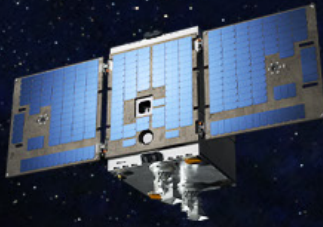


GA-150



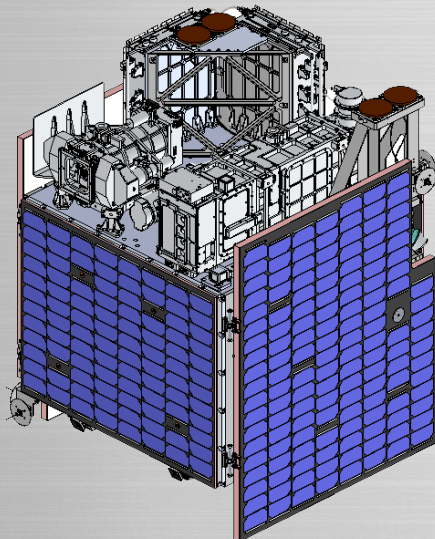
TSIS-2



GAzelle



OTB



Compact spacecraft design conforms to small payload launch envelope and provides flexible interior and exterior payload equipment accommodations

Resilient, modular, and configurable ESPA bus design supporting a variety of Comms and ISR missions

Customizable to operate over a wide range of orbits including all inclinations, and compatible with multiple launch vehicles

Utilizes standard payload interfaces to enable seamless integration and mission-ready delivery times

	GA-150 PARAMETER	GA-150 VALUE
SPACECRAFT (S/V) CAPABILITY	Orbit	LEO (400-1000 km), all inclinations (Configurable for other orbits)
	Mass (Basic/Launch)	Up to 130 kg/180 kg
	Volume	ESPA-compatible (Configurable for other launch vehicles)
	Mission/Program	TSIS-2, GAZelle, OTB
	Launch Vehicle Compatibility	Falcon 9, Electron, Alpha , other EELV and VADR class LVs as primary or rideshare payloads (as required)
	Design Life	Up to 5 years
	Stabilization	3-axis, 0.03 deg, 3 σ
	Power (OAP/Peak)	Up to 190 W/300 W from solar array with Li-ion batteries (Customizable for mission needs)
	Voltage	28 V +/- 6 Vdc
	Telemetry, Tracking & Command Rate	S-band, Up to 38 kbps uplink, 2 Mbps downlink
	Mission Data Rate	S-band 2 Mbps downlink; option to add X-band, Up to 300 Mbps; OCT capable
	On-board Storage	32 Gbytes, Additional storage options available
	Structure	Machined Aluminum
	Propulsion	Options to add Xenon Hall, Traditional Hydrazine, Butane (Electric and green options available); Up to 300 m/s dV
PAYLOAD (P/L) ACCOMMODATION CAPABILITY	Mass	Up to 50 kg
	Power	Up to 85 W (Customizable for mission needs); Power conversion available (6 V, 12 V, and 28 V)
	Volume	Internal up to 0.51 m x 0.51 m x 0.37 m, External up to launch vehicle allowable volume
	Field of Regard/View	Hemispherical unobstructed FOV
	Mission Data Handling	Up to 300 Mbps from P/L to S/V
	Command/Data Interface	Fully configurable (i.e. LVDS, RS422, Spacewire)
	Thermal Control	Up to 5 bus-controlled heater switches
	Heat Rejection	Configurable heat management system available (as required)

GA-EMS' Space Systems Division designs, builds, and operates a range of spacecraft for a variety of customers including the United States Space Force (USSF), the National Oceanic and Atmospheric Administration (NOAA), and the National Aeronautics and Space Administration (NASA).

A key principle of the GA-EMS approach to satellite engineering is scalable iterative design to reduce risk and cost. This allows GA-EMS to leverage successful satellite missions for their heritage baseline knowledge, providing flight-proven designs that reduce risk and non-recurring engineering (NRE) costs and provides a design that can accommodate mission specific requirements and payload specifications.

Highly Customizable

The GA-150 is a highly customizable satellite that can be configured to meet the needs of a wide variety of missions. It is compatible with multiple launch vehicles, including Falcon 9, Electron, and Alpha. The GA-150 can also be equipped with numerous options to increase mission data storage, add propulsion system, etc. to meet mission needs.

