
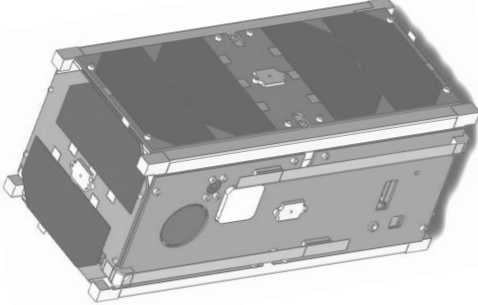


Model of BSUSat-1 satellite Interface Verification Records

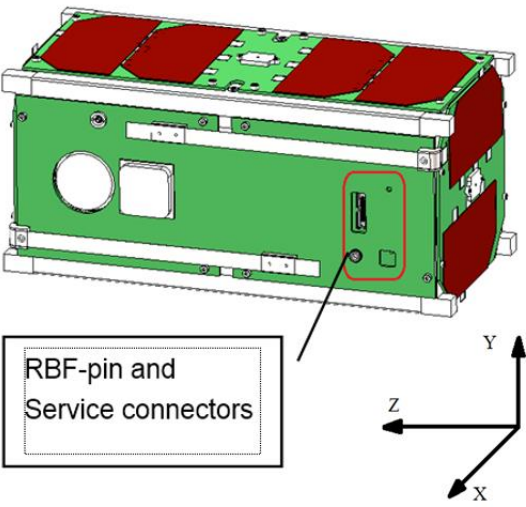
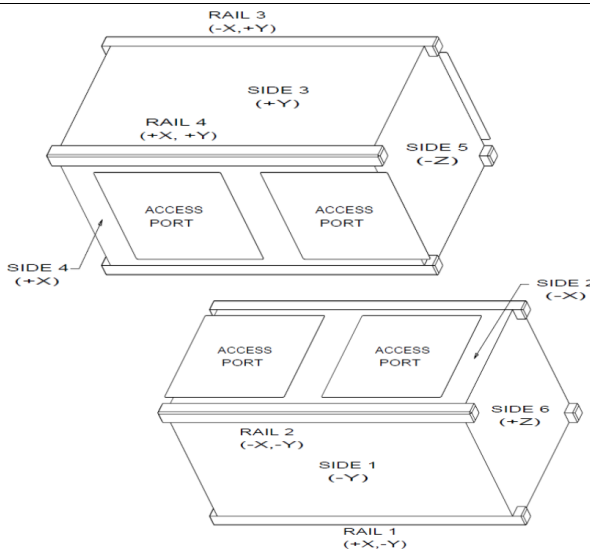
Acceptance Checklist

Project: BSUSAT-1	Date/Time: 12.04.2018	Engineers:
Organization: BSU	Location: Minsk, Belarus	SEMENOVICH S. SPIRIDONOV A. SUROVTSEV M.
Device Name: MODEL OF BSUSAT-1	Device S/N: no	

1. Appearance of the Device (2U form factor)

Model of BSUSat-1	BSUSat-1
	
Result: <u>Passed</u>	

2. Coordinate system definition, RBF pin and service connectors locations

 <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> RBF-pin and Service connectors </div>	
Result: <u>Passed</u>	

3. Mechanical Interface

Item	Results	Requirements	Verification Method	Passed: (Y / N)
Satellite Type	2U	2U	visual inspection	Y
Mass	1,557 kg	≤ 2,33 kg	weighing on scales	Y
Rails Anodized	Yes	Yes	visual inspection	Y
Rails Surface Roughness	0.891um	≤1.6um (Ra)	random check in one point of rail by stylus profiler	Y
Rails contact length: Rail 1 Rail 2 Rail 3 Rail 4	197 mm 197 mm 197 mm 197 mm	≥ 170.3mm	measurements by the appropriate instrument	Y
Result: <u>Passed</u>				

<i>Width [X-Y]</i>					
	Side 1 (-Y)	Side 2 (-X)	Side 3 (+Y)	Side 4 (+X)	Required
+Z	100.05 mm	100.02 mm	100.02mm	100.01 mm	100 ± 0.1mm
Middle	100.02 mm	100.01 mm	100.03 mm	100.03 mm	
-Z	100.02 mm	100.01 mm	100.01 mm	100.02 mm	
Result: <u>Passed</u>					

<i>Height [X-Y]</i>					
	Rail 1 (+X,-Y)	Rail 1 (-X,-Y)	Rail 1 (-X,+Y)	Rail 1 (+X,+Y)	Required
	227.03 mm	227.05 mm	227.03 mm	227.05 mm	227 ± 0.1mm
Result: <u>Passed</u>					

<i>Standoffs</i>					
	Rail 1 (+X,-Y) LxWxH	Rail 1 (-X,-Y) LxWxH	Rail 1 (-X,+Y) LxWxH	Rail 1 (+X,+Y) LxWxH	Required
+Z	8.5x8.5x7.0mm	8.5x8.5x7.0mm	8.5x8.5x7.0mm	8.5x8.5x7.0mm	≥ 6.5mm
-Z	8.5x8.5x7.0mm	8.5x8.5x7.0mm	8.5x8.5x7.0mm	8.5x8.5x7.0mm	
Result: <u>Passed</u>					

<i>Protrusions</i>						
Side 1 (-Y)	Side 2 (-X)	Side 3 (+Y)	Side 4 (+X)	Side 5 (-Z)	Side 6 (+Z)	Required
	4.52 mm	4.55 mm	5.03 mm	4.85 mm	4.85 mm	≤ 6.5mm
Result: <u>Passed</u>						

4. Moments of inertia and Main inertia axes (calculations)

Geometric center (GC) and center of mass (CM) of BSUSat-1 are placed in the same point. Maximal displacements of GC and CM could be in range: for Z-axis: ± 20 mm, for Y and X axis: ±10 mm.

$m = 1.557 \text{ kg}$; % [kg] Satellite mass
 $x = 0.1 \text{ m}$; % X— axis length
 $y = 0.1 \text{ m}$; % Y— axis length
 $z = 0.227 \text{ m}$; % Z— axis length

Moments of inertia

$I_x = \frac{m}{12} \cdot (y^2 + z^2) = 0.0079834 \text{ kg}\cdot\text{m}^2 = 79834 \text{ g}\cdot\text{cm}^2$; % X— axis inertia

$I_y = \frac{m}{12} \cdot (x^2 + z^2) = 0.0079834 \text{ kg}\cdot\text{m}^2 = 79834 \text{ g}\cdot\text{cm}^2$; % Y— axis inertia

$I_z = \frac{m}{12} \cdot (y^2 + x^2) = 0.002595 \text{ kg}\cdot\text{m}^2 = 25950 \text{ g}\cdot\text{cm}^2$; % Z— axis inertia

Main inertia axes of BSUSat-1 in the body frame are shown below.

