

Software

PS_Test_HS
Com port 3

DAC	PS
1	A
2	B
3	C
4	D
5	E

-31°C	510.4
-30°C	481
-29°C	453.5

+25°C

+25°C TESTS

EPI-Hi Bias Supplies

Functional Test Procedure

Document Number: 701005

ENGINEER W B R D

+54°C	9.450
+55°C	9.109
+56°C	8.781

Document 701005, EPI-Hi Bias Supplies Functional Test Procedure

1.0 Scope: This document is used to for functional tests of EPI-Hi Bias supplies board.

2.0 Applicable Documents:

- 2.1 Schematic: 701002_B.SCH
- 2.2 Layout: 701002_A4.PCB
- 2.3 ICD: EPI-Hi_Bias_Supply_Req_B_9-17-13.PDF

3.0 +25V Output Test: Complete setup per Figure 1. Make measurements per following table. Record results in the following table:

Record Unit Temperature: +25.5°C

Input Voltage	Output Voltage	Output Ripple	Input Current	Load Resistor	
11.4	25.84	30	10.14	25K } 30K MIN	NO SYNC 24.94 30
12	25.04	30	10.09	25K	
13	25.047	30	10.07	25K	
11.4	25.01	30	10.65	23.9K	
12	25.02	30	10.54	23.9K	
13	25.02	30	10.46	23.9K	
11.4	24.996	30	11.19	20K	
12	24.998 V	30 mV	11.04 mA	20K	
13	25.002	30	10.89	20K	

4.0 Bias Supplies tests: Complete setup per Figure 1. Make measurements per the following table. Record results in the following table. Unit temperature _____. See Figure 1 for MIN, NOM, and MAX Load resistor values. Set DAC1, through DAC5 outputs all the save value as indicated in the following Table. Measure and record output voltage. Also measure and record output ripple in the following table.
Table 2: Output Voltage Measurements

Load	Input Volts	CTRL OUT (DAC1)	V2a Out Volts	V1a Out Volts	V2b Out Volts	V1b Out Volts	V2c Out Volts	V1c Out Volts	V2d Out Volts	V1d Out Volts	V2e Out Volts	V1e Out Volts
MIN	11.4	0	0.049	0.0005	0.034	0.002	0.035	0.002	0.20	0.04	0.03	0.0005
MIN	11.4	1	53.45	3.72	53.5	4.89	53.39	4.66	53.38	7.79	53.32	5.03
MIN	11.4	2	107.2	32.4	107.42	32.6	107.28	32.19	107.2	15.66	107.16	32.27
MIN	11.4	3	161.0	50.06	161.28	50.35	161.13	49.72	160.99	22.9	160.92	49.83
MIN	11.4	4	214.75	67.70	215.08	68.06	214.9	67.28	214.7	30.6	214.67	67.38
MIN	11.4	5	268.2	85.3	268.76	85.76	268.6	84.79	268.1	38.16	267.9	84.79
MIN	12	0	0.052	0.002	0.037	0.002	0.045	0.003	0.167	0.033	0.045	0.002
MIN	12	1	53.44	37.1	53.5	4.89	53.39	4.67	53.38	7.79	53.32	5.029
MIN	12	2	107.2	32.4	107.4	32.6	107.3	32.18	107.2	15.6	107.16	32.28
MIN	12	3	161.04	50.07	161.29	50.34	161.13	49.73	160.99	22.9	160.93	49.82
MIN	12	4	214.76	67.76	215.09	68.07	214.9	67.28	214.7	30.5	214.7	67.38

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MIN	12	5	268.2	85.3	268.7	85.76	268.6	84.8	268.1	38.1	267.99	84.80
MIN	13	0	0.046	0.002	0.027	0.001	0.039	0.002	0.143	0.029	0.04	0.002
MIN	13	1	53.45	37.23	53.50	4.90	53.38	4.66	53.38	7.78	53.3	5.03
MIN	13	2	107.28	32.42	107.4	32.6	107.28	32.19	107.2	15.6	107.17	32.28
MIN	13	3	161.04	50.07	161.3	50.3	161.12	49.73	161	22.9	160.93	49.83
MIN	13	4	214.77	67.74	215.1	68.0	214.95	67.3	214.7	30.5	214.69	67.38
MIN	13	5	268.2	85.3	268.79	85.77	268.3	84.8	268	38.0	268	84.8

