

TEAM:

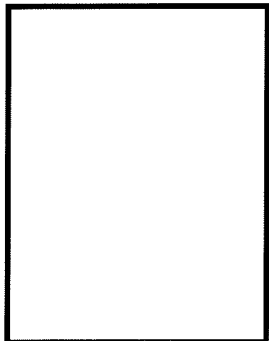
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Station	Grade	Comments
Array <i>McMullen</i>		
Driver <i>Hirtz</i>		
Body & Sizing <i>Hirtz</i>		
Electrical <i>McMullen</i>		
Battery Protection <i>Bohachick</i>		
Mechanical <i>Roberto</i>		
Dynamics <i>Call</i>		

TEAM:

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Regulation	Grade	Comments
5.1 Power – Solar array is present, no non-solar power sources		
Solar Array Output		
Voltage		
Amperage		
Power		



Station Manager:

Entrance:

Array disconnected from battery.

Station Grade:

Green = Pass

Blue = Needs improvement / Track Rayce Ready

Yellow = Needs improvement / Dynamic Test Ready

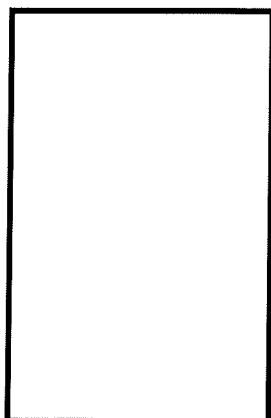
Red = Fail / Safety Hazard

Driver Station
FSGP 2011 SCRUTINEERING
May 2-7, 2011

Regulation \ Driver	Driver 1	Driver 2	Driver 3	Driver 4
3.6 Registration – All drivers are registered with headquarters (have id)				
3.7 Driver Req. – All drivers are 18 or older				
3.7 Driver Req. – Drivers have valid drivers license				
7.5.A Driver Helmets – Meets or exceeds Snell M95 / DOT motorcycle				
7.5.B Driver Shoes – Valid shoes				
3.7, 6.6 & 7.5.C Driver Ballast – Each driver ballasted to 80kg (176lbs)				
Driver Weight / Ballast Weight				
Color Tag / Security Marker				
6.4.E.2 Roll Cage – 5 cm clearance b/w roll cage and helmet, 3cm clearance b/w padding & helmet				
6.4.C Crush space – min. 15 cm b/w shoulders, hips, feet, and outer body				
6.4.G Egress – 10 sec fully out of solar car, no wheel chocks				
6.5.A Visibility – eye height = must be 70cm or greater				
6.5.B Forward Vision - ground @ 8 m, 17° up, 100° side to side				
6.5.E Rear Vision - 15 m back, 30° L/R single reflex image				
Appendix D. Driver Training – not mandatory, but review with team				

TEAM:	#
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Regulation	Grade	Comments
3.7 Driver/Pass Req. - There are a min. of 2 drivers		
7.5.A Driver Helmets – Valid helmet(s)		
7.5.E Water – minimum 1L water container		
7.4 & 7.4.A Radios/Communication – Driver in radio contact with chase verbal, hands free		
6.6.A & 6.6.B Ballast Carrier & Access – located in solar car, secure, and visible fixed in case of impact, single box		



Station Manager:

Entrance:

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

Station Grade:

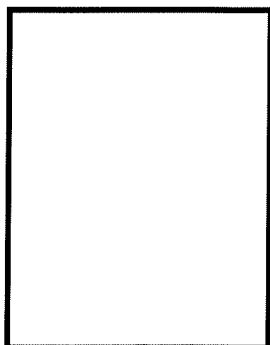
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Regulation	Grade	Comments
Body Signals		
5.9 Lighting – brake; red, visible 30° L/R, 15° U/D at 30 m, 50% of vehicle width separation, rear extremity		
5.9 Lighting – rear turn; red/amber, visible 30° L/R, 15° U/D at 30 m, 50% of vehicle width separation, rear extremities		
5.9 Lighting – front turn; red/amber, visible 30° L/R, 15° U/D at 30 m, 50% of vehicle width separation, front extremities		
5.10 Horn – sound level b/w 75-102 dB @ 15 m, permanently mounted		
Body Graphics and Dimensions		
3.9 & 3.10 Solar Car Numbers – approved color, 5 cm background, 25 cm high, 12 cm wide, 4 cm brush stroke, 2.5 cm spacing		
3.9 & 3.11 Institution Name – displayed on car with approved abbreviations		
3.9 & 3.12 Event Logo –space (20cm H x 30cm W) on both sides		
6.1 Solar Car Dimensions – Max. Dimensions L = 5m W = 1.8m H = 1.6m		
6.1.B Rayce Configuration – body remains fixed when moving under its own power		
6.1.A Charging Configuration – solar car body may split into two components; each component may not exceed the dimensions of the assembled car		
Cockpit		
6.4.A Seating Position – driver head above and behind feet. 27 degree or less, solid base & back rest		
6.4.B Belly Pan – full isolation and ability to support 80 kg		
6.4.E.1 Padding – roll cage padded around head meeting SFI-45.1 or better, 2 cm thick resilient material headrest		
6.4.F Fresh Air Circulation – cockpit vents		
6.4.G Egress – No tape used at egress point		
6.5.C & 6.5.D Windshield – shatter resistant, method to clear 0.1 m ² , distortion free		

