STEREO

IMPACT

FM1 SWEA/STE-D Thermal Vacuum Test Report

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Distribution List

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1. Overview

1.1. *Introduction*

The Solar Wind Electron Analyzer and Supra-Thermal Electron Detector (Downstream) (SWEA/STE-D) is the part of the STEREO IMPACT instrument suite. It resides at the end of the IMPACT boom.

This document describes the results of the thermal vacuum testing performed on the FM1 SWEA/STE-D unit. This testing was performed at U.C. Berkeley following the test procedure called out in reference 1. The thermal balance test has a separate test report (see reference 4).

The SWEA/STE-D FM1 unit has satisfactorily completed its thermal vacuum test program and has met all of its requirements spelled out in reference 1 and 2.

1.2. *Applicable Documents*

The following documents are closely interrelated with this specification. All documents can be found on the Berkeley STEREO/IMPACT FTP site unless otherwise indicated:

http://sprg.ssl.berkeley.edu/impact/dwc/

1. SWEA and STE-D Revised Test Plan1
2. APL Document APL 7381-9003 Rev A – STEREO Environment Definition, Observatory and Instrument (on APL web site)
3. IMACT-SWEA-CPT
4. BOOM_SWEA_TEST_REPORT

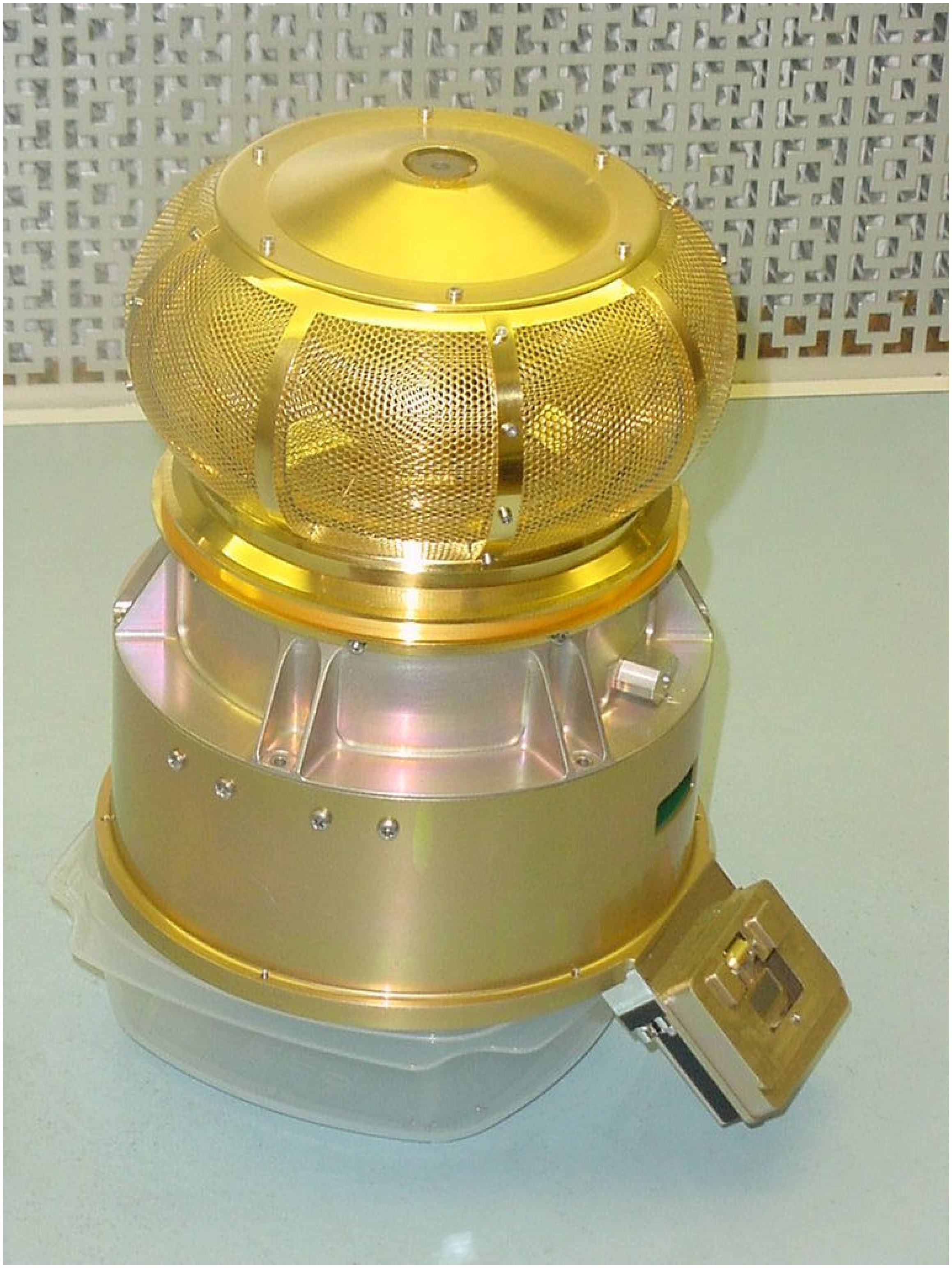


Fig 1. FM1 SWEA/STE-D

2. Test Setup

The “Jeffrey” thermal vacuum chamber at U.C. Berkeley was used for the thermal vac of the FM1 SWEA/STE-D.

