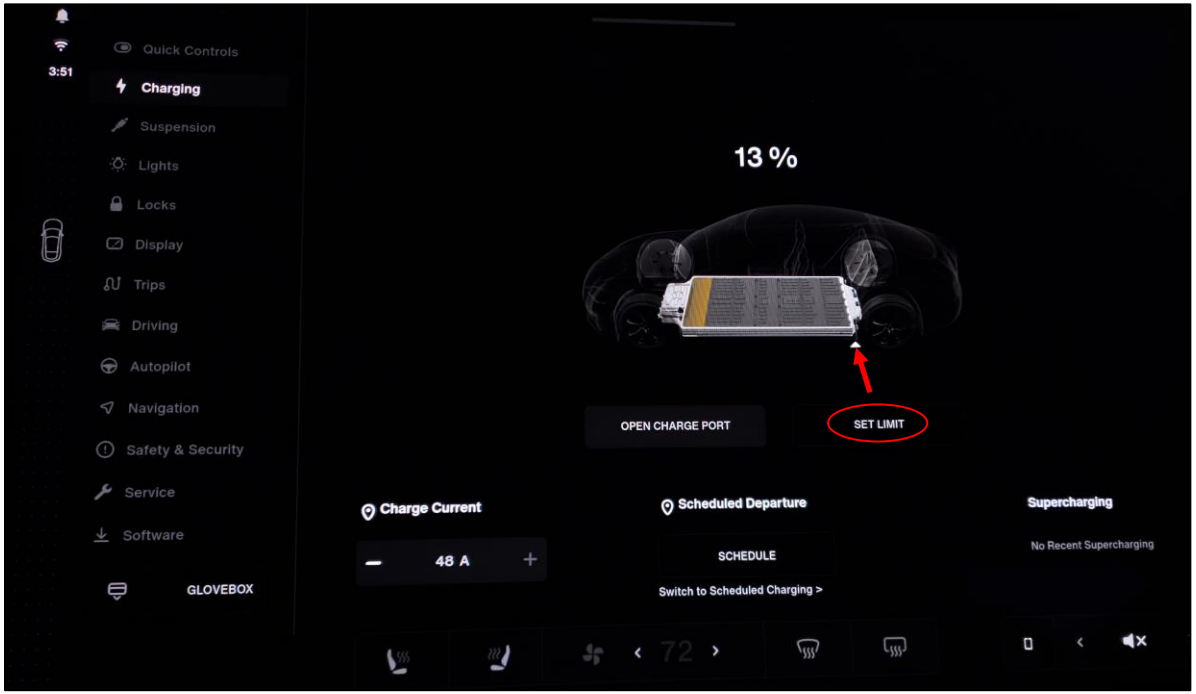
The HVAC control window will pop up. Press the power button **if the icon is blue. Pressing this icon when blue will turn the HVAC OFF.**

Quick Controls



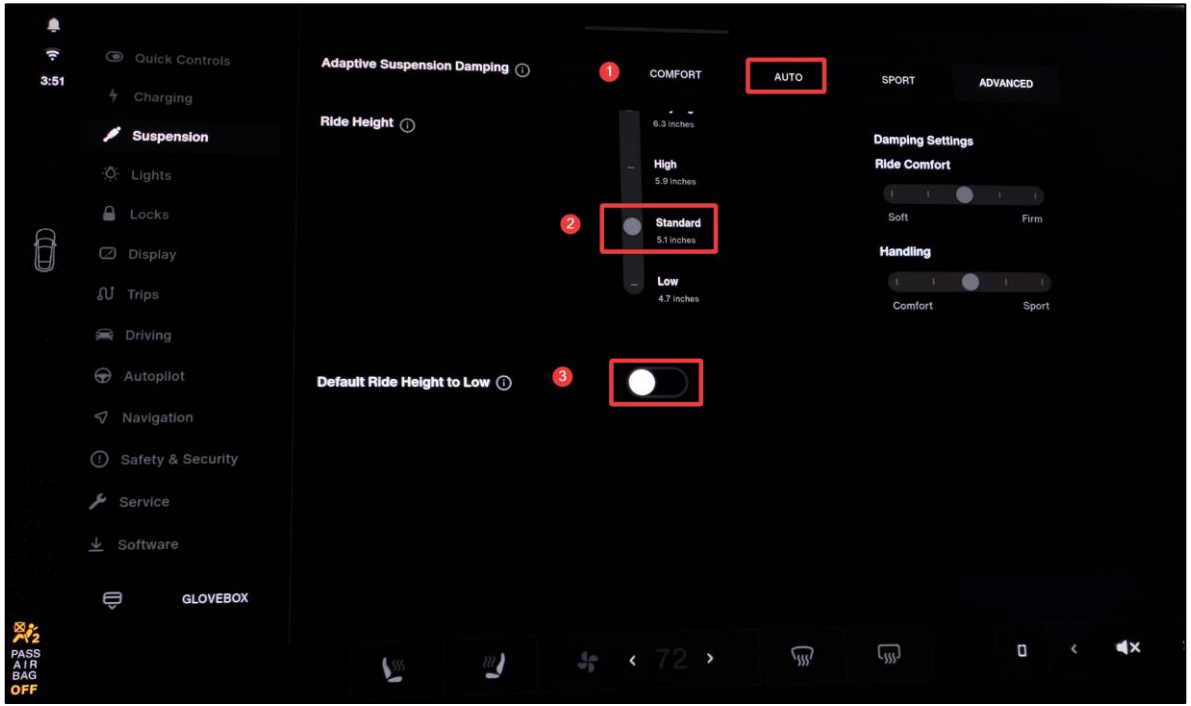
- No actions needed

Charging



- Set limit to 100% by pressing “set limit” and moving slider to the right.

Suspension

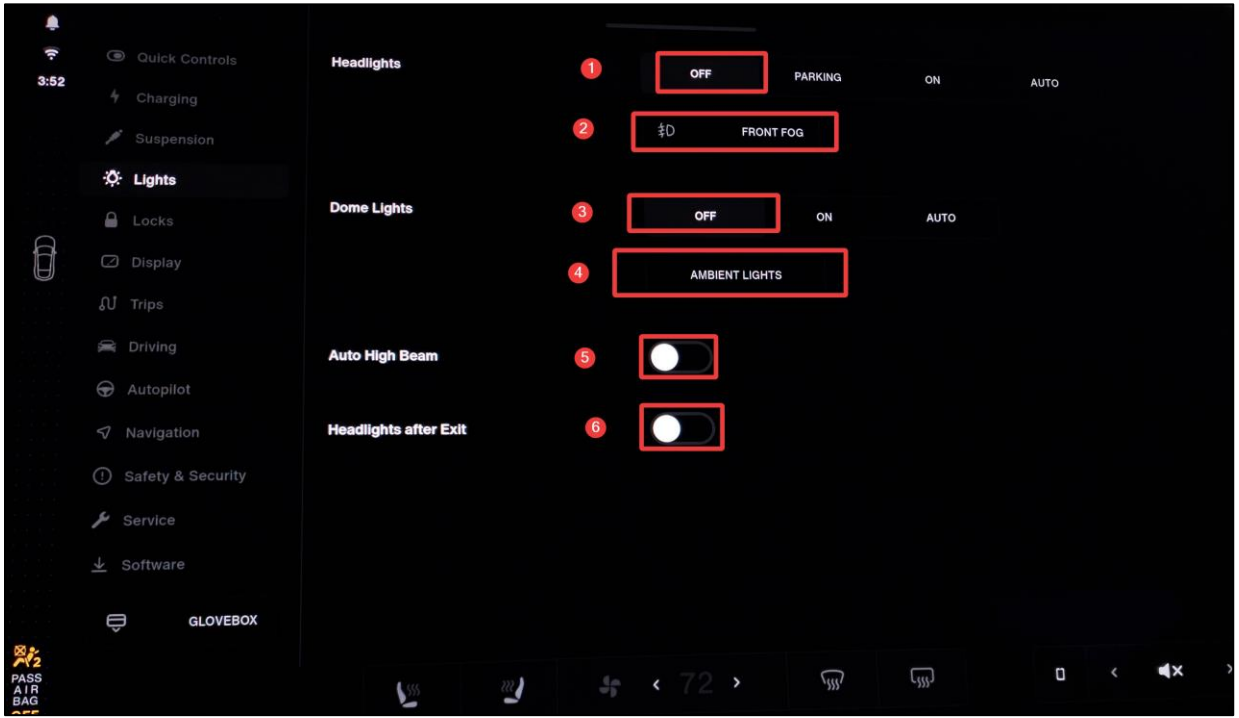


Suspension

1. Adaptive suspension damping set to “**AUTO**”
2. Ride height should be in “**Standard**”
3. Default ride height to low “**OFF**”

Note: As mentioned on slide 5, please make sure steps 1, 2 and 3 are followed before putting the car in the dyno mode.

