WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

- Custom 3D Printed Transition
- Avionics Bay & Sustainer
- Booster Section
- COTS Fiberglass 5:1 VK Nosecone
- Main Parachute: 10 ft CD 2.2
- Air Brakes
- Aerotech M2500 Motor

Vehicle Information

Vehicle Length [in]	Predicted Apogee [ft]	Total Impulse [Ns]
144	11,154	9,671
Max Acceleration [G]	Motor	Max Velocity [ft/s]
9.67	M2500-T	1003

Apogee
Drogue deployment

T+3.9 s
Time at motor burnout

1,100 ft
Main deployment

91.2 ft/s
Velocity off rail

T-0s
Liftoff

T+250s
Approximate time to touchdown

Avionics

Avionics has two main goals for the 2024 Spaceport America Cup. The first is to create an avionics bay that is more easily accessible and user friendly than designs in years past. This is highlighted by the switch panel accessible through a door in the airframe of our rocket.

The second goal is to develop and implement reactive air-brakes to give altitude control for our rocket. Hyperion uses an SRAD flight computer to predict its apogee during flight and adjust the air brakes accordingly to reach the target apogee of 10,000 ft.

Payload

A continuation from last year's experiment, the scientific payload attempts to measure a changing magnetic field using quantum photonics in the environment of a sounding rocket.
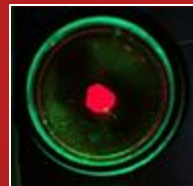
The system acts as a magnetometer with the following components: an engineered diamond with a nitrogen-vacancy center, a green light-emitting diode, a photodiode sensitive specifically to wavelengths of red light, and a Helmholtz coil.

When hit with light from the LED, the nitrogen deficient diamond disperses a red light with an intensity proportional to the strength of the surrounding magnetic field. By measuring the intensity of this red light, the magnetic field strength can be extracted and compared to the true value of the magnetic field created by the Helmholtz coils.

The goal is to determine whether these measurements and correlations can be made in a sounding rocket environment.