The FM1 IDPU was setup outside the chamber as indicated in the test plan (reference 1).

In addition to chamber monitoring TCs (on the baseplate, and shroud), a number of chamber TCs were attached to the exterior of the instrument to monitor the temperature. These instrument-mounted TCs, together with the internal passive PRT sensor attached to the SWEA chassis, were used to determine when temperature soaks were met. We could not mount a TC to the STE-D unit due to surface issues and size, so only the internal sensor was available for that, plus a TC attached to the heat strap used to control the STE-D temperature (the heat strap typically ran 10-20C colder than STE-D due to less than ideal thermal coupling).

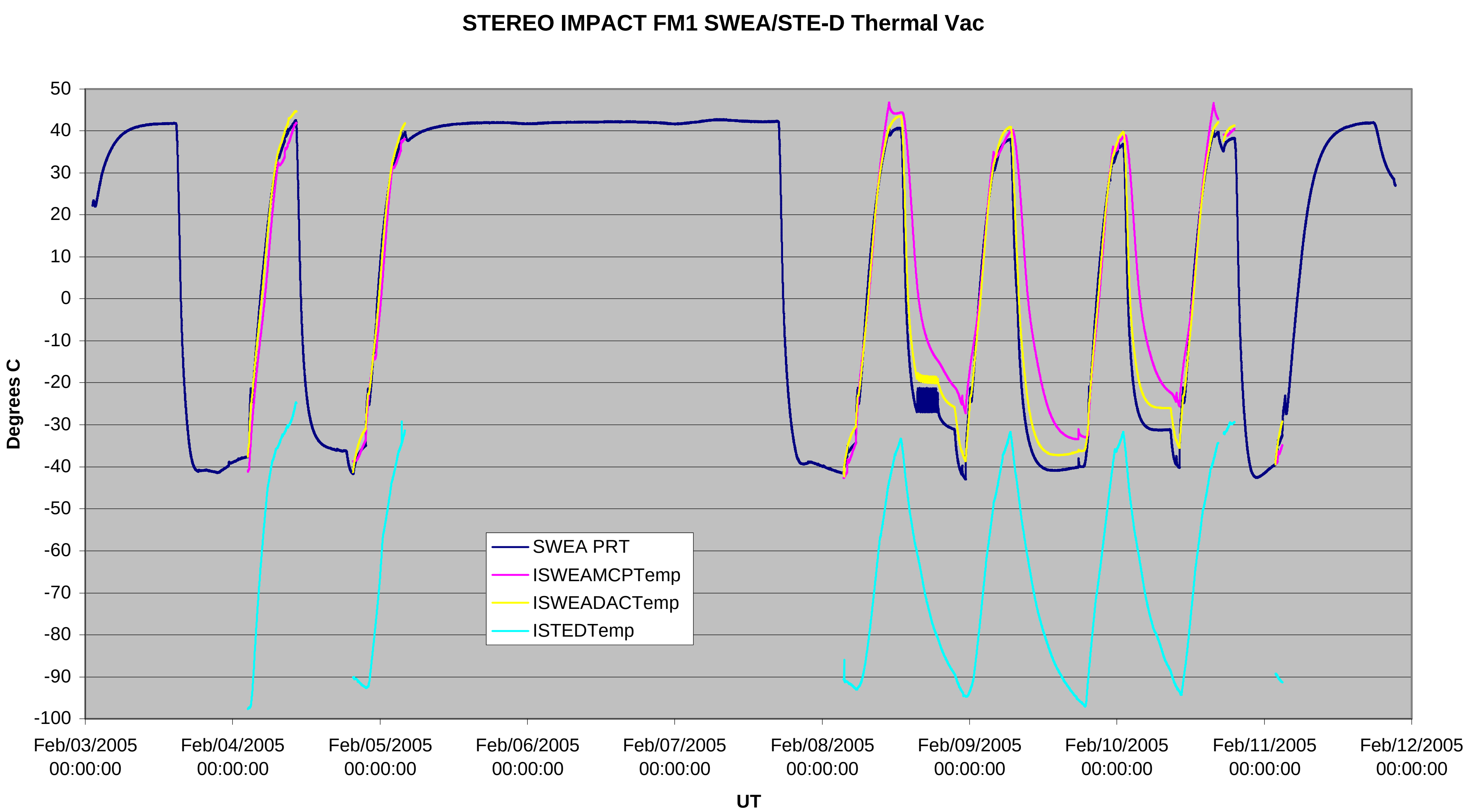
3. Test History

This test started on 2005-January-29, following vibration testing. Following a 48 hour bake at non-op hot (+40C), the instrument was transitioned to cold. It was found that we could not get STE-D cold enough, so chamber was broken to improve the conduction between the heat strap and the cold plate.