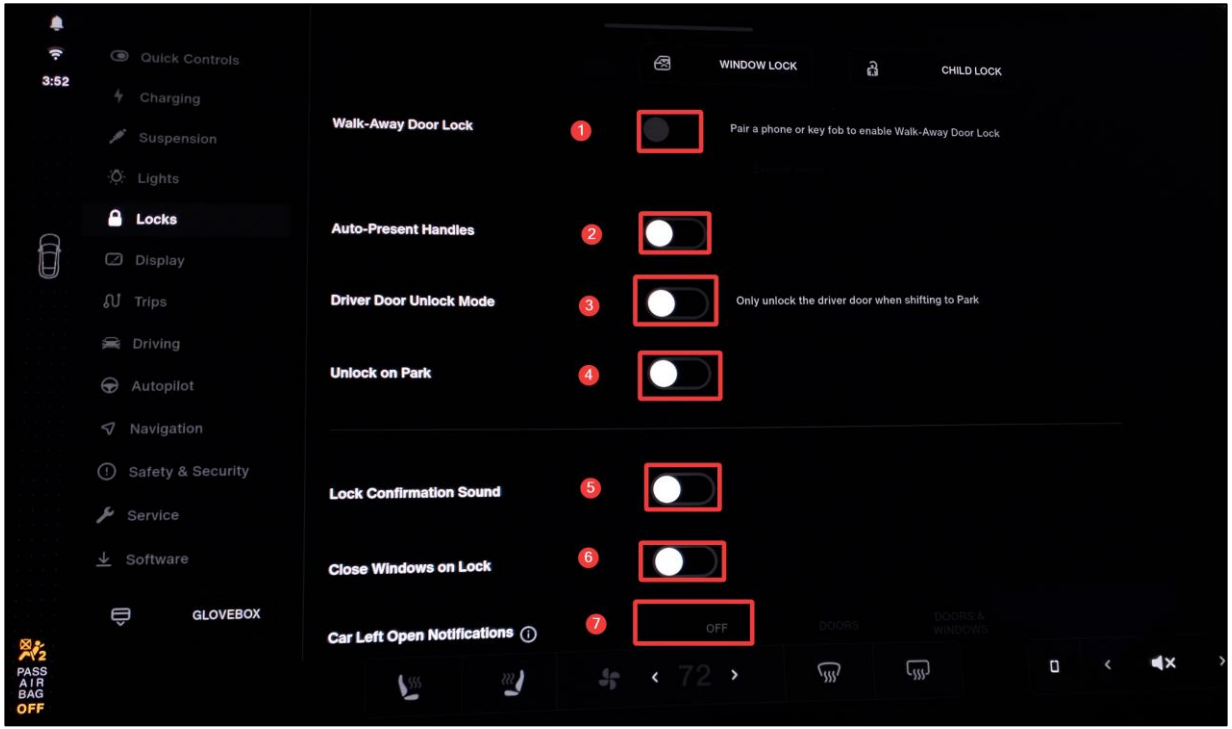
Lights



Lights

1. Headlights **OFF**
2. Front fog lights turned **OFF**
3. Dome lights turned **OFF**
4. Ambient lights **OFF**
5. Auto high beam **OFF**
6. Headlights after exit **OFF**

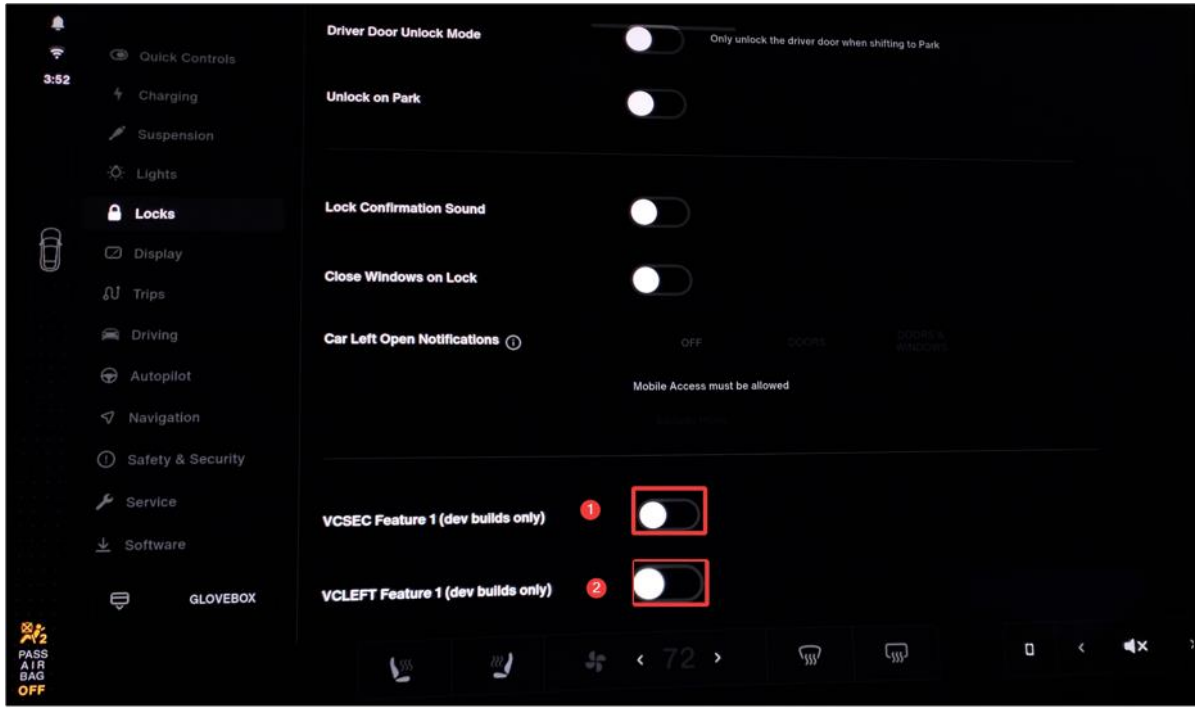
Locks



Locks

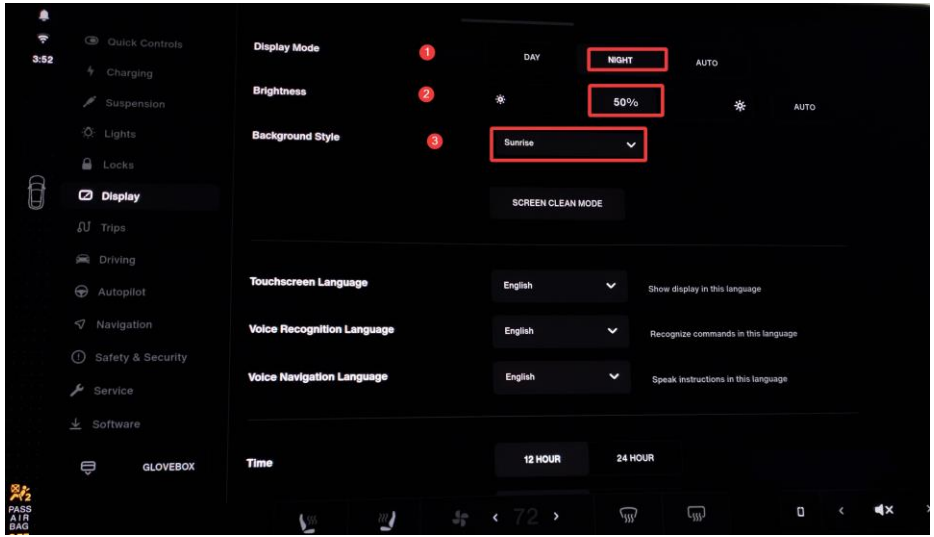
1. Walk-away door lock **OFF**
2. Auto-present handles **OFF**
3. Driver door unlock mode **OFF**
4. Unlock on park **ON**
5. Car left open notifications **OFF**

