



GOES-R Integration & Testing



GOES-R

Geostationary Operational Environmental Satellite-R Series

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Facilities

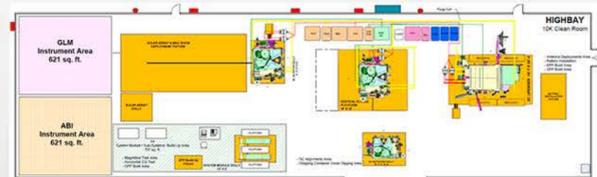
The stowed satellite envelope is approximately 7'x10'x16' with the solar array itself being some 12.5 feet tall.



Class 8 Clean Room Operational Certification

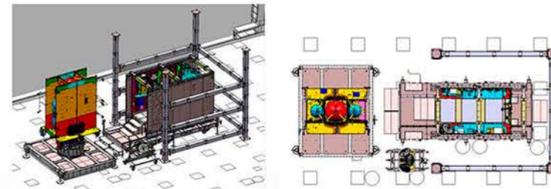


Space Support Building (SSB) Layout

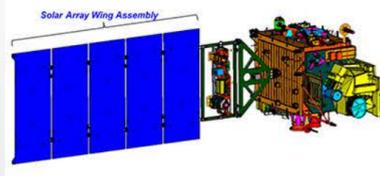


SSB Highbay Floor Plan

Spacecraft Mate and Solar Wing



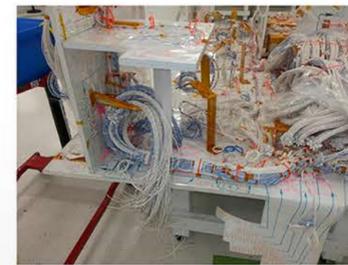
The Core Module on the left nests inside of the System Module on the right. Spacecraft mate is when the two modules are integrated.



- Each GOES-R series solar array consists of 5 panels joined by hinges, and each "5-pack" is approximately 280.5" x 154.5"
- Each solar panel consists of 32 strings of 42 solar cells connected in series, for a total of 6720 solar cells per 5-pack array.
- Each array outputs 5.7 kW of power at an operating voltage of 70 V at the beginning of life.

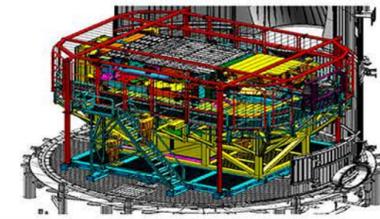
Harness

The avionics and power system contained in the electrical boxes must be linked to the antennas and instruments with a complex network of harnesses. The harnesses must be electrically grounded and attached to the spacecraft to prevent any excessive movement during launch.



GOES-R Harness Mockups

Test



The GOES-R Thermal Vacuum Test simulates the on-orbit environment of the satellite. The test will take place in the 29' x 65' thermal vacuum chamber, and will verify performance and functionality of the integrated system, including instruments. The image above shows the satellite surrounded by ground support equipment, including calrod cage, inside of the thermal vacuum chamber.



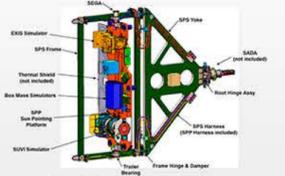
Testing being performed on isolation of Earth Pointing Platform (EPP). The EPP must be isolated from any movement in the rest of the spacecraft, but the harnesses must route from the electrical boxes on the spacecraft to the instruments mounted on the EPP without initiating motion of the platform.

Engineering Development Units (EDU)



Earth Pointing Platform EDU

The Earth Pointing Platform (EPP) must be isolated from any movement in the rest of the spacecraft, but the harnesses must route from the electrical boxes on the spacecraft to the instruments mounted on the EPP without initiating motion of the platform.



