

TEAM:	#
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Single-Occupant Multi-Occupant

Station	Grade	Comments		
Driver / Passenger Registration				
Driver Operations				
Lights & Vision				
Body & Sizing				
Electrical				
Battery Protection				
Mechanical				
Dynamics				
Safety				
Array Testing		For MOV Teams ONLY:	MOV Discussion	

PENALTY	REGULATION	VALUE

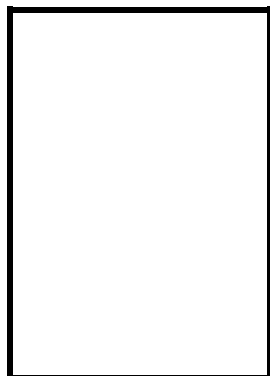
Date & Time Received	
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Regulation / Driver	Driver 1	Driver 2	Driver 3	Driver 4
11.1.A Driver is registered with HQ (has ID), is 18 or older with valid DL				
9.7.B – Common Ballast	Weight: _____		Ballast Tag # _____	
Driver Weight (includes driving clothes and shoes but not helmet)				
9.7, 9.7.A, 11.2, 11.3.C Ballast Weight – ballasted to 80 kg (176 lbs)				
Wristband Color				
Wristband ID #				
Ballast Security Tag ID #				

11.1.A.2 Driver Req. – max of 4, min of 2		
11.3.A Helmets – Type/Rating –Snell M95 / DOT / ISO motorcycle		
11.3.B Shoes – Valid shoes		

***** FOR MULTI-OCCUPANT VEHICLES, COMPLETE PAGE 2 FOR PASSENGERS *****



Station Manager:

Entrance:

All occupants report with ballast material, helmet(s), proper driver/passenger uniforms

Station Grade:

- Green = Pass
- Blue = Pass / Penalty / Bridging Document Required
- Yellow = Needs improvement / Dynamic Test Ready
- Red = Fail / Safety Hazard

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***** FOR MULTI-OCCUPANT VEHICLES *****

Passengers	Passenger 1	Passenger 2	Passenger 3	Passenger 4
11.1.Registered with HQ (has ID), is 18 or older				
Passenger Weight (includes clothes and shoes but not helmet)				
9.7, 9.7.A, 11.2, 11.3.C Ballast Weight – ballasted to 80 kg (176 lbs)				
Passenger Number Punched (1-8, X)				
Wristband ID #				
Ballast Security Tag ID #				

Passengers	Passenger 5	Passenger 6	Passenger 7	Passenger 8
11.1.Registered with HQ (has ID), is 18 or older				
Passenger Weight (includes clothes and shoes but not helmet)				
9.7, 9.7.A, 11.2, 11.3.C Ballast Weight – ballasted to 80 kg (176 lbs)				
Passenger Number Punched (1-8, X)				
Wristband ID #				
Ballast Security Tag ID #				

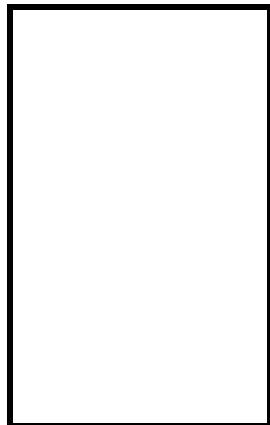
11.1.B.1 Passenger Req. – max of 8		
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Regulation	10.3.G.9 Roll Cage – 50 mm clearance b/w roll cage and helmet, 30 mm clearance b/w padding & helmet	9.6 Egress no wheel chocks, unassisted – 10 sec fully out of solar car (primary), 15 sec (secondary)	
		Primary	Secondary
Driver 1			
Driver 2			
Driver 3			
Driver 4			
Passenger 1			
Passenger 2			
Passenger 3			
Passenger 4			
Passenger 5			
Passenger 6			
Passenger 7			
Passenger 8			

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Regulation	Grade	Comments
11.3.E Water/Fluids – plan for water/fluid provision (1L min / per occupant)		
11.4.A, 11.4.C Radios/Communication – Driver in radio contact with team, hands free		
11.4.B Cell Phone in solar car – hand’s free and fixed mounting		
9.7.C Ballast Carriers – one per occupant within 300 mm of hip point		
9.7.E Ballast Access – located in solar car, and visible		
9.7.D Common Ballast Box – Equipped and sealable?		