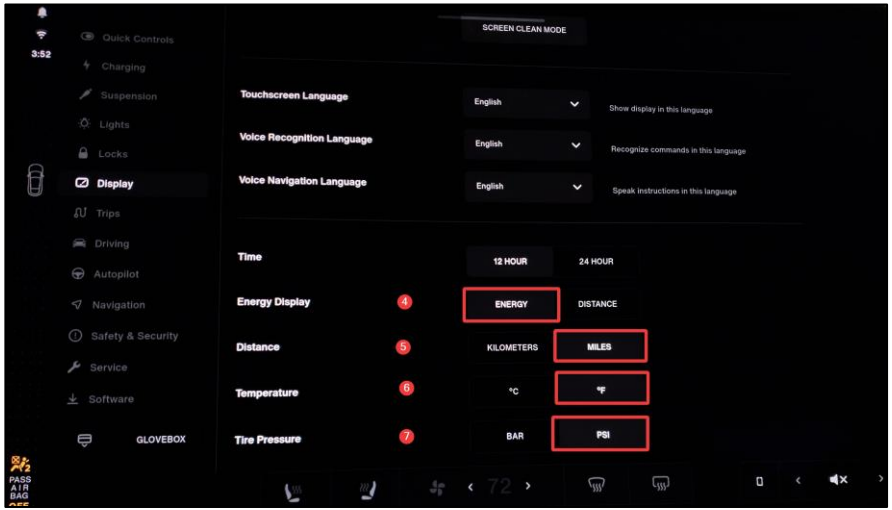
Locks (continued)



1. VCSEC feature 1 (dev builds only) **OFF**
2. VCLEFT feature 1 (dev builds only) **OFF**

Display

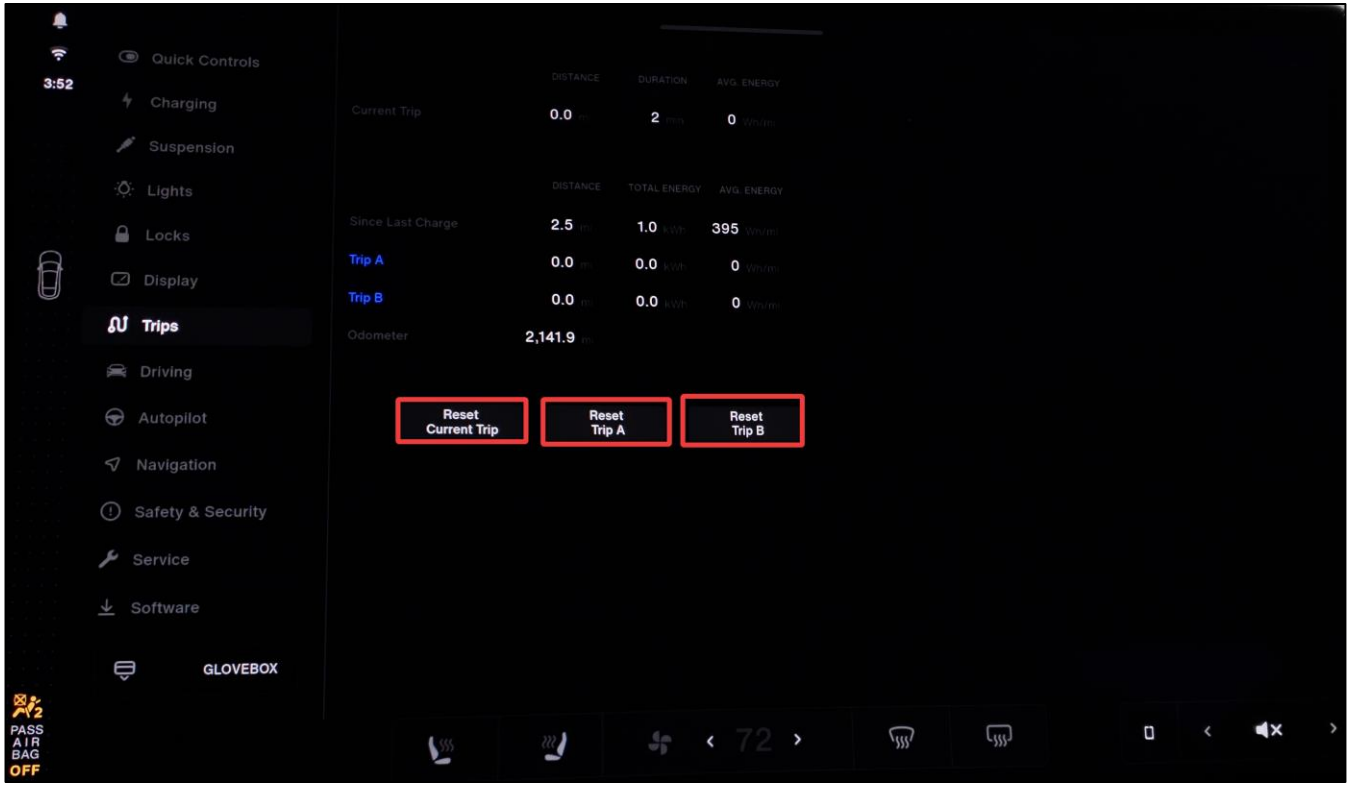




Display

1. Display mode **night**
2. Brightness **50%**
3. Background style **Sunrise**
4. Energy display **Energy**
5. Distance **miles**
6. Temperature **°F**
7. Tire pressure **PSI**