Powerful and Versatile

The GA-150 is a powerful and versatile satellite that can be used for a wide variety of applications, including Earth observation, scientific research, and communications. It has a mass of up to 100 kg, and it can generate up to 190 W of power from its solar array. The GA-150 also has a large data storage capacity of 32 GB, and it can transmit data at rates of up to 300 Mbps with an addition of options.

Long Life and Durability

The GA-150 is designed for durability and an up to 5 year lifecycle. The GA-150 is also equipped with a three-axis stabilization system that keeps it pointing in the right direction, even in harsh conditions.

Electrical Power System

Fixed and deployable solar panels with high efficiency Gallium Arsenide (GaAs) cells and 18 Ah Lithium-ion battery

Communications

S-band 2 Mbps high-rate downlink with options for higher rate communications (L, X, OCT)

Attitude Control

3-axis stabilized with redundant four reaction wheel momentum management and magnetorquers

Integrated suite of heritage sensors (star tracker, GPS, sun sensors, magnetometers)

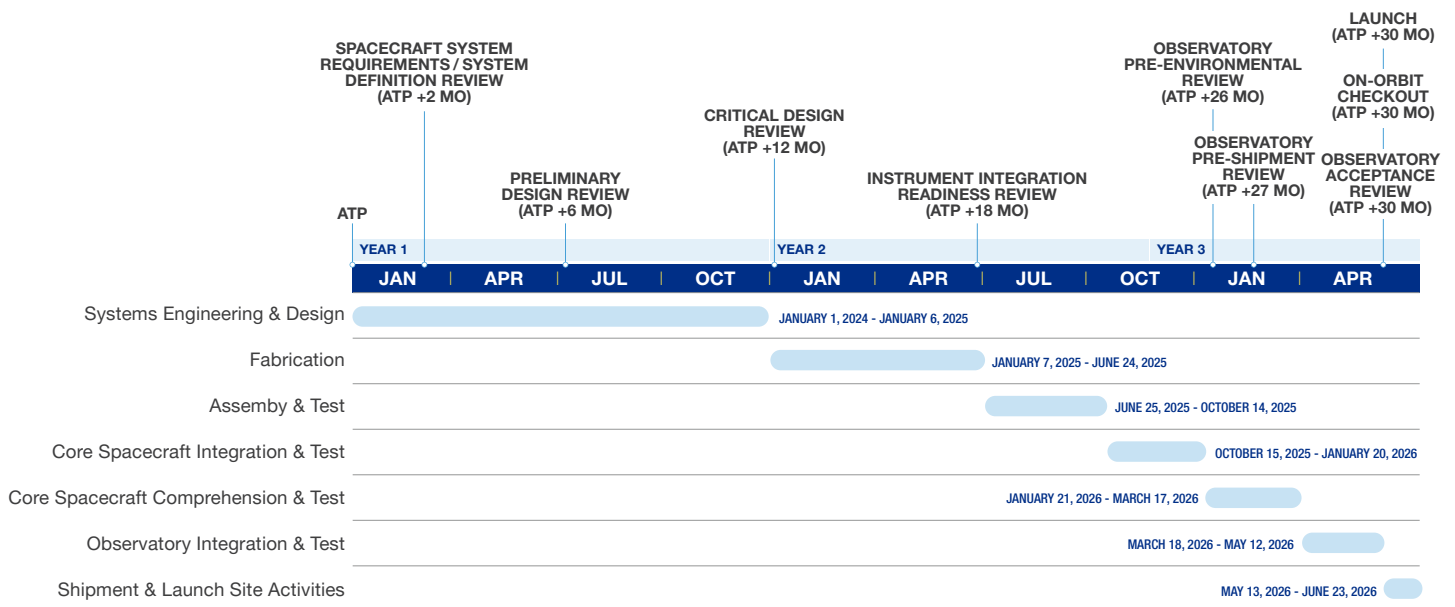
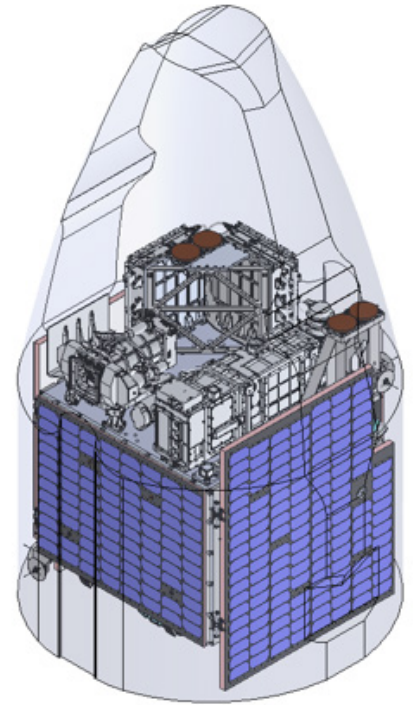
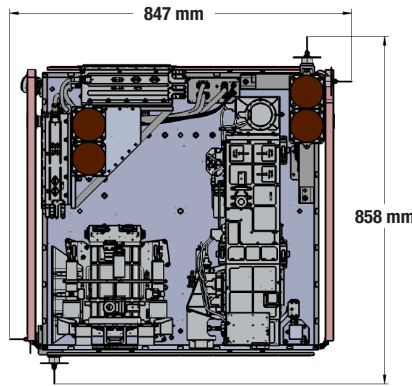
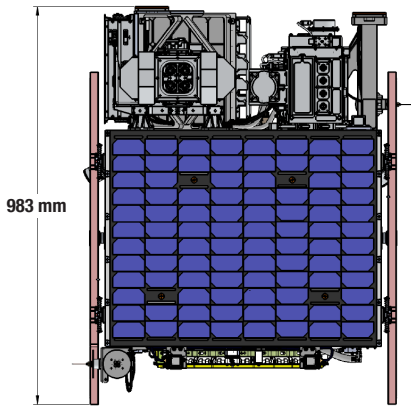
Structure

