Milestone Review Flysheet

nstitution	University of Florida	Milestone	Critical Design Report

Vehicle Properties

Total Length (in)	120
Diameter (in)	4.024
Gross Lift Off Weigh (lb)	22.6
Airframe Material	Carbon Fiber and Fiberglass
Fin Material	Carbon Fiber and Fiberglass
Coupler Length	8 in.

Motor Properties

Motor Designation	Class K Cesaroni K660-CL
Max/Average Thrust (lb)	242.75 / 148.28
Total Impulse (lbf-s)	548.33
Mass Before/After Burn	68.22 / 25.69 oz
Liftoff Thrust (lb)	242.75
Motor Retention	Aero Pack 54mm Retainer

Stability Analysis

Center of Pressure (in. from nose)	104
Center of Gravity (in. from nose)	81.327
Static Stability Margin (M 0.3)	5.7
Static Stability Margin (off launch rail)	2.1
Thrust-to-Weight Ratio	Max: 9.8 Avg: 8.0
Rail Size and Length (in)	144
Rail Exit Velocity	55.1 ft/s

Ascent Analysis

Maximum Velocity (ft/s)	638	
Maximum Mach Number	0.57	
Maximum Acceleration (ft/s^2)	311.4	
Target Apogee (From Simulations)	5340 ft	
Stable Velocity (ft/s)	200	
Distance to Stable Velocity (ft)	75	

Recovery System Properties
Drogue Parachute

Manufacturer/Model	Sunward Group Ltd			
Size	24 in.			
Altitude at Deployment (ft)	5280 (Apogee)			
Velocity at Deployment (ft/s)	0			
Terminal Velocity (ft/s)	75.73			
Recovery Harness Material	Kevlar			
Harness Size/Thickness (in)	0.50			
Recovery Harness Length (in)	300			
Harness/Airframe Interfaces	Eye-bolts/swivel links			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	1247.14	N/A	N/A	N/A

Recovery System Properties
Main Parachute-Aft

Manufacturer/Model	Fruity Chutes/IFC-72			
Size	72 in.			
Altitude at Deployment (ft)	500			
Velocity at Deployment (ft/s)	75.73			
Terminal Velocity (ft/s)	23.27			
Recovery Harness Material	Kevlar			
Harness Size/Thickness (in)	0.50			
Recovery Harness Length (in)	300			
Harness/Airframe Interfaces	Eye-Bolts/swivel links			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	37.64	73.34	N/A	N/A

Recovery System Properties
Drogue Parachute - Payload

Manufacturer	Sunward Group Ltd
Size	12
Altitude at Deployment (ft)	5151
Velocity at Deployment (ft/s)	64.4
Terminal Velocity (ft/s)	77.24

Recovery System Properties
Main Parachute - Payload

Manufacturer	Fruity Chutes/CFC-24
Size	24
Altitude at Deployment (ft)	500
Velocity at Deployment (ft/s)	77.24
Terminal Velocity (ft/s)	28.11

Recovery Harness Material			Kevlar	
Harness Size/Thickness (in)			0.5	
Recovery Harness Length (in)			180	
Harness/Airframe Interfaces		Eye-Bolts/swivel links		
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	26.04	120.67	**N/A**	**N/A**

Recovery Harness Material			Kevlar	
Harness Size/Thickness (in)			0.5	
Recovery Harness Length (in)			180	
Harness/Airframe Interfaces		Eye-Bolts/swivel links		
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	6.51	30.17	**N/A**	**N/A**

Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	Stratologger CF Altimeter
Redundancy Plan	Two altimeters will be used with delayed charges in case of separation failure
Pad Stay Time (Launch Configuration)	3 hours

Recovery Electronics	
Rocket Locators (Make/Model)	Big Red Bee BRB900
Transmitting Frequencies	900 Mghz
Black Powder Mass Drogue Chute (grams)	2.5
Black Powder Mass Main Chute (grams)	2.5

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Payload	
Payload 1	Overview
	The payload will come down under parachutes seperate from the launch vehicle.
Payload 2	Overview

Test Plans, Status, and Results	
Ejection Charge Tests	An ejection charge test is scheduled preceding each launch.
Sub-scale Test Flights	A subscale flight test is scheduled for December 16th

Full-scale Test Flights	A fullscale flight test is scheduled for February 10th.

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Additional Comments