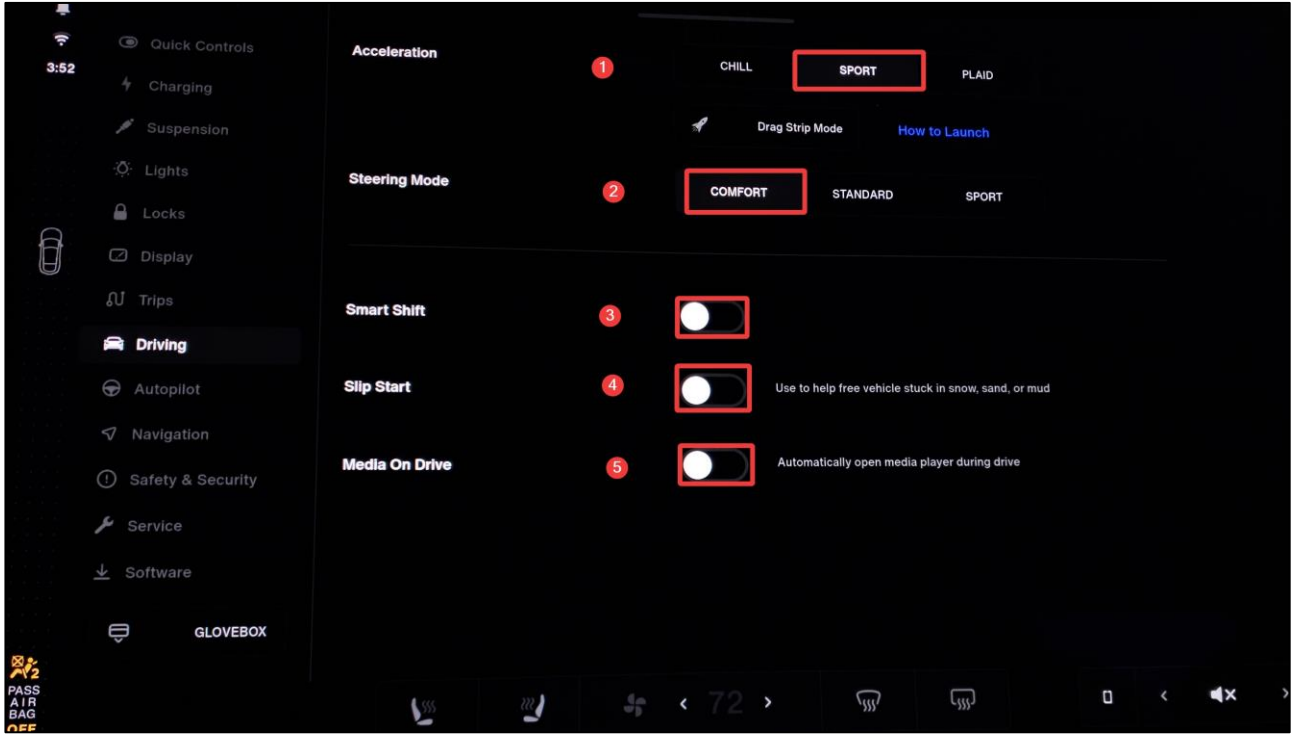
Trips



Trips

1. Reset all trips

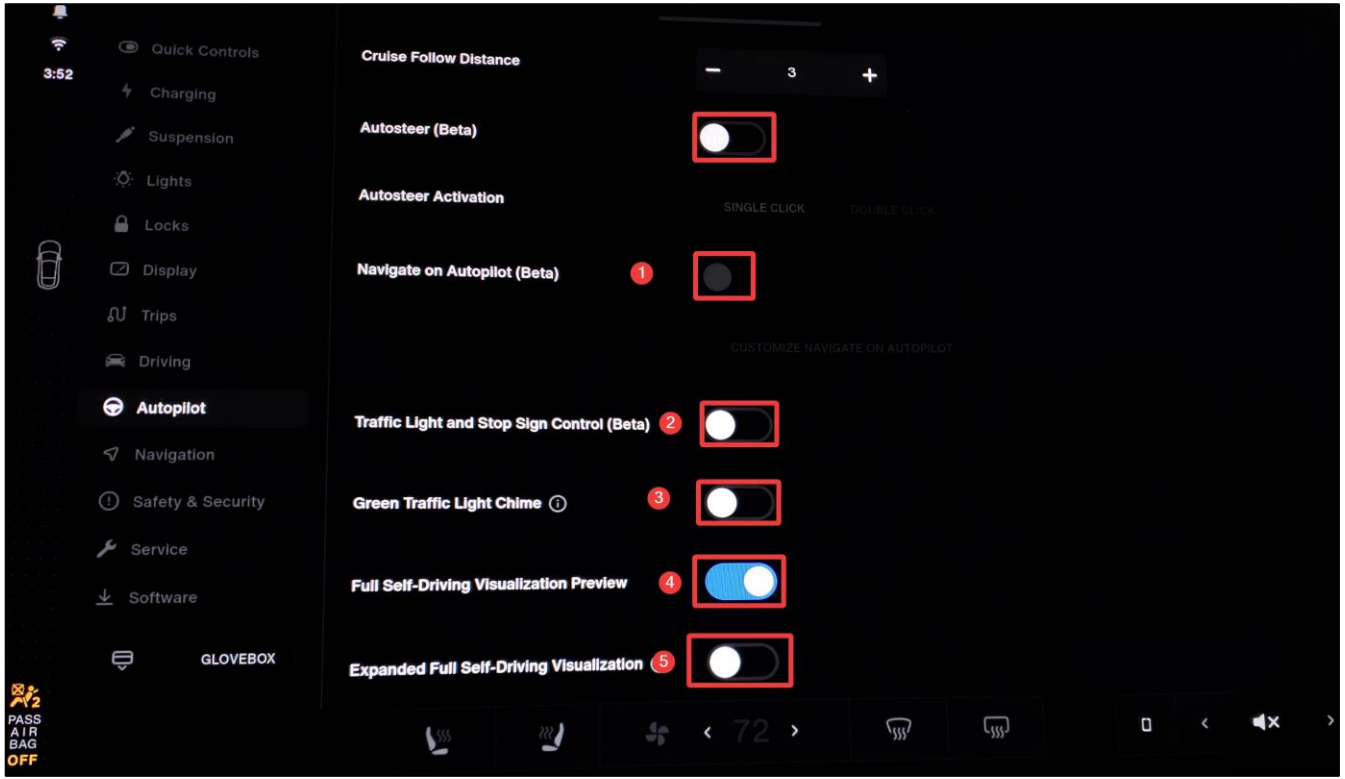
Driving



Driving

1. Acceleration set to **CHILL/SPORT**
2. Steering mode set to **COMFORT**
3. Smart shift **OFF**
4. Slip start **OFF**
5. Media on Drive **OFF**

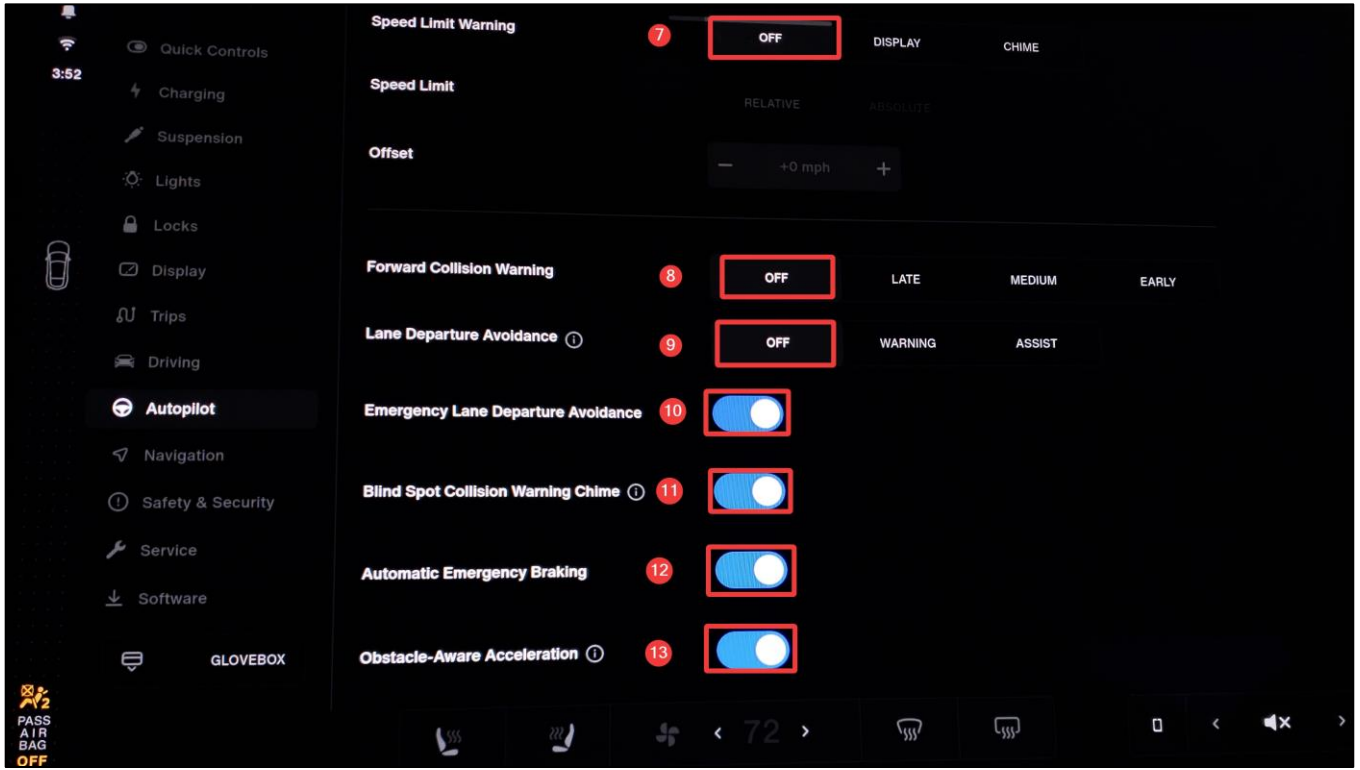
Autopilot



Autopilot

1. Autosteer (Beta) **OFF**
2. Navigate on Autopilot (Beta) **OFF**
3. Traffic light and stop sign control (Beta) **OFF**
4. Green traffic light chime **OFF**
5. Full self-driving visualization preview **ON**
6. Expanded full self-driving visualization **OFF**