Raycing Requirements		
6.11 Towing Hardpoint and tow strap for breakdowns per track regs		
Vehicle Weight and Tires		
Vehicle Weight LF - RF- LR- RR- Total:		
6.3 Tire Ratings – weight <wheel rating> tires inflated w/in manf. rating		
6.3 Tire Sets – tie configurations meet worst case loading, min 3 points of contact		
Solar Array Sizing		
5.2 Style _____ 6m ² of any solar cells _____ 9m ² of solar cells from approved list (5.2.C)		
3.4.E Solar Cell Technology – Solar cells match information given on approval form		

Tire Set Configuration NOTES:

Station Manager:

Entrance:

Driver in fully assembled solar car

Station Grade:

Green = Pass

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Regulation	Grade	Comments
5.3.A Battery Max weights (Pb-acid sealed 125kg) (NiFe 100kg) (NiZn 75kg) (NiMH 70kg) (LiFePo4 50kg) (Li-ion / Li Polymer 25kg) 5.3.B. (Other)		
5.5.C Battery Ventilation – 280 lpm to exterior vent, operates with battery switch		
5.5 Battery Enclosures – isolated w/ 1 MΩ to frame, non-conductive, labeled		
5.7.B External Cutoff Switch – properly marked and rated for load		
5.13 Electrical Shock Hazards – protected and marked w/ 10 mm labels		
5.3.D Other Storage Techniques – Power condensers or flywheels		
5.5 Battery Removal – batteries can be removed and have appropriate storage case		
3.4.D & 5.3 Storage Batteries – match submitted approval form		
5.3 Battery Pack Weight		
5.5.B Battery Stacking – use proper racks		
5.3.C Supplemental Batteries – radios, meters, telemetry, driver fan, main disconnect relay, horn only		
5.6 Main Fuse - < 200% Ip, first in series		
5.7.A Power Switch – manual switch capable to interrupt Ip, 10 mm labels, normally open		
5.2 Electrical Connection – between array and car are carried internally		
5.8 Cable Sizing – proper size for Ip		
5.11 Accelerator – zero return, brake shutoff on cruise control		
5.12 Control – driver has sole control		

Station Manager:

Entrance:

To be announced.

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BATTERY PROTECTION SYSTEM 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

BATTERY PROTECTION SYSTEM 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

BATTERY PROTECTION SYSTEM OVER CURRENT(OC) TEST

☐ String ☐ Module – Test Level

☐ Pass ☐ N/A ☐ Fail

Max Current: _____ Imax @ _____ °C

BPS I Resolution: _____ Bit

BPS I Trip: _____ Imax_trip

BPS I Range: _____ - _____ VDC

☐ Filtering ☐ Delay

BPS Sample Rate: _____ S/s

BPS Disconnect Delay: _____ s

BATTERY PROTECTION SYSTEM OVER TEMPERATURE(OT) TEST

☐ String ☐ Module ☐ Cell – Test Level

☐ Pass ☐ N/A ☐ Fail

Max Operating Temperature: _____ °C

BPS T Resolution: _____ Bit

BPS T Trip: _____ °C Tmax_trip

BPS T Range: _____ - _____ °C

BPS Sample Rate: _____ S/s

BPS Disconnect Delay: _____ s

Station Manager:

Entrance:

To be announced.

