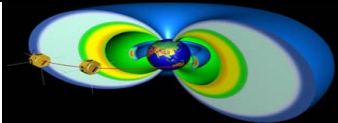


SPACE SCIENCES LAB UNIVERSITY OF CALIFORNIA, BERKELEY	TECHNICAL NOTE	 RADIATION BELT STORM PROBE
TITLE: RBSP-EFW-TN-029 SPB ESC/DDD Compliance Verification		RBSP-EFW-TN-029 SPB ESC/DDD Compliance Verification.doc Rev. -

RBSP-EFW-TN-029 SPB Electrostatic Cleanliness and Deep Dielectric Discharge Compliance Verification

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9/9/09

1. Purpose

This compliance verification is to protect sensitive electronics from a potentially damaging electric discharge. This condition occurs when a sufficiently large electron flux causes charge accumulation such that the local voltage exceeds the breakdown voltage of a dielectric gap or a gap voltage of a floating conductor. This condition is mitigated by identifying any exposed insulators or floating conductors in the SPB assembly.

2. References

APL 7417-9018 RBSP Electromagnetic Environment Control Plan (EMECP).

3. Analysis

There are no floating conductors in the SPB, verified by design.

The following list summarizes parts on the SPB that are exposed insulators with a view from external surfaces of the SPB when mounted on the RBSP spacecraft (“exposed insulators”), or which are insulators with less than .350 Al equivalent shielding to the exterior of the RBSP spacecraft (“DDD-susceptible insulators”):

Visible Configuration	P/N	Part	Material	Surface Area (cm ²)	Volume (cm ³)	Figure
Stowed/ Deployed	606	Switch Arm Bushing (2x)	Vespel SP-3	0.06	0.018	1
Deployed	817	Nut Isolator	PEEK450G	0.26	0.038	2
	619	Plunger Housing (2x)	PEEK 450G	0.30	0.439	3
	652	Preamp Cup	PEEK 450G	28.17	7.349	3
	604	Sphere Retainer	PEEK450G	0.74	0.212	3
	802	Sphere Mount	PEEK450G	0.16	0.641	3

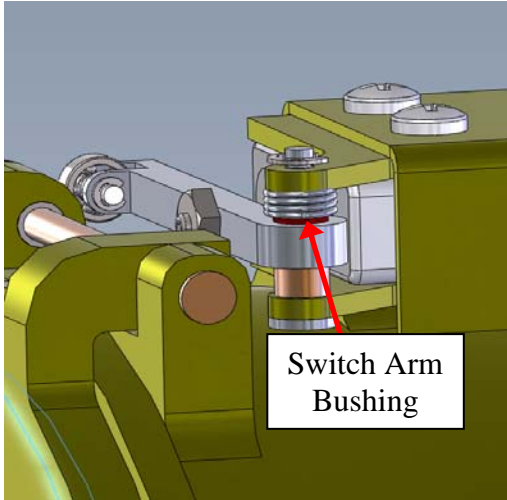
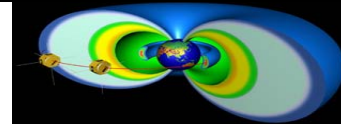


Figure 1. Door Open Indication

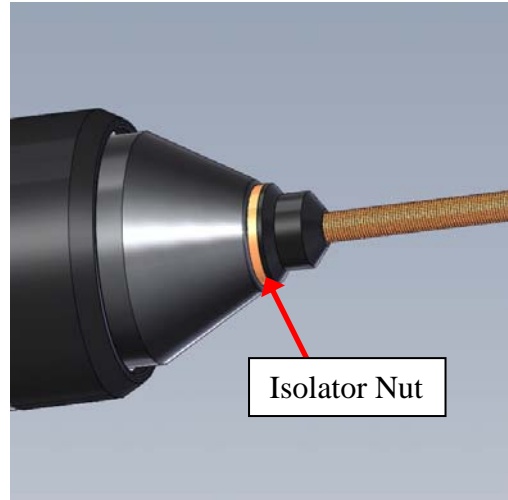


Figure 2. Preamplifier Enclosure

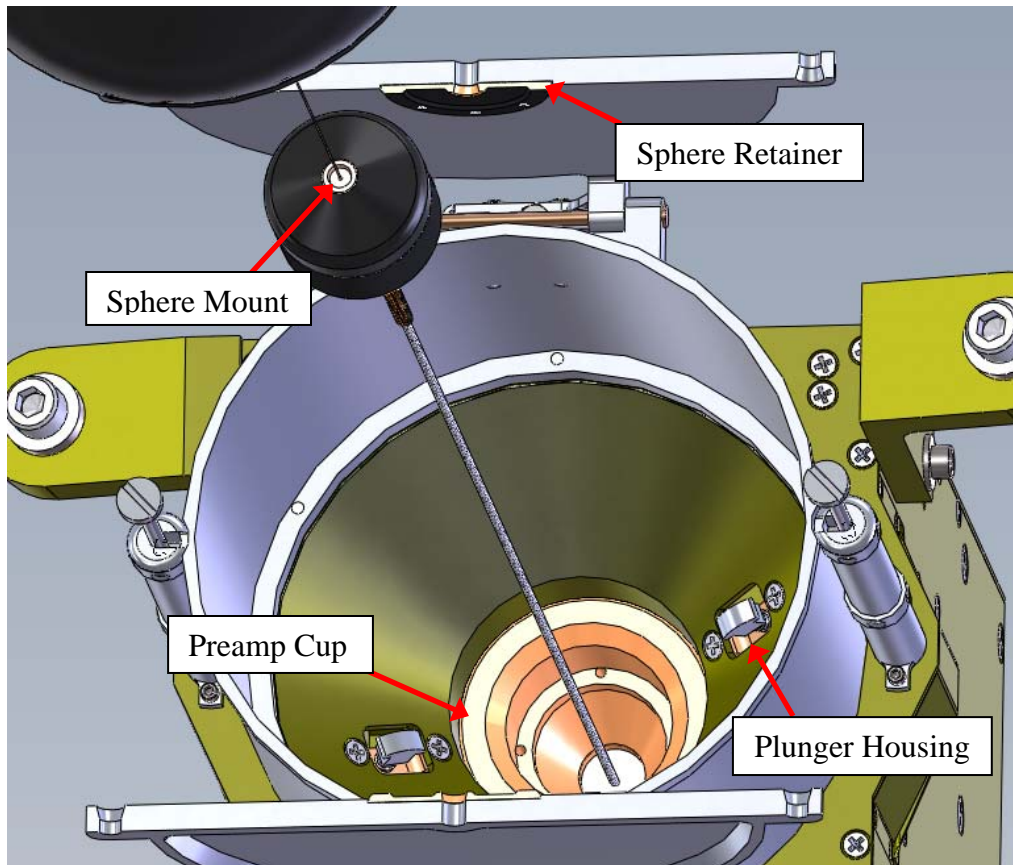


Figure 3. Deployed Preamplifier Enclosure and Sensor