Station Manager:

Entrance:

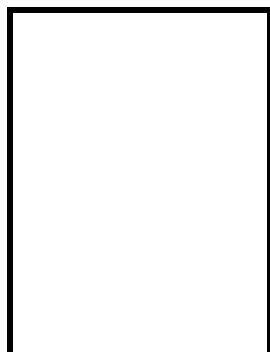
All occupants report with ballast material, helmet(s), proper driver/passenger uniforms with fully assembled solar car and radio communication

Station Grade:

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Regulation	Grade	Comments
Vision		
9.5.B Forward Vision - ground @ 8 m, 6.4 m above @ 12.2 m ahead, 100° side to side, 75 mm letters @ 3m front, 50 mm letters @3m side		
9.5.E Rear Vision - 15 m back, 30° L/R single reflex image		
9.5.E Rear Vision – camera fixed in position, view screen viewable in normal driving position		
Lighting / Signals		
9.4.A Lighting – DRL/Headlamps; white, visible 30° L/R, 15° up at 30 m, 25% of vehicle width from CL, front extremities, no farther back than 175 mm		
9.4.B Lighting – Front Turn; amber, visible 30° L/R, 15° up at 30 m, 25% of vehicle width from CL, front extremities, no farther back than 175 mm		
9.4.C Lighting – Side Marker, amber, visible 60° F/B, 15° up at 30 m, between 20-30% back from front of vehicle		
9.4.D Lighting – Brake; red, visible 30° L/R, 15° up at 30 m, 40% of vehicle width from CL, no farther forward than 175 mm		
9.4.E Lighting – Rear Turn; red/amber, visible 80° out, 45° in, 15° up at 30 m, 25% of vehicle width from CL, rear extremities		
9.4.F Lighting – High Mount Brake; red, visible 30° L/R, 15° up at 30 m, high mounted rear of vehicle canopy (700 mm above ground)		
9.4.G Lighting – BPS Trip; white, visible 30° L/R, 15° up at 30 m, high mounted rear of vehicle canopy (700 mm above ground)		
9.4.H. – Front turn, Side Markers, Rear Turn – Emergency Hazard format		
9.4.I Horn – sound level b/w 75-102 dB @ 15 m, permanently mounted, steering wheel operated. Duration for 5 min potential		



Station Manager:

Entrance:

Driver in fully assembled solar car

Station Grade:

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Dimensions and Body		
9.1 Solar Car Dimensions – Max. Dimensions L = 5.0 m, W = 2.2 m, H = 1.6 m		
9.3 Ground Clearance – 50 mm		
8.1.I Charging Configuration – all portions carried by solar car (stands, supports, cables etc)		
8.1.K & 9.2 Operational Configuration – body remains fixed (no reorientation/tilting) when moving under its own power		
9.5.C & 9.5.D Windshield – shatter resistant, method to clear rain, distortion free		
9.9.A Solar Car Numbers – approved color, 50 mm background, 250 mm high, 120 mm wide, 40 mm brush stroke, 25 mm spacing, visible from 3 m at 1.8 m above ground		
9.9.B Institution Name – displayed on car with approved abbreviations and more prominent than any team sponsor logo/name, no disruptive or offensive graphics. Visible from 3 m at 1.8 m above ground		
9.9.C Event Logo –space (200 mm H x 300 mm W) on both sides, visible from 3 m at 1.8 m above ground		
9.9.D National Flag – displayed on both sides of car by windshield (min size 70 mm x 40 mm)		
9.9.E Front Signage – space (600 mm x 150 mm projected) with event logo included and institutional name		
Distance from front of car to driver’s headrest (identify value)		