Station Grade:

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Regulation	Grade	Comments
3.4.B Structural Report – Vehicle matches structural report		
5.5.B Battery Enclosures – structurally sound and properly secured to chassis		
6.2 Body panels and array – securely fastened to prevent unintended movement.		
6.2.A Covers and Shields – all moving parts protected against contact. Driver shielded from steering linkage		
6.2.B Clearance – moving parts are interference free		
6.2.B Steering Static Test – can turn lock to lock while still, no excessive play in steering		
6.3 Wheels – Wheels meet the minimum requirements.		
6.4 Driver cockpit – designed for protection, will not cause undue strain.		
6.4.D Safety Belts – commercial 5 pt., properly attached with nuts and bolts.		
6.4.E Roll Cage – designed to protect driver from injury, integral part of chassis. Ref Appendix B		
6.7 Proper structural fasteners, no friction or press fit assemblies.		
6.7.A Bolts – SAE grade 5, M 8.8 or AN/MS on critical systems, two threads beyond nut, no shaved heads		
6.7.B Securing Bolts – safety wire, cotter pins or flex-loc nuts		
6.8 Brakes – dual independent and balanced co-reactive		
6.9 Parking Brake – equipped with working parking brake		
6.10 Steering Wheel – continuous perimeter steering wheel...Ref Appendix A		
6.10.A Steering stops – in place and functional		
6.11 Towing hard point – solid attachment point present.		

Station Manager:

Entrance:

Vehicle disassembled in team pit

Station Grade:

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Regulation	Grade	Comments
U-Turn Test		
6.10.B Turning Radius – wheels turn inside 16-m wide lane		RIGHT TURN: LEFT TURN:
Figure-8 Test		
6.3 Tire and Wheel Requirements – all wheels must remain in contact with the ground		
6.12 Dynamic Stability – vehicles must exhibit sufficient stability during test		
6.12.A Figure 8 – vehicle must negotiate figure-8 course in less than 9 sec per side w/o hitting cones or showing signs of instability		TIME FOR FIGURE-8:
Braking Test		
6.12 Dynamic Stability – vehicles must exhibit sufficient stability during test		
6.8.B Braking Performance – vehicle must decelerate from > 50 kph (31 mph) at > 4.72 m/s ² (.4G) to a complete stop w/o excessive veering or signs of instability		TIME: SPEED:
Slalom Test		
6.12 Dynamic Stability – vehicles must exhibit sufficient stability during test		
6.12.C Slalom Test – Negotiated slalom course within appropriate time and speed		TIME: SPEED:
High Speed Stability		
6.12 Dynamic Stability – vehicles must exhibit sufficient stability during test		
6.12.B Stability at Speed – Maintains constant speed in a 3.5 meter lane		SPEED:

Station Manager:

Entrance:

All drivers report to station with car, Green, Blue, or Yellow from Body & Sizing, Electrical, Mechanical, and Driver/Passenger Stations with radio communication

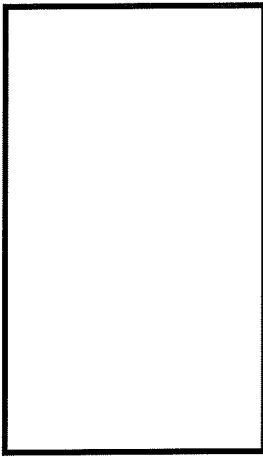
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Regulation	Lead	Chase	Scout	T&T	Other	Comments
Support Vehicles (7.3, 7.3.A – 7.3.D)						
All vehicles registered with ASC HQ						
Max 15-passenger van				N/A	N/A	
Roof mounted amber lights			N/A	N/A	N/A	
Storage racks are secure and safe						
Support Vehicle Graphics (7.3.E)						
Organization Name						
Solar Car Number on both sides & rear (at least 25cm tall, w/ a 4cm brush-stroke)						
Solar Car Number on top passenger's side of windshield (at least 15cm tall)				N/A	N/A	
Event Logo—provided on-site (both sides of each vehicle and trailer)						
Slow-Moving Caravan Sign	N/A		N/A	N/A	N/A	
Radio Communication (7.4)						
Communication with solar car driver, which observer can monitor			N/A	N/A	N/A	
Communication between lead and chase			N/A	N/A	N/A	
Separate CB channel for ASC communications in all vehicles on route						
Safety Equipment (4.3) (minimum requirements per safety plan)						
Certified, stocked First Aid Kit						
ABC Fire Extinguisher						
Safety Vest (1 per person)						
4 Orange Cones (minimum 12" high)						
Orange Warning Flag						
Battery MSDS, Spill Kit, and method of containment of battery fires	N/A		N/A	N/A	N/A	
Safety Officer and Demonstration	Grade	Comments				
4.3.A Safety – Team Safety Officer Name:						
4.3.A Safety officer provides proof of First Aid and CPR training						
Demonstration of roadside safety procedures by team (role play)						



Station Manager:

Entrance:

Lead and chase vehicles with all equipment and team members who will be in those vehicles; safety officer must be present

Station Grade:

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This section will be selective used, but included in its entirety to help show what it appears for full race years