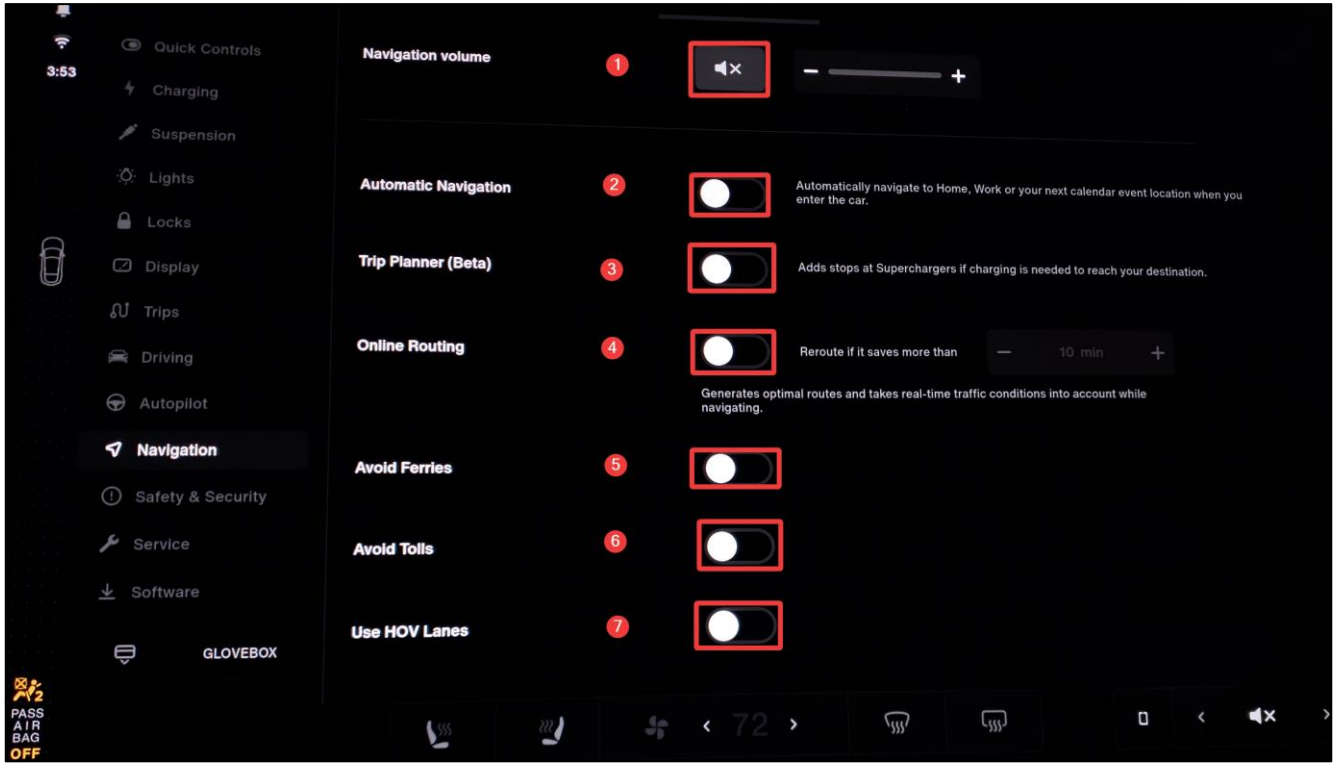
Autopilot (continued)



Autopilot (continued)

7. Speed limit warning **OFF**
8. Forward collision warning **OFF**
9. Lane departure avoidance **OFF**
10. Emergency lane departure avoidance **ON**
11. Blind spot collision warning chime **ON**
12. Automatic emergency braking **ON**
13. Obstacle-aware acceleration **ON**

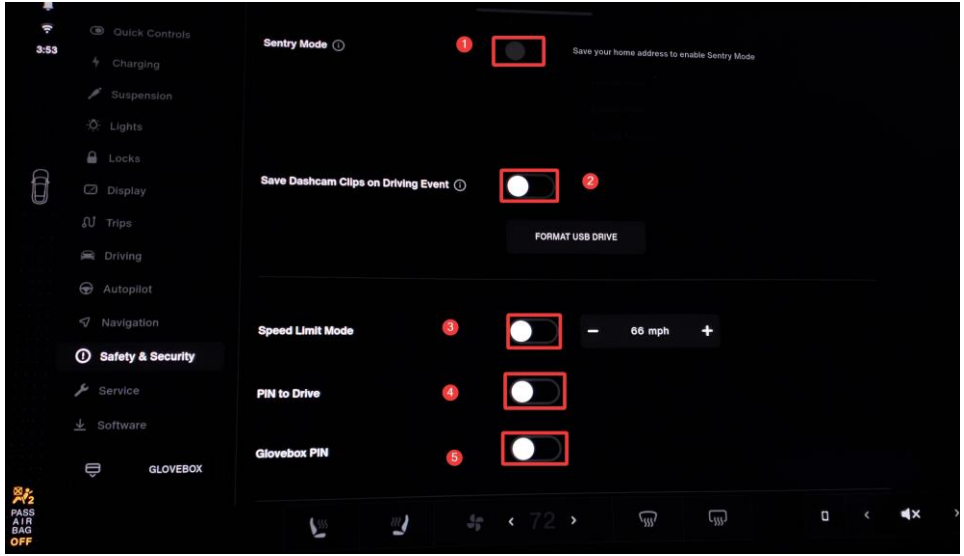
Navigation

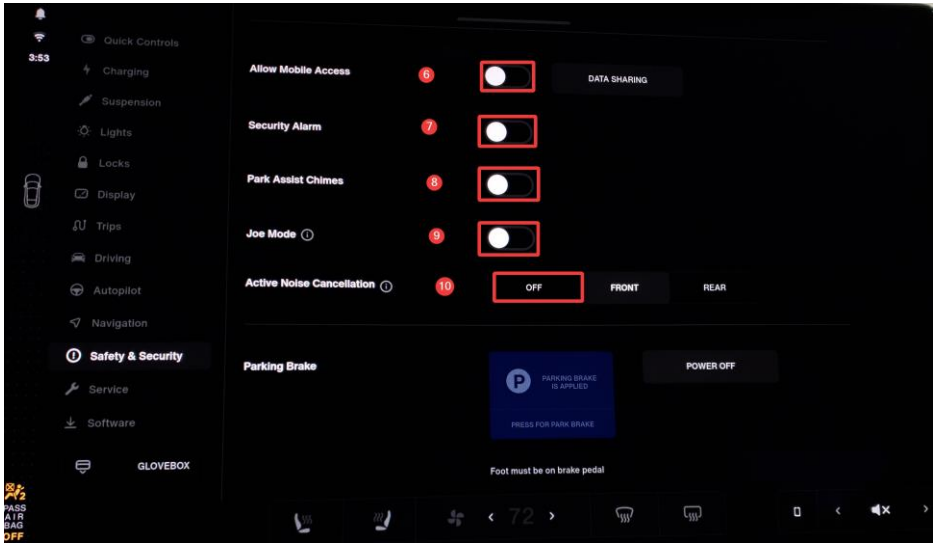


Navigation

1. Volume **OFF**
2. Automatic navigation **OFF**
3. Trap planner (beta) **OFF**
4. Online routing **OFF**
5. Avoid ferries **OFF**
6. Avoid tolls **OFF**
7. Use HOV lanes **OFF**