Testing was re-started on February 3 with an 8-hour bake-out at non-op hot, followed by a transition to non-op cold (which was achieved this time). The remaining cycling went according to plan with CPTs at each soak and cold-start at high and low bus voltage at the first and last cycle. Except for the first and last cycle and a pause in the middle of cycle 3 the unit was operated continuously with SWEA high voltage on. We ran with both a Ni63 electron source and a small electron gun in the chamber to stimulate SWEA. STE-D was stimulated by its internal door source.

4. Temperature Profile

SWEA PRT is the spacecraft-monitored temperature sensor attached to the SWEA pedestal (internal). ISWEAMCPTemp is telemetry from a thermistor on the MCP board in the SWEA unit. ISWEADACTemp is telemetry from a thermistor on the DAC board in the SWEA pedestal. ISTEDTemp is telemetry from a PRT in the STE-D unit. Note that on Feb 8 during cool-down the survival heater was left on by mistake for a while, slowing down the cool-down of the SWEA pedestal.


STEREO IMPACT FM1 SWEA/STE-D Thermal Vac
Degrees C
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
SWEA PRT
ISWEAMCPTemp
ISWEADACTemp
ISTEDTemp
Feb/03/2005 00:00:00
Feb/04/2005 00:00:00
Feb/05/2005 00:00:00
Feb/06/2005 00:00:00
Feb/07/2005 00:00:00
Feb/08/2005 00:00:00
Feb/09/2005 00:00:00
Feb/10/2005 00:00:00
Feb/11/2005 00:00:00
Feb/12/2005 00:00:00
UT

5. Trending

5.1. *Trending Data Explanation*

The trending data on the previous pages is extracted from the trending file for the STE-D and SWEA plus LVPS. It is composed of values measured during the CPT, either directly, or from a post-processing fitting function which evaluates the data collected.

- The Door Open and Door Close columns show two times; from application of power to the time when the door comes off the first switch (starts moving), and the time from the application of power to the time when the door reaches the destination switch.
- Threshold values are DAC levels, corresponding to ~100eV per step. Requirement is <5keV.
- The test pulser fit data measures the electronic performance. Of particular interest is the FWHM, which measures the electronic noise in the system. Other values can be used to look for thermal drift and other trends in energy gain and offset.
- The “door source” fit data measures the calibration source on the STE door, and so is a end-to-end measurement (albeit using mostly photons rather than electrons). Again the FWHM is of interest (requirement < 2keV). In a few cases the short integration door source test was skipped due to time limitations; the long integration test is a better test for most purposes.

- SWEA trends show the primary current (data logger) and secondary voltages (instrument housekeeping). High Voltage supply monitors are also trended.