Table 3, Output ripple measurements

< 30 mV min Load

Failed

Load	Input Volts	CTRL OUT (DAC1)	V2a Ripple mV	V1a Ripple mV	V2b Ripple mV	V1b Ripple mV	V2c Ripple mV	V1c Ripple mV	V2d Ripple mV	V1d Ripple mV	V2e Ripple mV	V1e Ripple mV
MIN	11.4	0										
MIN	11.4	1										
MIN	11.4	2										
MIN	11.4	3										
MIN	11.4	4										
MIN	11.4	5										
MIN	12	0										
MIN	12	1	50	50								
MIN	12	2	30	30								
MIN	12	3	20	20								
MIN	12	4	30	30								
MIN	12	5	20	20								
MIN	13	0										
MIN	13	1										
MIN	13	2										
MIN	13	3										
MIN	13	4										
MIN	13	5										

5.0 Output measurements for Nom Load: Change the load to Nominal values and record data per following tables:

Table 4 Output Voltage Measurements, Nominal Load values

Load	Input Volts	CTRL OUT (DAC 1)	V2a Out Volts	V1a Out Volts	V2b Out Volts	V1b Out Volts	V2c Out Volts	V1c Out Volts	V2d Out Volts	V1d Out Volts	V2e Out Volts	V1e Out Volts
Mom	11.4	0	0.014	0.0002	0.011	0.0008	0.007	0.0003	0.05	0.004	0.008	0.0001
Mom	11.4	1	53.2	3.7	53.29	4.87	53.18	4.6	53.17	3.7	53.1	5.0
Mom	11.4	2	106.8	32.2	106.97	32.45	106.8	32.0	106.78	7.49	106.7	32.11
Mom	11.4	3	160.33	49.86	160.05	50.14	160.4	49.5	160.3	11.2	160.26	49.63
Mom	11.4	4	213.8	67.5	214.1	67.8	214.0	67.0	213.8	15	213.77	67.17
Mom	11.4	5	266.98	85.0	267.5	85.5	267.3	84.5	266.8	18.7	266.79	84.55
Mom	12	0	0.015	0.0007	0.016	0.0013	0.007	0.0001	0.05	0.004	0.012	0.0007
Mom	12	1	53.2	3.69	53.3	4.88	53.18	4.63	53.17	3.7	53.12	5.0
Mom	12	2	106.8	32.2	106.99	32.45	106.84	32.0	106.78	7.5	106.74	32.11
Mom	12	3	160.34	49.87	160.06	50.1	160.4	49.5	160.3	11.2	160.27	49.63
Mom	12	4	213.8	67.5	214.2	67.86	214.0	67.0	213.8	15.0	213.78	67.1
Mom	12	5	267	85	267.57	85.5	267.4	84.5	266.9	18.7	266.8	84.57
Mom	13	0	0.015	0.001	0.007	0.0003	0.014	0.001	0.05	0.004	0.014	0.001
Mom	13	1	53.2	3.68	53.29	4.8	53.18	4.63	53.1	3.73	53.12	5.00
Mom	13	2	106.8	32.2	106.99	32.45	106.85	32.0	106.8	7.49	106.74	32.1
Mom	13	3	160.8	49.8	160.06	50.1	160.4	49.5	160.3	11.2	160.28	49.65
Mom	13	4	213.8	67.5	214.2	67.8	214	67.0	213.8	15.0	213.8	67.18
Mom	13	5	267.06	85.08	267.6	85.5	267.4	84.56	266.9	18.7	266.9	84.59

Table 5, Output ripple measurements for nominal load values

Load	Input Volts	CTRL OUT (DAC1)	V2a Ripple mV	V1a Ripple mV	V2b Ripple mV	V1b Ripple mV	V2c Ripple mV	V1c Ripple mV	V2d Ripple mV	V1d Ripple mV	V2e Ripple mV	V1e Ripple mV
Mom	11.4	0	30	30								
Mom	11.4	1										
Mom	11.4	2										
Mom	11.4	3										
Mom	11.4	4										
Mom	11.4	5										
Mom	12	0										
Mom	12	1										
Mom	12	2										
Mom	12	3										
Mom	12	4										
Mom	12	5										
Mom	13	0										
Mom	13	1										
Mom	13	2										
Mom	13	3										
Mom	13	4										
Mom	13	5										