Safety & Security

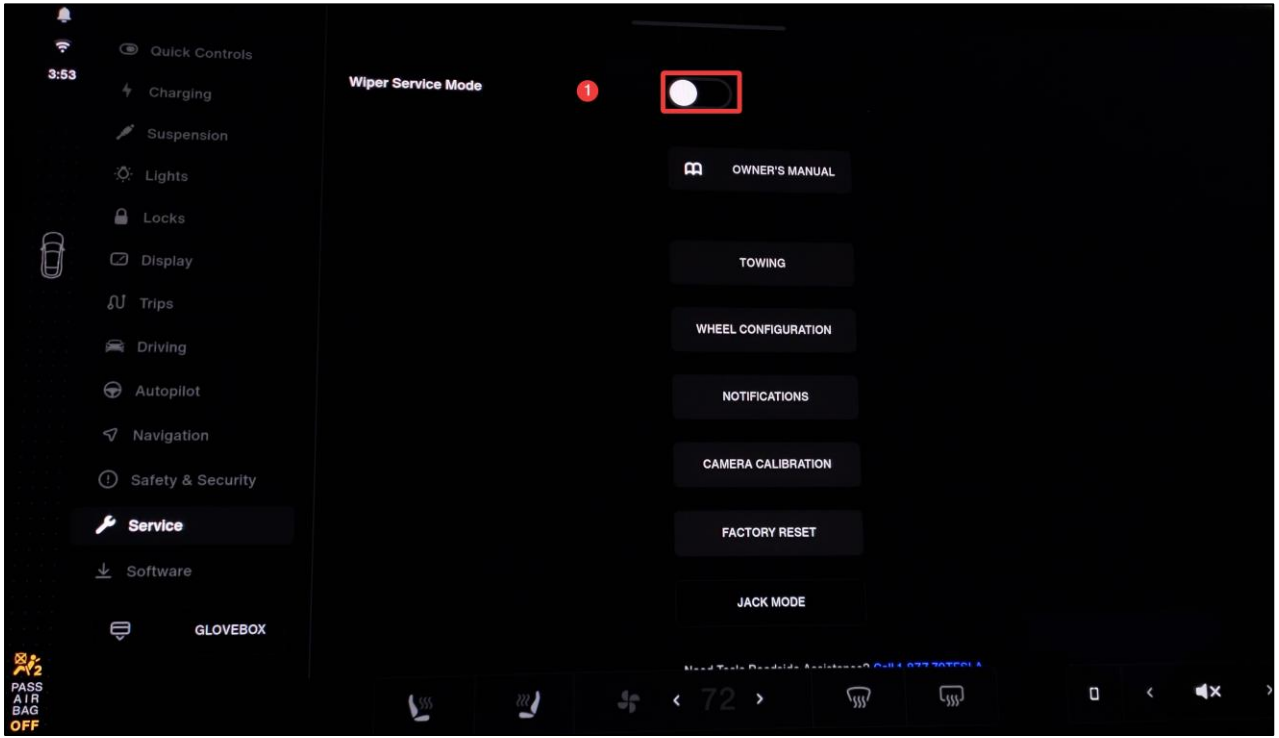




Safety & Security

1. Sentry mode **OFF**
2. Save dashcam clips on driving event **OFF**
3. Speed limit mode **OFF** every time except for constant speed sections
4. PIN to drive **OFF**
5. Glovebox PIN **OFF**
6. Allow mobile access **OFF**
7. Security alarm **OFF**
8. Park assist chimes **OFF**
9. Joe mode **OFF**
10. Active noise cancellation **OFF**