5.2. ***STE-D Trending Data***

STE-D FM1 Performance Trend

Date	File	Test	SWEA/STE-D Primary Current (mA)	STE-D Temp	SWEA / STE-D DAC Temp	HTE DCur (mA)	Door Open (sec)	Door Close (sec)	Bias	FIR Rev	Det.	thresh.	Test Pulser Offset (keV)	Test Pulser Gain (keV/bin)	Test Pulser Curv. (1/keV)	Test Pulser Test Gain	Test Pulser FWHM (keV)	Door Source Offset (keV)	Door Source Gain (keV/bin)	Door Source Curv. (1/keV)	Door Source 60keV LS	Door Source 22keV LS	Door Source FWHM	Long Integration Door Source (Door Out) AccTime (sec)	Long Integration Offset (keV)	Long Integration Gain (keV/bin)	Long Integration Curv. (1/keV)	Long Integration 60keV LS	Long Integration 22keV LS	Long Integration 88keV LS	Long Integration FWHM
Oct 8 2004	0410080033.lm	FM1 boom IST, with SWEA (shield added)	142	24	33.7	17.2	0.38 / 0.38	0.25 / 0.38	20	10/15/2004	0	13	-0.10	0.3864	7.80E-06	13.4921	1.336	-0.07	0.3911	6e-6 (F)	58.53	29.95	1.404	1720	-0.06	0.3919	3.08E-05	35.54	20.03	1.11E-02	1.388
											1	12	-0.16	0.3872	7.53E-06	12.5168	1.139	-0.06	0.3886	6e-6 (F)	54.12	28.26	1.140		-0.05	0.3861	6.09E-05	38.50	10.84	1.11E-02	1.163
											2	13	-0.23	0.3879	8.39E-06	13.2135	1.239	-0.02	0.3880	6e-6 (F)	43.85	34.84	1.250		-0.04	0.3865	5.09E-05	30.83	17.41	1.11E-02	1.242
											3	13	-0.14	0.3864	7.40E-06	13.6343	1.336	-0.06	0.3882	6e-6 (F)	42.30	34.53	1.390		-0.06	0.3863	6.30E-05	30.34	16.96	1.20E-02	1.359
Oct 8 2004	0410081029.lm	FM1 boom IST, with SWEA (shield added), Ground fixed		23	27	15			20	10/15/2004	0													490	-0.06	0.3909	6.82E-05	56.36	28.40	1.69E-02	0.907
											1														-0.05	0.3887	6.28E-05	57.00	28.96	1.25E-02	0.849
											2														-0.05	0.3846	1.92E-05	44.75	24.60	1.11E-02	0.845
											3														-0.06	0.3862	6.09E-05	43.97	24.56	1.88E-02	0.907
Oct 16 2004	04101600000s.lm	FM Suite IST @ caltech		25.2	32.9	16.9	0.38 / 0.38	0.25 / 0.38	20	10/15/2004	0	10	-0.13	0.3868	7.39E-06	13.2873	0.836	-0.07	0.3909	6e-6 (F)	55.77	27.82	0.918	590	-0.06	0.3916	4.07E-05	55.34	27.54	1.47E-02	0.915
											1	9	-0.05	0.3882	8.57E-06	13.4294	0.766	-0.04	0.3882	6e-6 (F)	53.79	27.59	0.847		-0.05	0.3865	5.94E-05	54.77	27.49	1.91E-02	0.854
											2	9	-0.08	0.3868	8.49E-06	13.1308	0.763	-0.04	0.3879	6e-6 (F)	44.93	23.67	0.870		-0.04	0.3880	5.04E-05	43.56	24.13	1.11E-02	0.886
											3	8	-0.09	0.3869	7.70E-06	13.5099	0.834	-0.07	0.3897	6e-6 (F)	42.62	23.03	0.894		-0.07	0.3869	6.28E-05	43.13	22.45	1.51E-02	0.906
Nov 3 2004	0411031063.lm	FM1 boom suite post-EMC at UCB	139.5	24.5	32.3	17.1	0.38 / 0.38	0.25 / 0.38	20	10/15/2004	0	10	-0.14	0.3872	7.38E-06	13.3068	0.849	-0.06	0.3913	4.70E-05	54.00	28.20	0.918	940	-0.06	0.3906	6.61E-05	55.74	27.27	1.28E-02	0.920
											1	10	-0.06	0.3863	9.36E-06	13.4325	0.801	-0.03	0.3889	4.20E-05	54.45	27.70	0.855		-0.05	0.3889	3.50E-05	54.33	27.33	1.28E-02	0.855
											2	11	-0.12	0.3872	8.88E-06	13.1951	0.847	-0.05	0.3881	3.14E-05	45.39	23.42	0.880		-0.05	0.3878	6.59E-05	43.97	23.94	1.31E-02	0.884
											3	10	-0.10	0.3872	7.62E-06	13.5791	0.834	-0.08	0.3886	5.31E-05	42.47	22.74	0.882		-0.06	0.3869	6.69E-05	42.83	22.71	1.09E-02	0.887