Failed

6.0 Output measurements for Max Load: Change the load to Max values and record data per following tables:

Table 6 Output Voltage Measurements, Max Load values

Load	Input Volts	CTRL OUT (DAC 1)	V2a Out Volts	V1a Out Volts	V2b Out Volts	V1b Out Volts	V2c Out Volts	V1c Out Volts	V2d Out Volts	V1d Out Volts	V2e Out Volts	V1e Out Volts
Max	11.4	0	0.008	0.0001	0.0038	0.0001	0.0043	0.0001	0.056	0.003	0.005	0.0001
Max	11.4	1	53	3.63	53.00	4.8	52.9	4.58	52.9	2.46	52.9	4.95
Max	11.4	2	106.3	32.0	106.4	32.3	106.3	32	106.2	4.9	106.2	32.0
Max	11.4	3	159.6	49.7	159.8	50.0	159.66	49.4	159.5	7.4	159.5	49.5
Max	11.4	4	212.7	67.3	213	67.7	212.9	66.9	212.7	9.8	212.7	66.99
Max	11.4	5	265.5	84.8	265.9	85.2	265.8	84.3	265.5	12.3	265.3	84.3
Max	12	0	0.0056	0.001	0.009	0.0005	0.013	0.0002	0.046	0.014	0.007	0.0005
Max	12	1	53	3.64	53.02	4.78	52.88	4.52	52.84	2.45	52.75	4.8
Max	12	2	106.32	32.13	106.43	32.33	106.27	31.89	106.18	4.93	106.1	31.97
Max	12	3	159.6	49.75	159.81	50.02	159.69	49.39	159.45	7.4	159.37	49.46
Max	12	4	212.81	67.36	213.09	67.69	212.91	66.89	212.69	9.87	212.59	66.96
Max	12	5	265.69	84.88	266.17	85.3	265.96	84.32	265.44	12.33	265.29	84.31
Max	13	0	0.005	0.0002	0.0042	0.0002	0.0045	0.0001	0.018	0.001	0.005	0.0001
Max	13	1	52.97	3.62	53	4.81	52.9	4.57	52.9	2.455	52.87	4.95
Max	13	2	106.3	32.1	106.46	32.3	106.3	31.9	106.29	4.93	106.24	32.00
Max	13	3	159.56	49.7	159.8	50.0	159.67	49.4	159.56	7.4	159.5	49.5
Max	13	4	212.8	67.3	213.14	67.7	213	66.9	212.8	9.88	212.78	67.02
Max	13	5	265.6	84.8	266.2	85.3	266	84.3	265.6	12.3	265.5	84.3

Table 7, Output ripple measurements for nominal load values

Load	Input Volts	CTRL OUT (DAC1)	V2a Ripple mV	V1a Ripple mV	V2b Ripple mV	V1b Ripple mV	V2c Ripple mV	V1c Ripple mV	V2d Ripple mV	V1d Ripple mV	V2e Ripple mV	V1e Ripple mV
Max	11.4	0	30	30	/	/	/	/	/	/	/	/
Max	11.4	1	30	30	/	/	/	/	/	/	/	/
Max	11.4	2	30	30	/	/	/	/	/	/	/	/
Max	11.4	3	30	30	/	/	/	/	/	/	/	/
Max	11.4	4	30	30	/	/	/	/	/	/	/	/
Max	11.4	5	30	30	/	/	/	/	/	/	/	/
Max	12	0	30	30	/	/	/	/	/	/	/	/
Max	12	1	30	30	/	/	/	/	/	/	/	/
Max	12	2	30	30	/	/	/	/	/	/	/	/
Max	12	3	30	30	/	/	/	/	/	/	/	/
Max	12	4	30	30	/	/	/	/	/	/	/	/
Max	12	5	30	30	/	/	/	/	/	/	/	/
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										

7.0 Input current measurements:

- 7.1 Set All load for all the power supplies to NOM value (6 PS). Set all DAC Values to +5V. Set Input Voltage to +12V. Measure and record input current 49.7. Record input Voltage _____.
- 7.2 Set all load for all the power supplies to MAX values. Set a;; DAC Values for +5V. Set Input Voltage to +12V. Measure and record input current 78.6 mA. Record input Voltage 12.02 V.
- 7.3 Set All load for all the power supplies to NOM value (6 PS). Set all DAC Values to +5V. Set Input Voltage to +11.4V. Measure and record input current 51.8. Record input Voltage _____.
- 7.4 Set All load for all the power supplies to MAX value (6 PS). Set all DAC Values to +5V. Set Input Voltage to +11.4V. Measure and record input current 82.8. Record input Voltage 11.27.
- 7.5 Set All load for all the power supplies to NOM value (6 PS). Set all DAC Values to +5V. Set Input Voltage to +13V. Measure and record input current 47.2 mA. Record input Voltage _____.
- 7.6 Set All load for all the power supplies to MAX value (6 PS). Set all DAC Values to +5V. Set Input Voltage to +13V. Measure and record input current 73.4 mA. Record input Voltage 12.93.