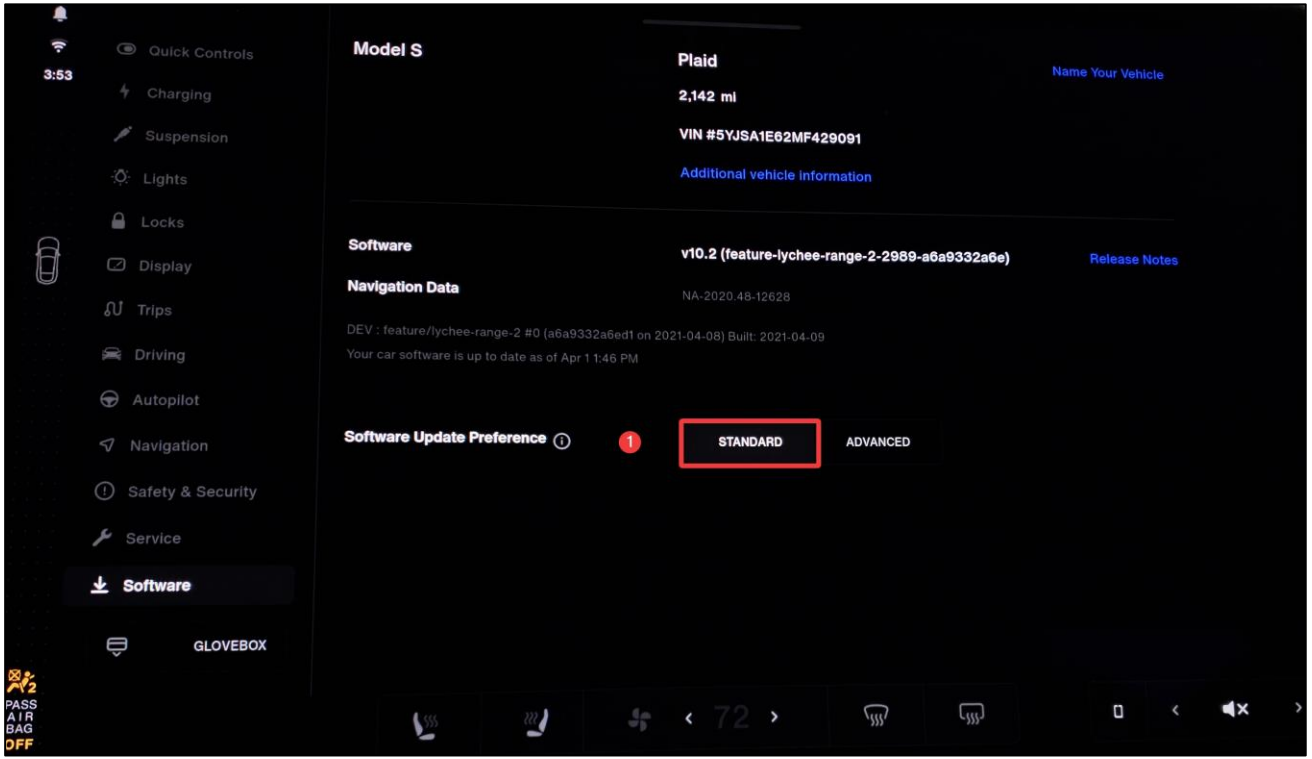
Service



Service

1. Wiper service mode **OFF**

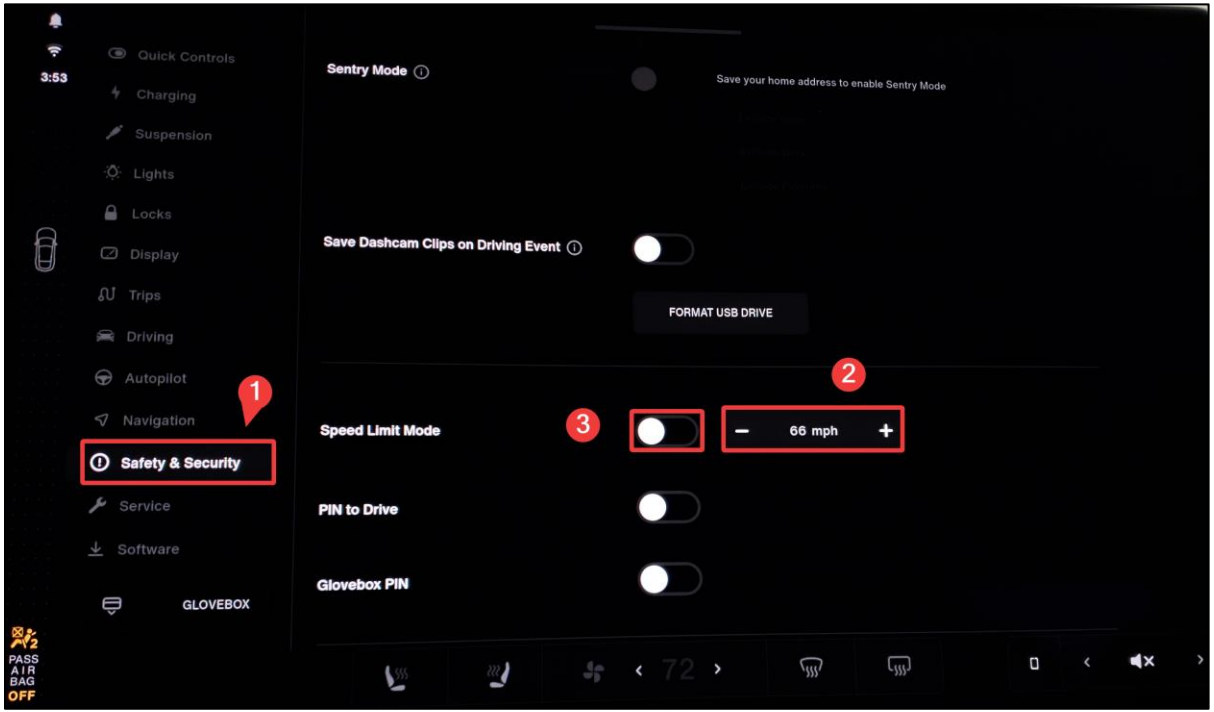
Software



Software

1. Software update preference **“STANDARD”**

Enable/disable speed limiter



Put vehicle in park

1. Go to safety and security
2. Set speed limit to 66 mph
3. Turn on speed limit mode

Enter passcode “0000” when prompted

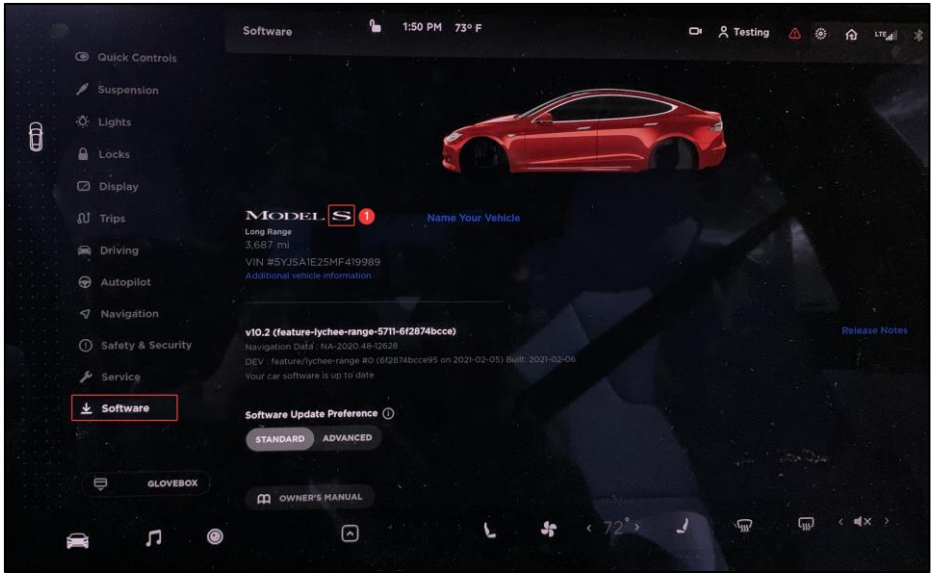
To disable speed limiter, put vehicle in park

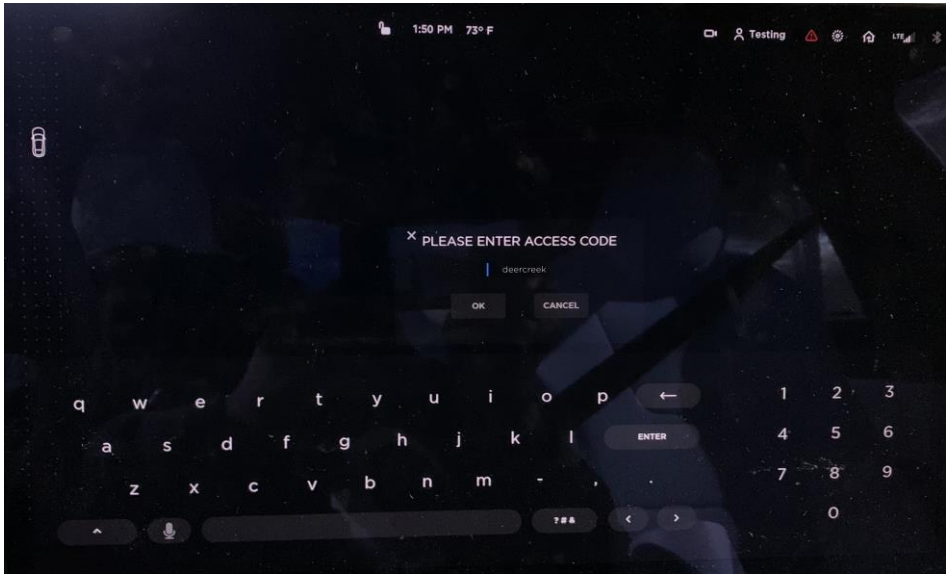
1. Go to safety and security
2. Turn off speed limiter

Enter passcode “0000” when prompted.

DYNO Mode

Entering Dyno Mode



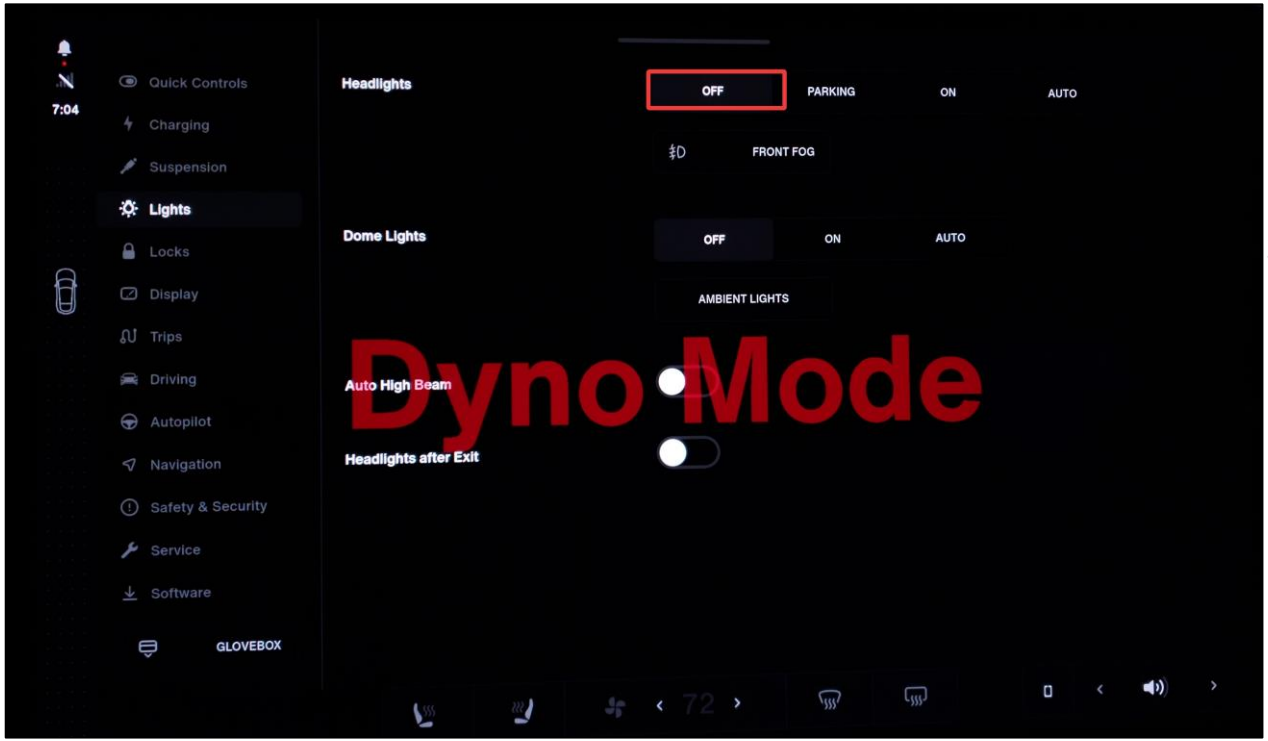


Note: Please follow slide 11 before doing these steps

1. On the software screen, hold the Model **S** icon for 5 seconds. If successfully done, a pop-up window will appear in the middle of the screen.
2. Enter access code: “dynotest”

- When this is done successfully, the phrase ‘Dyno Mode’ will appear both on the instrument cluster and center screen.
- It is normal for alerts to appear indicating traction control is disabled after dyno mode in enabled.

Entering Dyno Mode



1. Dyno mode is now **ON**
   - Verification steps:
     - UI should say “Dyno Mode” in bold red font
     - Following alerts should appear:
       - Stability control disabled
       - Traction control disabled
       - Dyno mode enabled – Do not drive
2. Verify the headlights are turned back OFF before driving on the dyno.