Dec 8 2004	0412081480.lm	FM1SWEA pre-Thermal Balance	138	17	23	14.3			20	2/18/2005	0	10	-0.11	0.3866	7.52E-06	13.2967	0.771	-0.04	0.3941	6e-6 (F)	55.15	27.00	0.860	650	-0.05	0.3904	7.09E-05	55.21	26.17	1.68E-02	0.894
											1	9	-0.04	0.3863	9.58E-06	12.4179	0.719	-0.01	0.3888	6e-6 (F)	54.61	26.93	0.830		0.01	0.3876	8.02E-05	53.91	26.97	1.28E-02	0.839
											2	9	-0.07	0.3886	8.55E-06	13.1251	0.706	-0.01	0.3883	6e-6 (F)	44.02	22.73	0.826		0.00	0.3881	7.28E-05	43.54	22.83	1.09E-02	0.839
											3	10	-0.09	0.3869	7.55E-06	13.5190	0.766	-0.03	0.3863	6e-6 (F)	41.50	21.16	0.858		-0.05	0.3860	6.98E-05	42.07	21.72	7.98E-03	0.882
Dec 10 2004	0412101030.lm	FM1 SWEA Thermal Balance	139	13	-10	13	0.38 / 0.50	0.50 / 0.50	20	2/18/2005	0	14	-0.17	0.3871	7.17E-06	13.4461	1.161	-0.09	0.3914	6e-6 (F)	55.12	26.82	1.171	1330	-0.06	0.3900	6.71E-05	55.91	26.71	1.09E-02	1.119
											1	14	-0.09	0.3864	9.02E-06	12.4911	1.097	-0.04	0.3904	6e-6 (F)	55.48	27.16	1.103		-0.05	0.3914	5.84E-05	55.78	26.91	1.78E-02	1.079
											2	12	-0.13	0.3896	8.55E-06	13.2148	0.924	-0.05	0.3888	6e-6 (F)	44.96	23.17	0.967		-0.05	0.3862	5.58E-05	45.71	23.53	1.68E-02	0.958
											3	13	-0.12	0.3874	7.62E-06	13.6313	0.969	-0.05	0.3876	6e-6 (F)	45.47	22.18	0.987		-0.05	0.3868	6.53E-05	43.59	23.16	1.64E-02	0.964
Jan 20 2005	0501200000.lm	FM1 SWEA Pre-vib	140	24.3	30.5	13.8	0.38 / 0.38	0.38 / 0.38	20	2/18/2005	0	11								6e-6 (F)											
											1	11								6e-6 (F)											
											2	11								6e-6 (F)											
											3	11								6e-6 (F)											
Jan 27 2005	0501290105.lm	FM1 SWEA Post-vib	138	18.1	30.2	14.5	0.50 / 0.50	0.38 / 0.38	60	2/18/2005	0	11								6e-6 (F)											
											1	11								6e-6 (F)											
											2	11								6e-6 (F)											
											3	11								6e-6 (F)											
Feb 4 2005	0502040000.lm	FM1 SWEA Thermal Vac Hot #2	150.6	-33	37.3	15	0.38 / 0.38	0.38 / 0.38	150	2/18/2005	0	9	-0.05	0.3874	7.90E-06	13.1311	0.646	-0.03	0.3903	6e-6 (F)	45.26	18.92	0.703	890	-0.02	0.3907	6e-6 (F)	58.59	24.71	1.11E-02	0.779
											1	8	-0.02	0.3881	9.59E-06	12.2738	0.586	-0.01	0.3903	6e-6 (F)	43.47	19.78	0.721		0.01	0.3880	6e-6 (F)	55.79	25.11	8.73E-03	0.728
											2	9	-0.05	0.3865	8.67E-06	12.8771	0.675	-0.01	0.3903	6e-6 (F)	38.91	19.54	0.722		0.02	0.3883	5.90E-05	44.57	21.90	9.20E-03	0.726
											3	8	-0.04	0.3868	8.21E-06	13.3138	0.636	0.01	0.3875	6e-6 (F)	42.62	20.61	0.779		0.01	0.3877	4.55E-05	42.50	20.33	1.28E-02	0.773
Feb 4 2005	0502040000.lm	FM1 SWEA Thermal Vac Cold #2	134	-90.2	-40.4	11.8	0.75 / 0.75	1.25 / 1.25	150	2/18/2005	0	8	-0.23	0.3874	7.40E-06	13.1606	0.659	-0.11	0.3900	6e-6 (F)	52.80	24.10	0.672	930	-0.11	0.3861	6e-6 (F)	53.59	24.28	1.28E-02	0.672
											1	8	-0.14	0.3886	1.00E-04	12.2415	0.487	-0.09	0.3868	6e-6 (F)	53.20	24.02	0.646		-0.09	0.3863	6e-6 (F)	53.82	24.30	1.68E-02	0.622
											2	8	-0.18	0.3900	8.72E-06	12.9038	0.475	-0.10	0.3944	6e-6 (F)	44.10	21.22	0.611		-0.10	0.3905	6e-6 (F)	43.88	21.46	5.71E-03	0.616