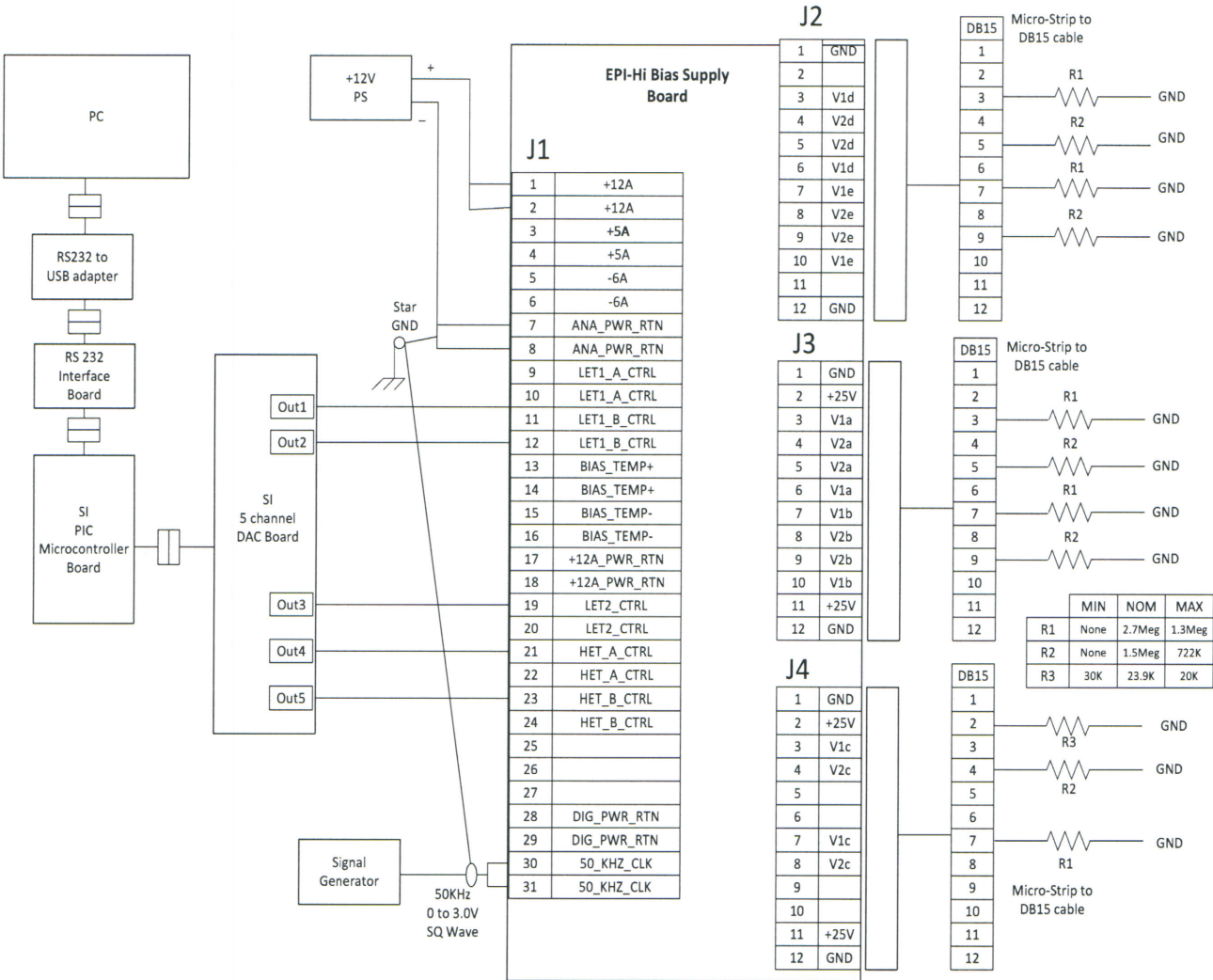


Figure 1, Test setup