Cockpit		
7.1.A, 10.3.B.1 Single Occupant Class Number of Occupants – Max. of (1)		
7.1.B, 10.3.B.2 Multi-Occupant Class – Number of Occupants		
10.3.B.3 Seating Position – seat forward facing		
10.3.B.4 Back and Head Restraint – top of head restraint 800 mm (MOV front seats, Single-Occupant), 750 mm (MOV rear seats)		
10.3.B.5, 10.3.B.6 Occupants heels below hip point, angle between shoulders, hips, knees >90 deg		
10.3.C Occupant Space Check		
9.5.A Visibility – eye height = must be 700 mm or greater		

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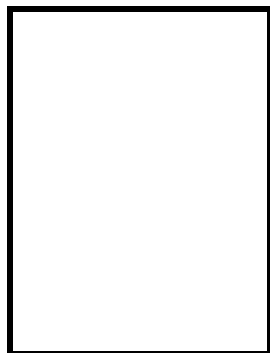
10.3.D Belly Pan – full isolation and ability to support 80 kg. Occupants torso and limbs above lower element of chassis		
10.3.G.8 Padding – roll cage padded around head meeting SFI-45.1/FIA 8857-2001 A or B or better, coverage of 50% or more.		
10.3.G.8 Headrest – headrest provided with 20 mm thick padding, secured		
9.5.F Outside Air Circulation – cockpit vents / intake vents, fan if from wheel vents		
9.6.B Egress – Can be opened from both inside and outside, no tape used at egress point		
9.6.B.3 Egress Opening – 25 mm wide stripe, and external canopy release marked “Open” 20 mm		

Operational Requirements		
9.8 Data logger – position for exposure to sky and fixed in position		

Vehicle Weight and Tires		
Vehicle Weight LF - RF- LR- RR- Total:		
10.2.A, 10.2.B Tire Sets – tire configurations meet loading requirement, min 4 points of contact		
10.2.C Tire Ratings – weight <wheel rating> tires inflated w/in manf. rating tube-type tires need tubes US DOT or similar		
10.2.D Wheel/Rim – profile matches bead requirements of tire		
Tire Set Configuration NOTES:		

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Solar Collector Sizing		
8.1.A Cell Type: _____		
8.1.B Size – Single Occupant (Cell Type 1 - 4m ² , Cell Type 2 – 3.560m ² , Cell Type 3 – 2.640m ²)		
8.1.B Size – MOV (Cell Type 1 - 5m ² , Cell Type 2 – 4.440m ² , Cell Type 3 – 3.300m ²)		
8.1.E Supplementary Solar Collector - Single Occupant (Cell Type 1 - 2m ² , Cell Type 2 – 1.780m ² , Cell Type 3 – 1.320m ²), carried within the car. MOV – Not applicable		
5.2.F Solar Cell Technology – Solar cells match information given on approval form		
8.1.H Example Cell and map provided which match physical solar collector on car		
8.1.G No more than 6 cell types or sizes used		
8.1.F Hybrid Solar Collector		
8.1.D Concentrator		
5.2.F Grandfathered Array		
8.1.J Water Sprayer – hand pumped, 5 gal max, ambient temp water only		
8.1.1 Stands – carried by the solar car		
8.1.I Umbilical cord – stored in car		



Station Manager:

Entrance: _____

Driver and Occupants in fully assembled solar car

Station Grade:

Green = Pass

Blue = Pass / Penalty / Bridging Document Required

Yellow = Needs improvement / Dynamic Test Ready

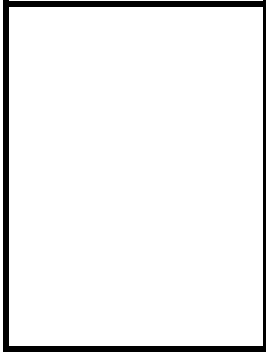
Red = Fail / Safety Hazard

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Regulation	Grade	Comments
8. Power – Solar array is present, no non-solar power sources		
8.2.A Battery Max weights _____ Li-S (15 kg) _____ Li-ion / Li Polymer (20 kg) _____ LiFePo4 (40 kg) _____ 8.2.B. (Other)		
8.2.A.2 MOV Battery Exemption		Battery Weight:
8.4.D Battery Ventilation – pull from exterior vent, operates with battery switch Fan can operate from supplemental if BPS trips		
8.4.E External Cooling – not permitted unless powered by main battery / unless emergency		
8.4.A, 8.4.C Battery Enclosures – isolated w/ 1 MΩ to frame, non-conductive, labeled		
8.6.C External Power Switch – location, marking, operation, rated for load		
8.9 Electrical Shock Hazards – protected and marked w/ 10 mm labels		
8.2.B., 8.2.D Other Storage Techniques – Power condensers or flywheels		
8.4 Battery Removal – batteries can be removed		
8.4 Battery Removal – MOV exemption		
8.4.G Impound Box – lockable box, no external hardware		
5.2.D & 8.2.A Storage Batteries – match submitted approval form		
8.2.A Battery Pack Weight		
8.4.B Battery Mounting - secured		
8.2.C Supplemental Batteries – radios, meters, driver fan, main power switch, horn only, BPS momentarily, fans in BPS trip, BPS Strobe, BPS Fault Driver Indicator		
8.2.C.2 Supplemental Battery Location – In battery enclosure		
8.5 Main Fuse - < 200% Ip or 75% of wire capacity, first in series		
8.5.B Branch – other wiring sizes off main bus are properly fused		
8.5.C Voltage Taps – fused or current limited		
8.6 Power Switch – manual switch capable to interrupt Ip, 10 mm labels, normally open		
81.I.1 Electrical Connection – between array and car are carried internally		
8.7.A Cable Sizing – proper size for Ip		
8.8.B Accelerator – zero return, brake shutoff on cruise control		
8.8.A Control – driver has sole control		
8.8.C Cruise Control – driver activated only, automatic deactivation		

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Station Manager:

Entrance:

_____ Fully assembled car

Station Grade:

Green = Pass

Blue = Pass / Penalty / Bridging Document Required

Yellow = Needs improvement / Dynamic Test Ready

Red = Fail / Safety Hazard

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BPS - OVER VOLTAGE (OV) TEST

String Module Cell – Test Level Pass Fail

Nominal Voltage: _____ Vnom @ ____ °C **BPS V Resolution:** _____ Bit
Max Voltage: _____ Vmax @ ____ °C **BPS V Range:** _____ - _____ VDC
BPS Max Trip: _____ Vmax_trip **BPS Sample Rate:** _____ S/s
 Filtering Delay **BPS Disconnect Delay:** ____ s

BPS - UNDER VOLTAGE (UV) TEST

String Module Cell – Test Level Pass N/A Fail

Nominal Voltage: _____ Vnom @ ____ °C **BPS V Resolution:** _____ Bit
Min Voltage: _____ Vmin @ ____ °C **BPS V Range:** _____ - _____ VDC
BPS Min Trip: _____ Vmin_trip **BPS Sample Rate:** _____ S/s
 Filtering Delay **BPS Disconnect Delay:** ____ s

BPS - OVER CURRENT (OC) TEST

String Module – Test Level Pass N/A Fail

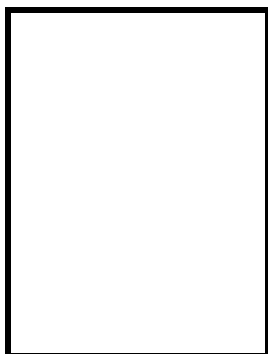
Max Current (charge): _____ Imax @ ____ °C **BPS I Resolution:** _____ Bit
Max Current (discharge): _____ Imax @ ____ °C **BPS I Range:** _____ - _____ VDC
BPS I Trip(charge): _____ Imax_trip
BPS I Trip(discharge): _____ Imax_trip **BPS Sample Rate:** _____ S/s
 Filtering Delay

BPS - OVER TEMPERATURE (OT) TEST

String Module Cell – Test Level Pass N/A Fail

Max Operating Temperature: _____ / _____ °C (Charge) / (Discharge) **BPS T Resolution:** _____ Bit
BPS T Trip: _____ °C Tmax_trip_charge **BPS T Range:** _____ - _____ °C
BPS T Trip: _____ °C Tmax_trip_discharge **BPS Sample Rate:** _____ S/s
BPS Disconnect Delay: ____ s