											3	8	-0.16	0.3870	7.40E-06	13.2004	0.529	-0.07	0.3898	6e-6 (F)	41.37	20.66	0.658		-0.06	0.3861	6e-6 (F)	42.49	20.16	8.42E-03	0.680
Feb 5 2005	0502050000.lm	FM1 SWEA Thermal Vac Hot #3	156	-38.2	37.8	16.3	0.50 / 0.50	0.50 / 0.50	150	2/18/2005	0	8	-0.09	0.3874	7.86E-06	13.1217	0.640	-0.03	0.3904	6e-6 (F)	54.13	24.88	0.766	600	-0.05	0.3868	6e-6 (F)	53.86	24.24	2.06E-02	0.762
											1	8	-0.03	0.3882	9.57E-06	12.2738	0.541	0.01	0.3907	6e-6 (F)	54.61	25.11	0.718		0.01	0.3887	8.94E-05	54.86	24.84	1.29E-02	0.717
											2	8	-0.06	0.3885	8.80E-06	12.8771	0.566	0.01	0.3903	6e-6 (F)	43.87	21.93	0.722		0.02	0.3887	6e-6 (F)	43.93	21.14	1.20E-02	0.706
											3	8	-0.07	0.3870	8.10E-06	13.3194	0.636	0.00	0.3879	6e-6 (F)	42.53	20.17	0.768		0.01	0.3876	6e-6 (F)	41.98	20.39	1.48E-03	0.761
Feb 7 2005	0502060000.lm	FM1 SWEA Thermal Vac Cold #3	125.2	-90.5	-40.4	12.3	1.00 / 1.12	1.12 / 1.12	20	2/18/2005	0	8	-0.23	0.3868	7.24E-06	13.2723	0.505	-0.13	0.3966	6e-6 (F)	38.44	17.85	0.663	2060	-0.10	0.3890	6e-6 (F)	52.19	23.84	1.04E-02	0.664
											1	8	-0.13	0.3871	9.38E-06	12.2086	0.477	-0.10	0.3900	6e-6 (F)	52.01	24.36	0.639		-0.09	0.3904	6e-6 (F)	52.49	23.91	1.63E-02	0.636
											2	8	-0.20	0.3872	8.51E-06	13.0090	0.475	-0.11	0.3959	6e-6 (F)	43.82	19.68	0.605		-0.10	0.3905	6e-6 (F)	42.58	20.70	1.21E-03	0.616
											3	8	-0.18	0.3872	7.41E-06	13.4585	0.535	-0.08	0.3911	6e-6 (F)	32.06	16.58	0.675		-0.06	0.3867	7.01E-05	41.54	19.96	1.52E-03	0.680
Feb 8 2005	0502080000.lm	FM1 SWEA Thermal Vac Hot #4	161	-37.1	43.8	14.9	0.50 / 0.50	0.50 / 0.50	20	2/18/2005	0	8	-0.09	0.3871	7.81E-06	13.1947	0.639							960	-0.02	0.3881	6e-6 (F)	54.28	24.44	1.82E-02	0.759
											1	7	-0.02	0.3863	9.72E-06	12.3245	0.573								0.01	0.3905	6e-6 (F)	54.58	24.90	1.04E-02	0.715
											2	8	-0.06	0.3863	8.76E-06	12.8906	0.559								0.02	0.3883	6.31E-05	43.54	21.26	1.71E-02	0.715
											3	8	-0.07	0.3872	8.05E-06	13.4163	0.625								0.01	0.3877	6.31E-05	42.17	20.26	9.58E-03	0.758
Feb 8 2005	0502080000.lm	FM1 SWEA Thermal Vac Cold #4	129.5	-91.8	-32.5	14.6	1.25 / 1.25	1.50 / 1.50	150	2/18/2005	0	13	-0.21	0.3876	7.51E-06	13.1766	0.814							330	-0.11	0.3863	6e-6 (F)	53.59	24.45	9.89E-03	0.850
											1	9	No fit												-0.09	0.3867	6e-6 (F)	54.19	24.36	1.06E-02	0.818
											2		-0.21	0.3866	8.55E-06	12.8941	0.493								-0.10	0.3868	6e-6 (F)	43.08	21.33	1.29E-02	0.827
											3	12	-0.18	0.3870	7.60E-06	13.2534	0.527								-0.07	0.3884	5.70E-05	42.86	20.18	2.28E-02	0.743
Feb 9 2005	0502090000.lm	FM1 SWEA Thermal Vac Hot #5	158	-30.4	39.8	14.4	0.50 / 0.50	0.50 / 0.50	150	2/18/2005	0	8	-0.09	0.3865	7.89E-06	13.0960	0.637							700	-0.02	0.3907	7.10E-05	54.31	24.35	1.11E-02	0.756
											1	8	-0.07	0.3886	9.04E-06	12.2562	0.541								0.01	0.3887	6.02E-05	55.54	24.73	2.02E-02	0.737
											2	8	-0.06	0.3866	8.88E-06	12.8751	0.566								0.01	0.3882	6.18E-05	43.81	21.28	1.50E-02	0.714
											3	8	-0.06	0.3869	8.14E-06	13.3078	0.629								0.02	0.3879	7.43E-05	42.67	20.23	2.24E-02	0.758