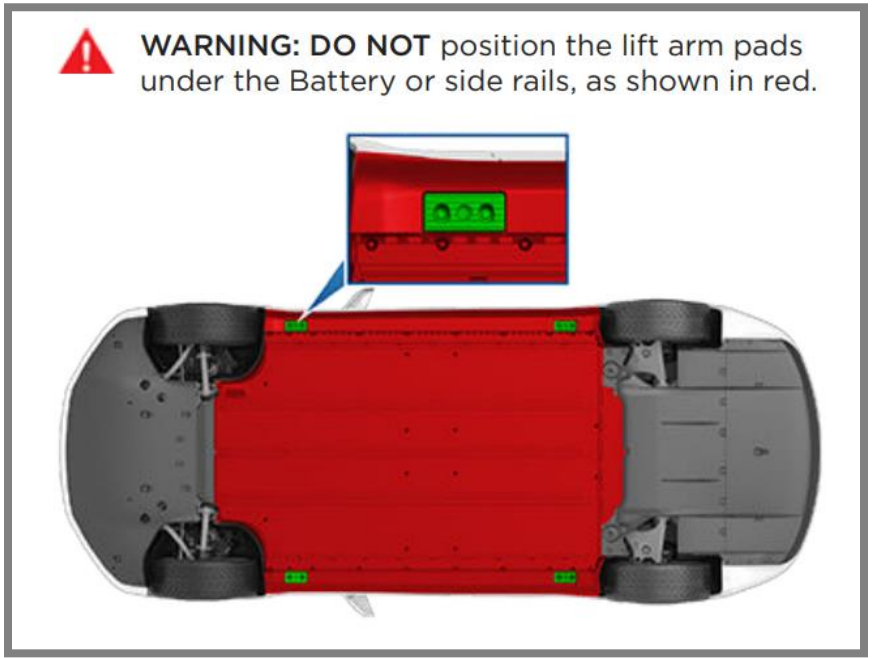
   - In the light controls tab, turn the headlights OFF after going into drive.

External Current Measurement
2021 Model S

Requirements

- 1 Hioki current probe (or similar instrument with high enough accuracy)
  - Minimum current rating of 500 A clamps. 1000 amp is preferred. If a 500amp clamp is used, caution will need to be taken during the initial acceleration for CSS of MCT. A gradual acceleration will need to be done. Example: Taking 60 seconds to accelerate to 65mph.
  - Hioki current probes should be zeroed out before installation
- Power Analyzer
- The current clamp should be installed before putting the vehicle on the dyno.

Raising the Vehicle

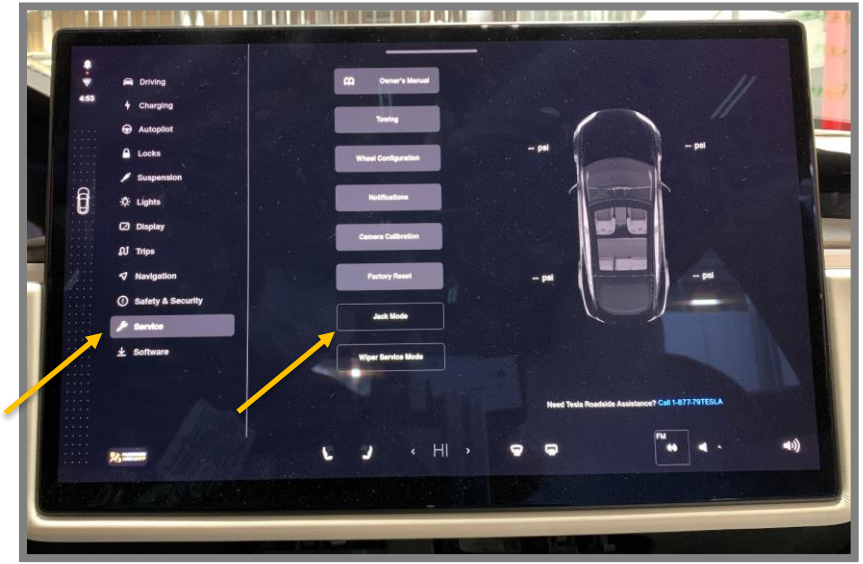


- Model S equipped with air suspension automatically self-levels, even when power is off. To prevent damage when jacking or lifting the vehicle, you must activate **Jack Mode** to disable self-leveling.

Jacking Procedure

1. Position Model S centrally between the lift posts.
2. Using the touchscreen, raise the suspension to Very High. This is done by navigating to Controls>Suspension>Ride Height. Press the brake pedal and verify all doors and the liftgate are closed. Then press the Very High icon.
3. Position the lift arm pads under the designated body lift points at the locations shown.

Raising the Vehicle: Jack Mode



1. One the lift pads are placed in the correct position under the vehicle, use the touchscreen to enable Jack Mode.
   - Controls>Service>Jack Mode
   - When done successfully, the Jack Mode icon will turn blue.

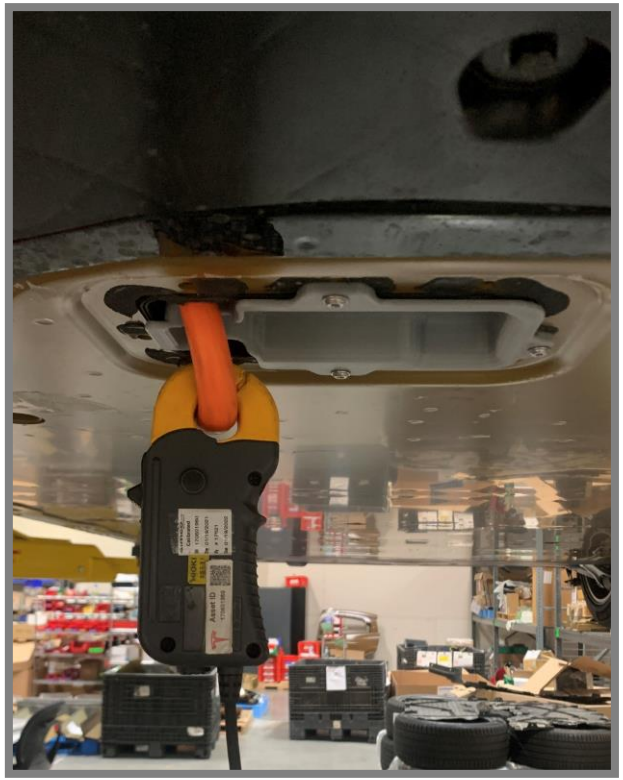
2. Now the vehicle can be lifted in the air to access the lower current clamp contact location.

Current Clamp Install

Removing the HV Cover

- Under the vehicle is a cover for access to a HV cable.
- The cover is secured with 4 Phillip head screws. Those 4 screws can be removed now.
- Hold on to these screws. If lost, spares are placed in the center console. Size is M5x65 mm

Current Clamp Install



Current Clamp

- Using caution, install the current clamp over the modified HV cable.

Current Clamp Install

Current Clamp Install

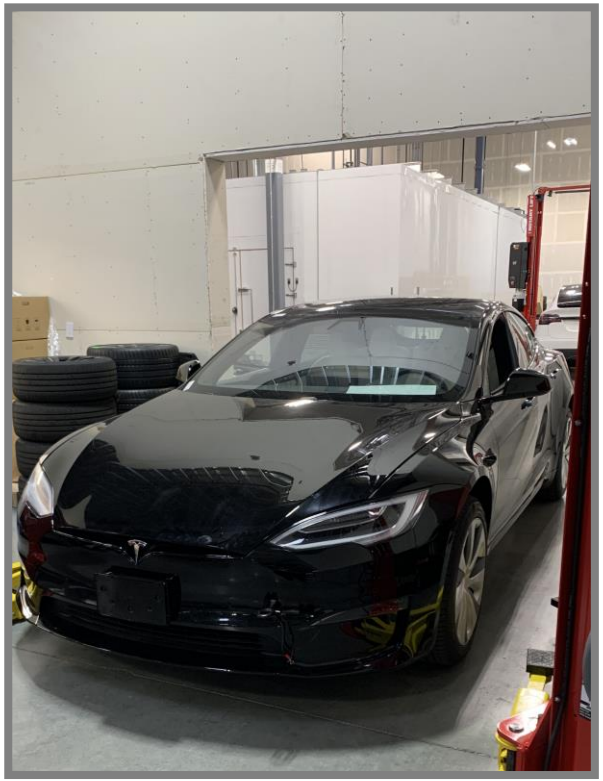
- With the cover in hand, install it over the current clamp. The clamp's leads should be routed out of case facing the driver's side.
- Using the 4 Phillip head screws, install all screws hand tight into the vehicle's battery.

Current Clamp Install

Current Probe Lead Routing

- Use tape to secure the current probe leads to the battery case. The lead should be positioned wherever accessible to the dyno operator and later connected to a power analyzer.

Current Clamp Install



- Once the clamp is installed, the vehicle can be lowered and removed from the lift.
- Jack Mode can now be disabled form the touchscreen.
- Use caution when driving the vehicle. The vehicle should be left in very high unless the vehicle is on the dyno. This is to make sure the HV cover doesn't get damaged while driving.