Regulation	Grade	Comments
8.6.B Fault Dash Indicator illuminates on BPS trip		
9.4.G.2 BPS Trip Strobe illuminates on BPS trip		



Station Manager: _____

Entrance: _____

Fully assembled car / battery pack and BPS

Station Grade:

- Green = Pass
- Blue = Pass / Penalty / Bridging Document Required
- Yellow = Needs improvement / Dynamic Test Ready
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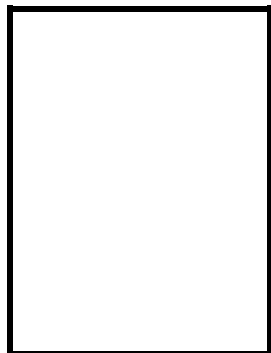
Regulation	Grade	Comments
5.2.B Mechanical Report – vehicle matches structural report		
8.4.B Battery Enclosures – structurally sound and properly secured to chassis		
9.7.C, 9.7.D Ballast Carriers – structurally sound and properly secured to chassis		
10.1 Body panels and array – securely fastened to prevent unintended movement		
10.1.C Array Attachment – 2 independent methods		
10.2.A Wheel Configuration Acceptable		
10.2.B Wheels – meet the minimum requirements		
10.8 Towing Hardpoint – accessible for forward towing		
Occupant Cell		
10.1.A Covers and Shields – all moving parts protected against contact. Occupants shielded from steering linkage and other moving parts		
10.3 Occupant Cell – designed for protection, will not cause undue strain		
10.7.A Steering Wheel – continuous perimeter steering wheel. Ref. Appendix A		
10.3.E Safety Belts – commercial 5 pt. that meets FIA D 280.T, SFI 16.1 or SFI 16.5, proper positioning of attachment points, properly attached with nuts and bolts (10.3.E.3)		
10.3.E.1, 10.3.E.10 5-point (min) safety belt (FIA/SFI)		
10.3.E.4, 10.3.E.5, 10.3.E.6 shoulder belt placement		
10.3.E.4, 10.3.E.7 lap belt placement		
10.3.E.4, 10.3.E.8 submarine belt placement		
10.3.E.9 Safety belt chaffing through seat		
10.3.F.1 Crush Zone – 150 mm structural zone by occupant’s torso		
10.3.G Roll Cage – designed to encompass occupants in all directions, integral part of chassis, deflect array, metallic		
10.5.E & 10.5.F Pedal Placement - brake pedal activation, spacing between pedals, right foot activation		
8.8.B.1 Accelerator Pedal Placement - right foot activation & right of the brake pedal		

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Steering								
10.1.B Clearance – moving parts are interference free								
10.1.B, 10.7.D Steering Static Test – can turn lock to lock while still, no excessive play in steering								
10.7.B Steering stops – in place and functional								
Brakes								
10.5.G Hand Brakes – if equipped – lock-to-lock use without repositioning hands								
10.5, 10.5.A Brakes – dual independent and balanced co-reactive								
10.5.B Brake Pads – contact area > 6.0 cm ² , initial thickness >= 6.0 mm, full contact with rotor								
10.5.D Brake Lines – appropriately sized and constructed								
10.5.H Mechanical Rear Brake – Volume limiting valve – locked out								
10.6 Parking Brake – lockable, independent equipped with working parking brake (must hold 10% of vehicle weight in both directions), non-tire contact style	VEHICLE WEIGHT =							
	FORWARD PULL:				REAR PULL:			
Hardware								
Critical Areas (Reg 10.4.E)	Steering	Brakes	Front Suspension	Rear Suspension	Seat/Safety Harness	Drive Train	Battery Box	Ballast Box
10.4 - Critical Areas do not use friction or press fit assemblies								
10.4.A Bolts – SAE grade 5, M 8.8 or AN/MS on critical systems, two threads beyond nut, no shaved heads								
10.4.B Securing Bolts – safety wire, cotter pins or flex-loc nuts								
10.4.D No plastic luggage type buckles or single push release straps								

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Fastener/Hardware Notes:	
10.4.C Securing Rod-Ends – All rod-ends secured with jam nuts	