Feb 9 2005	0502090000.lm	FM1 SWEA Thermal Vac Cold #5	130	-94.9	-39.0	12.4	1.12 / 1.12	1.25 / 1.25	20	2/18/2005	0	8	-0.21	0.3873	7.50E-06	13.2515	0.599	-0.11	0.3963	6e-6 (F)	53.05	23.51	0.688	2050	-0.11	0.3862	6e-6 (F)	53.21	23.93	8.85E-03	0.680
											1	9	-0.14	0.3878	9.51E-06	12.2781	0.495	-0.09	0.3966	6e-6 (F)	52.08	23.84	0.608		-0.09	0.3867	6e-6 (F)	53.11	23.92	1.57E-02	0.628
											2	9	-0.20	0.3867	8.40E-06	12.9890	0.469	-0.10	0.3946	6e-6 (F)	43.80	21.11	0.605		-0.09	0.3962	6.79E-05	43.12	20.87	1.69E-02	0.607
											3	8	-0.17	0.3874	7.70E-06	13.4548	0.527	-0.07	0.3904	6e-6 (F)	34.29	16.14	0.717		-0.07	0.3869	6.79E-05	41.85	20.06	1.36E-02	0.652
Feb 10 2005	0502100000.lm	FM1 SWEA Thermal Vac Hot #6	149	-35	38	14.4	0.50 / 0.50	0.50 / 0.50	150	2/18/2005	0	8	-0.08	0.3874	7.81E-06	13.1288	0.637	-0.09	0.3903	6e-6 (F)	53.54	24.47	0.780	700	-0.05	0.3881	6e-6 (F)	54.45	24.47	1.58E-02	0.760
											1	8	-0.02	0.3880	9.69E-06	12.2868	0.566	-0.01	0.3909	6e-6 (F)	54.85	24.96	0.819		0.00	0.3885	6.89E-05	55.64	24.99	2.39E-02	0.726
											2	8	-0.06	0.3864	8.73E-06	12.8743	0.564	0.02	0.3903	6e-6 (F)	44.79	21.23	0.705		0.02	0.3885	9.05E-05	43.97	21.48	1.89E-02	0.706
											3	8	-0.06	0.3869	8.13E-06	13.3136	0.646	0.00	0.3878	6e-6 (F)	43.62	21.83	0.768		-0.01	0.3883	4.16E-05	42.44	20.40	1.28E-02	0.762
Feb 10 2005	0502100000.lm	FM1 SWEA Thermal Vac Cold #6	136	-90.7	-30.2	14.6	1.12 / 1.25	1.38 / 1.50	150	2/18/2005	0	8	-0.23	0.3877	7.28E-06	13.1762	0.562							1210	-0.11	0.3861	6.74E-05	50.00	22.70	1.68E-02	0.759
											1	10	-0.14	0.3889	9.80E-06	12.2417	0.276								-0.09	0.3964	6e-6 (F)	50.21	22.99	1.71E-02	0.719
											2		-0.20	0.3871	8.72E-06	12.8946	0.495								-0.10	0.3941	7.13E-05	40.84	19.94	1.44E-02	0.616
											3		-0.18	0.3870	7.78E-06	13.3627	0.594								-0.06	0.3900	6E-5 (F)	39.37	18.94	1.68E-02	0.688
Feb 10 2005	0502100000.lm	FM1 SWEA Thermal Vac Hot #7	148	-31.9	37.8	15.4	0.38 / 0.38	0.38 / 0.38	20	2/18/2005	0	8	-0.09	0.3868	7.68E-06	13.2064	0.636	-0.02	0.3909	6e-6 (F)	53.66	24.23	0.788	930	0.02	0.3909	7.14E-05	54.34	24.42	1.77E-02	0.764
											1	8	-0.03	0.3870	9.51E-06	12.3098	0.577	0.01	0.3903	6e-6 (F)	54.77	25.50	0.732		0.02	0.3880	6.46E-05	54.41	24.16	1.48E-02	0.722
											2	8	-0.06	0.3869	8.51E-06	13.0281	0.571	0.02	0.3900	6e-6 (F)	43.58	21.74	0.684		0.02	0.3889	6.00E-05	43.49	21.39	1.28E-02	0.715
											3	8	-0.07	0.3869	7.78E-06	13.4231	0.629	0.03	0.3879	6e-6 (F)	41.97	20.72	0.732		0.02	0.3871	7.16E-05	42.22	20.30	1.57E-02	0.764
Feb 11 2005	0502110000.lm	FM1 SWEA Thermal Vac Cold #7	125	-89.3	-38.8	12.2	1.00 / 1.00	1.00 / 1.00	20	2/18/2005	0	8	-0.24	0.3872	7.33E-06	13.2260	0.550	-0.10	0.3900	6e-6 (F)	52.80	24.50	0.672	700	-0.10	0.3962	6e-6 (F)	52.88	24.00	7.04E-03	0.684
											1	7	-0.15	0.3874	9.53E-06	12.2786	0.481	-0.10	0.3968	6e-6 (F)	52.82	23.77	0.624		-0.06	0.3965	6e-6 (F)	53.55	23.96	1.19E-02	0.637
											2	8	-0.21	0.3823	8.25E-06	13.0038	0.479	-0.11	0.3947	6e-6 (F)	42.70	21.19	0.610		-0.09	0.3943	6e-6 (F)	43.01	20.88	5.06E-03	0.605
											3	8	-0.18	0.3876	7.40E-06	13.4619	0.569	-0.07	0.3901	6e-6 (F)	41.97	20.17	0.652		-0.07	0.3962	5.73E-05	41.45	20.22	1.42E-02	0.667