Sun Pointing Platform EDU

The Sun Pointing Platform (SPP) is installed between the spacecraft and the solar array and hosts two vital instruments which must be perfectly aligned during installation. The SPP is deployed along with the solar array by means of a motor which also must channel harness to communicate with instruments installed on the SPP. There are two motors which maintain sun pointing within a light tolerance for the solar array and the SPP to enable successful instrument performance. The installation of the motors requires precise laser measurements to allow for alignment to the instruments.

GOES-R I&T CHIL Projects

(Collaborative Human Immersive Laboratory)

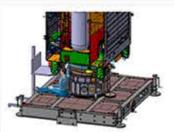
- What Is CHIL?**
 - An Advanced Technology Virtual Reality And Simulation Laboratory That Offers A Smarter, Cheaper And Lower Risk Opportunity In Building Satellites, Exploration Spacecraft, Launch Vehicles And Missile Defense Systems
- What Are The Capabilities Of CHIL?**
 - Virtual Prototyping, Productivity And Human Factors Simulation, Assembly Process Validation & Identification Of Mechanical Interfaces



EPP Integration Study



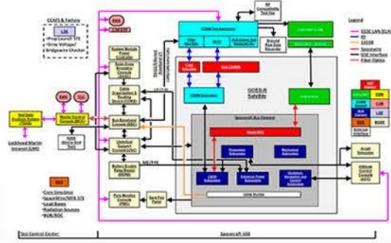
Battery Access Study



System Module/Core Module Mate Study

EGSE

(Electrical Ground Support Equipment)

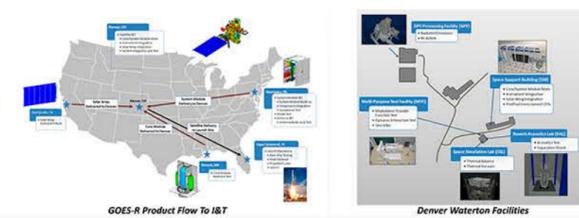


EGSE Architecture Block Diagram



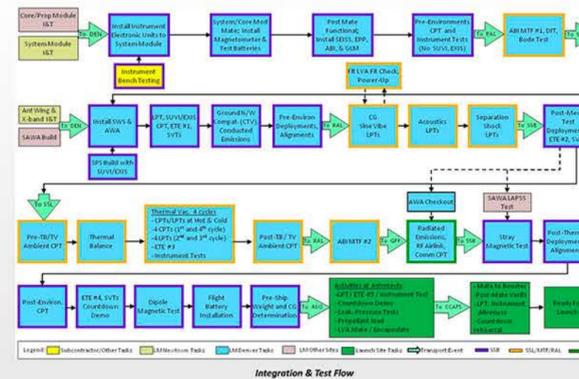
Bus Ground Support Equipment

Integration & Test



GOES-R Product Flow To I&T

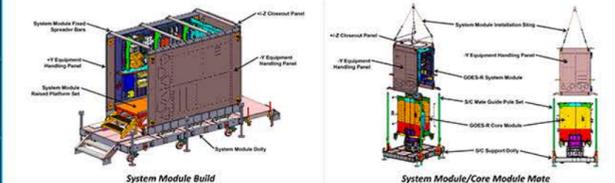
Denver Waterton Facilities



Integration & Test Flow

MGSE

(Mechanical Ground Support Equipment)

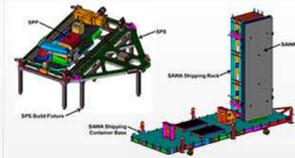


System Module Build

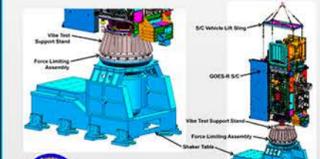
System Module/Core Module Mate



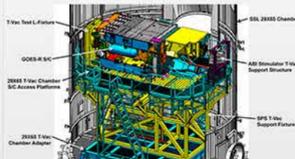
Spacecraft Access Platforms



SWS Support Features



Vibe Support Fixture



Thermal Vacuum Configuration