Station Manager:

Entrance:

Vehicle disassembled at station

Station Grade:

Green = Pass

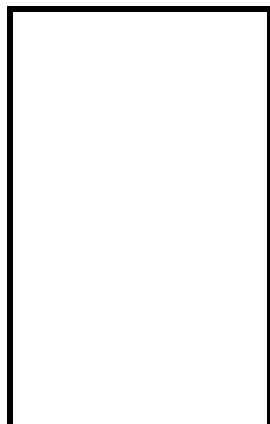
Blue = Pass / Penalty / Bridging Document Required

Yellow = Needs improvement / Dynamic Test Ready

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Regulation	Grade	Comments
U-Turn Test		
10.7.C Turning Radius – any portion of the car <200 mm above ground is within 16 m wide lane		RIGHT TURN: LEFT TURN:
Figure-8 Test		
10.2.A Tire and Wheel Requirements – all wheels must remain on the ground		
10.1.B no body work shall contact moving structural members		
10.9 Dynamic Stability – vehicles must exhibit sufficient stability during test		
10.9.A Figure 8 – vehicle must negotiate Figure-8 in <9 seconds per side w/o hitting cones or showing signs of instability		TIME FOR FIGURE-8:
Braking Test		
10.9 Dynamic Stability – vehicles must exhibit sufficient stability during test		
10.5.C, 10.9.D Braking Performance – vehicle must decelerate from ≥ 50 km/h (31 mph) at > 4.72 m/s ² to a complete stop w/o excessive veering or signs of instability (mechanical braking only)		TIME: SPEED:
Slalom Test		
10.9 Dynamic Stability – vehicles must exhibit sufficient stability during test		
10.9.C Slalom Test – Negotiate slalom course within appropriate time (11.5 s)		TIME: SPEED:
High Speed Stability		
10.9 Dynamic Stability – vehicles must exhibit sufficient stability during test		
10.9.B Stability at Speed – Maintains constant speed in a 3.5 meter lane		SPEED:



Station Manager:

Entrance:

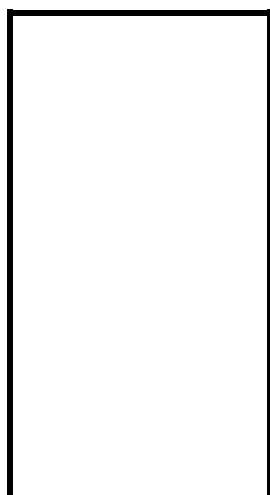
All drivers & passengers report to station with car, Green, Blue, or Yellow from Driver Registration, Driver Operations, Body & Sizing, Mechanical, Electrical, BPS

Station Grade:

- Green = Pass
- Blue = Pass / Penalty / Bridging Document Required
- Yellow = *Not available at this station*
- Red = Fail / Safety Hazard

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Regulation	Grade	Comments
Safety Equipment (minimum requirements) (3.1.B.1)		
Certified, stocked First Aid Kit		
ABC Fire Extinguisher (10 kg+)		
Safety Vests (1 per person in pit area)		
Battery MSDS		
Spill Kit and method of containment of battery fires, including: <ul style="list-style-type: none"> • Shovel/spade (for applying the sand) • Safety glasses • Gloves for handling batteries 		
Suitable containers for damaged electrochemical cells		
Safety Officer		
4.4.A Safety – Team Safety Officer Name: _____		
4.4.A Safety officer provides proof of First Aid and CPR training		



Station Manager:

Entrance:

Safety officer must be present

Station Grade:

- Green = Pass
- Blue = Not available at this station*
- Yellow = Not available at this station*
- Red = Fail / Safety Hazard

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Regulation	Grade	Comments
Testing / Discussion in preparation for 2020		
Onboard Charger Primary to Secondary Isolation		
Access to Energized Parts		
EVSE/Energy Meter Test		
Notes		

Station Manager:

Entrance:

Fully assembled car

Station Grade:

- Green = Completed Station
- Blue = Not available at this station*
- Yellow = Not available at this station*
- Red = Did Not Complete Station