5.3. *SWEA, LVPS Trending Data*

SWEA FM1 Performance Trend (incl SWEA/STE-D LVPS)

Date	File	Test	SWEA Temp	ISWEAM CPTemp	ISWEAD ACTemp	Bus Voltage	Primary Current	2.5V	5VD	5VA	12VA	ISWEAST EDCur	ISWEAV0 @ DAC=128	ISWEANR 5V	ISWEAAnal	ISWEADefl1	ISWEADefl2	Open Door?	MCP On?	
Oct 8 2004	0410080933.tlm	FM1 Boom I&T, with SWEA (shield added)	30.7	31.9	32.8	28	142	2.50	4.99	5.36	12.14	17	-12.49	6.60	66.26	158.60	94.30	Yes	No	
Oct 16 2004	0410160000a.tlm	FM1 Suite I&T @ Caltech	30.9	31.9	32.9	28	140	2.50	4.99	5.37	12.16	17.3	-12.49	6.6	66.3	158	93	No	No	
Nov 3 2004	0411031353.tlm	FM1 boom suite post-EMC at UCB	30.4	31.6	32.7	28	139.5	2.50	4.99	5.36	12.14	14.8	-12.49	6.62	68	157.8	93.5	No	No	
						28	138	2.50	4.99	5.34	12.10									
Dec 8 2004	0412081459.tlm	FM1 SWEA pre-Thermal Balance				24	146	2.50	4.99	5.35	12.16									
			23.1	23	25.2	35	139	2.50	4.99	5.33	12.04	15.8						No	No	No HV Enable Plug
						28	138	2.50	4.99	5.34	12.10									
Dec 10 2004	0412101830.tlm	FM1 SWEA pre-Thermal Balance				24	145	2.50	4.99	5.35	12.16									
			23.1	23	25.2	35	139	2.50	4.99	5.33	12.04	15.8	-12.52	6.6	67.1	160.3	96	Yes	Yes	
						28	140													
Jan 26 2005	0501270000.tlm	FM1 SWEA Pre-vib				24	155	2.50	4.99	5.37	12.22									
				29.4	31.8	35	140	2.50	4.99	5.36	12.10	16.1	-12.48	6.6	65.8	157.8	93.5	Yes	No	Lost File
Jan 28 2005	0501290105.tlm	FM1 SWEA Post-vib	21.8	20.7	22.9	28	138					14.6	-12.49	6.55	66.26	157.8	93.5	No	No	Lost File
						28	150.6	2.50	4.99	5.05	11.40									
Feb 4 2005	0502040000.tlm	FM1 SWEA Tvac Hot #2				24	290	2.50	4.99	5.56	12.70									
			37.4	33.6	39.4	35	150.5	2.50	4.99	5.38	12.17	16.7	-12.48	6.73	65.8	156.9	92.6	Yes	Yes	
						28	134	2.50	4.99	5.05	11.36									
Feb 4 2005	0502040000.tlm	FM1 SWEA Tvac Cold #2				24	132	2.50	4.98	5.04	11.35									
			-38.4	-38.6	-36.9	35	133	2.50	4.98	5.03	11.30	14.5	-12.57	6.37	68.8	162.8	98.6	No	Yes	
Feb 5 2005	0502050000.tlm	FM1 SWEA Tvac Hot #3	36.9	34.9	39.1	28	166	2.50	4.99	5.40	12.20	15.6	-12.49	6.13	65.8	156.9	93.5	No	Yes	
Feb 7 2005	0502080000.tlm	FM1 SWEA Tvac Cold #3	-38.5	-41.8	-37.5	28	125.2	2.50	4.99	5.06	11.40	14.8	-12.55	6.36	68.8	163.7	99.4	No	Yes	
Feb 8 2005	0502080000.tlm	FM1 SWEA Tvac Hot #4	40.5	44.1	43.1	28	161	2.50	4.99	5.38	12.20	14.9	-12.48	6.14	65.8	156.9	92.6	No	Yes	
Feb 8 2005	0502080000.tlm	FM1 SWEA Tvac Cold #4	-41.6	-24.8	-36.4	28	129.5	2.50	4.98	5.08	11.40	16.6	-12.55	6.13	68.8	163.7	99.4	No	Yes	
Feb 9 2005	0502090000.tlm	FM1 SWEA Tvac Hot #5	37.4	37.9	40.1	28	158	2.50	4.98	5.37	12.15	15.3	-12.48	6.14	65.8	157.8	93.5	No	Yes	
Feb 9 2005	0502090000.tlm	FM1 SWEA Tvac Cold #5	-40.1	-33.4	-36.4	28	136	2.50	4.98	5.08	11.42	13.9	-12.57	6.11	68.8	163.7	99.4	No	Yes	
Feb 10 2005	0502100000.tlm	FM1 SWEA Tvac Hot #6	36	35.7	37.4	28	149	2.50	4.98	5.36	12.10	16.7	-12.49	6.13	65.8	157.8	93.5	No	Yes	
Feb 10 2005	0502100000.tlm	FM1 SWEA Tvac Cold #6	-39.3	-24.3	-33.4	28	138	2.50	4.99	5.10	11.45	14.8	-12.55	6.17	68.8	162.9	98.6	No	Yes	
						28	148	2.50	4.99	5.38	12.17									
Feb 10 2005	0502100000.tlm	FM1 SWEA Tvac Hot #7				24	289	2.50	4.99	5.53	12.67									147mA at 26V
			36.9	38.8	39	35	148	2.50	4.99	5.36	12.10	14.7	-12.48	6.71	65.8	156.9	92.6	No	Yes	
						28	125	2.50	4.99	5.05	11.36									
Feb 11 2005	0502110000.tlm	FM1 SWEA Tvac Cold #7				24	125.2	2.50	4.98	5.04	11.39									
			-36.3	-38.8	-35.6	35	141.8	2.50	4.98	5.04	11.34	14.7	-12.55	6.36	68.8	163.7	99.4	No	Yes	

6. TQCM Data

A bakeout was added to the end of the thermal vac cycling using a TQCM monitor to verify the outgassing rate meets the requirement (2.5E-11 g/cm2/sec). A final outgassing rate of ~40Hz/hour was measured, which is about the background rate of the chamber.