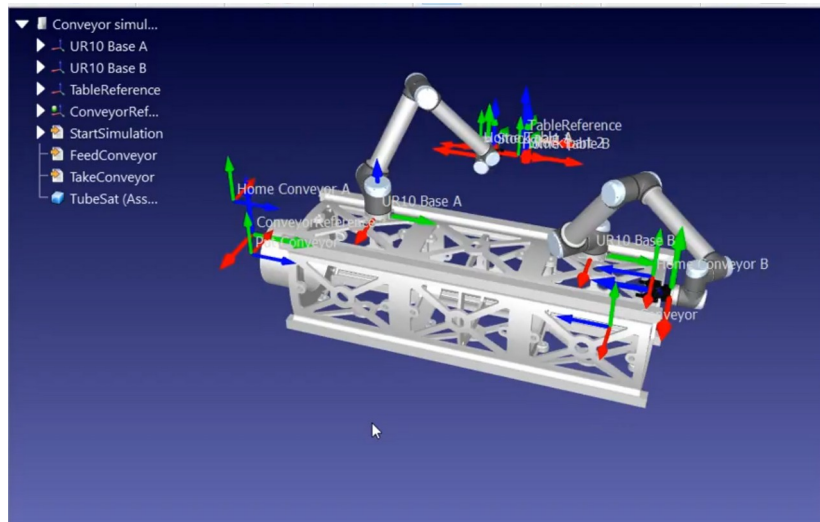


NASA Orbital Debris Assessment Report Inputs

ELaNa I ODAR



Giskard Cubesat 1 will demonstrate the use of commercial off-the-shelf (COTS) components in space, test a high-speed communications links and the modules that allow to carry out particular tasks depending on the demand required by the client.

Upon deployment from the P-POD, Giskard Cubesat 1 will power up and start counting down timers. At 30 minutes, the antennas will be deployed, then at 45 minutes the UHF beacon will be activated. For the first few passes, the ground station operators will attempt communications to perform checkouts of the spacecrafts. Approximately 4 days from launch, payload tests will begin and continue for at least 1 year.

The Giskard Cubesat 1 structure is made of Aluminum 6061-T6. It contains all standar commercial off-the-shelf (COTS) materials, electrical components, PCBs, robotic arms and solar cells. The high-speed radio uses a ceramic patch antenna.

There are no pressure vessels, hazardous, or exotic materials.

The electrical power storage system consists of common lithium-ion baterries with over-charge/current protection circuitry. The lithium batteries carry the UL-listing number MH12345.

Cubesat Acceptance List

3U+ CubeSat Acceptance Checklist

Project: Repair Satellites 2020 Date/Time: 11/11/20 08:00 Engineers: PHD. Juan Perez

Organization: Giskard Space Location: Headquarters Giskard Space Lima, Peru

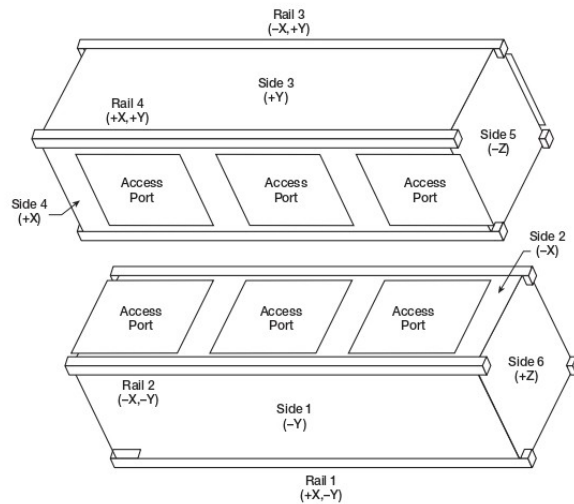
Satellite Name: Giskard 1

Satellite S/N: #7020

Revision Date: 13/11/20

Mass (< 4.00 kg)	3.95 kg	RBF Pin (≤ 6.5 mm)	5.97 mm
Spring Plungers (Depressed)	Functional Y / <input checked="" type="checkbox"/> / <input checked="" type="checkbox"/> Flush with Standoff <input checked="" type="checkbox"/> / N	Rails Anodized	<input checked="" type="checkbox"/> / N
Deployment Switches (Depressed)	Functional <input checked="" type="checkbox"/> / N Flush with Standoff <input checked="" type="checkbox"/> / N	Deployables Constrained	<input checked="" type="checkbox"/> / N

Mark on the diagram the locations of the RBF pin, connectors, deployables, and any envelope violations.