Integrally machined aluminum assembly with flexibility to accommodate varying payload interfaces and internal and external packaging requirements

Thermal Control

Passive thermal coatings with active heater control

Higher performance options and additional capabilities (i.e. propulsion, thermal management) can be added as options



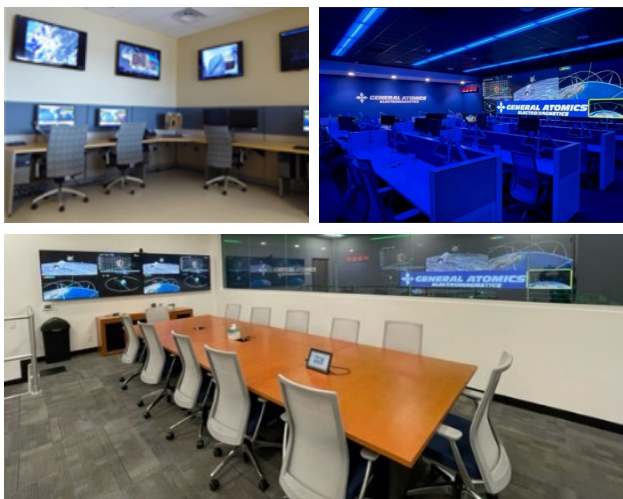
Spacecraft Manufacturing and Operations



GA-EMS has over 2 million ft² manufacturing and laboratory space across its enterprise

- 100,000 ft² clean rooms with 20,000 ft² purpose built for Space Systems
- SCIF/SAPF engineering and production facilities in Herndon, VA, Centennial, CO, and San Diego, CA
- Multiple environmental test facilities across the Space Systems enterprise with vibe, EMI/EMC, and thermal vac capability
- Space Flight Fiber Laser Build and Test Laboratory in San Diego, CA
- 10,000 ft² Cable Center of Excellence in San Diego, CA
 - > Building cables for space systems, nuclear power plants, military applications and commercial product lines for the last 14 years
 - > Mil-Spec certified cable assembly technicians and automated testing equipment

SMOCS IN VA, CO AND ALBUQUERQUE, NM



GA-EMS' facilities include a multi-mission-capable Space Mission Operations Center (SMOC) to readily support secure integration and testing. GA-EMS operates a world-class small satellite Integration and Test facility in Centennial, CO, with four state-of-the-art TVAC chambers, an anechoic chamber, and vibration and shock test facilities.

Rapid Spacecraft Development Office (RSDO)
 NASA Goddard Space Flight Center
 Mail Code 401.1
 Greenbelt, MD 20771 USA
 Phone: 301-286-1289
 Email to: rsdo@rsdo.gsfc.nasa.gov