Authorized by:

IT 1:

IT 2:

Passed: Y / N

3U+ Volume

Length (Z): 30 ≤ 36 mm

Diameter: 63.1 ≤ 64 mm

3U+ Centered: Y / ☒

List Item		As Measured				Required
Width [x-y]	Side 1 (-Y)	Side 2 (-X)	Side 3 (+Y)	Side 4 (+X)		
	+Z <u>+100.1 mm</u>	<u>+99.9</u>	<u>+99.9</u>	<u>+100.1</u>	100 ± 0.1 mm	
	Middle <u>+0.1 mm</u>	<u>-0.1 mm</u>	<u>-0.1 mm</u>	<u>+0.1 mm</u>	100 ± 0.1 mm	
	-Z <u>-99.9 mm</u>	<u>-100.1 mm</u>	<u>-100.1 mm</u>	<u>-99.9 mm</u>	100 ± 0.1 mm	
Height [x-y]	Rail 1 (+X, -Y)	Rail 2 (-X, -Y)	Rail 3 (-X, +Y)	Rail 4 (+X, +Y)		
	<u>325.6 mm</u>	<u>325.9 mm</u>	<u>325.6</u>	<u>325.3 mm</u>	340.5 ± 0.3 mm	
+Z Standoffs	Rail 1 (+X, -Y) length x width	Rail 2 (-X, -Y) length x width	Rail 3 (-X, +Y) length x width	Rail 4 (+X, +Y) length x width		
	<u>6.6</u> x <u>6.7</u>	<u>6.8</u> x <u>6.9</u>	<u>6.8</u> x <u>6.9</u>	<u>6.6</u> x <u>6.8</u>	≥ 6.5 mm	
-Z Standoffs	<u>6.6</u> x <u>6.9</u>	<u>6.9</u> x <u>6.6</u>	<u>6.6</u> x <u>6.7</u>	<u>6.9</u> x <u>6.6</u>	≥ 6.5 mm	
Protrusions	Side 1 (-Y)	Side 2 (-X)	Side 3 (+Y)	Side 4 (+X)	Side 5 (-Z)	Side 6 (+Z)
	<u>3.0 mm</u>	<u>0.5 mm</u>	<u>1.1 mm</u>	<u>0.8 mm</u>	<u>2.3 mm</u>	<u>1.5 mm</u>
						≤ 6.5 mm

Licensing Procedures

Obtaining licenses for satellites can be a lengthy process. Before finalizing any system design and operations plan before submitting any application, you must understand the regulatory restrictions and clearly identify all the information required to obtain the license.

If the Cubesat transmits by Radio frequency (RF) to connect to the Earth and there is a federal law that needs a license. An NTIA (National Telecommunications and Information Administration) must be applied for, while the Federal Communications Commission (FCC) handles all other satellites operated by non-governmental agencies.

For this case there are 4 types of licenses (Amateur, Commercial, Experimental and Government).

If the Cubesat uses a camera, an authorization from NOAA (National Oceanic and Atmospheric Administration) is required to find out if a remote sensing license is necessary and, if so, to start the application process. There they would give you the NOAA Commercial Remote Sensing Regulatory Affairs (CRSRA) license

You must also need a Letter of Compliance, Cubesat Components ODAR, Transmitter Survey and Material List to the entity that is going to launch it.

Flight Certification Documentation List

- 1) Orbital Debris Assessment Report (ODAR), or similar, showing compliance inputs.
- 2) Transmitter surveys
- 3) Material list
- 4) Mass properties report
- 5) Battery report
- 6) Dimensional verifications
- 7) Electrical report
- 8) Venting analysis
- 9) Testing procedures/reports
- 10) Compliance letter
- 11) Safety package inputs