

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

No sink Data

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°C

Input Voltage	Output Voltage	Output Ripple	Input Current	Load Resistor
11.4				25K
12				25K
13				25K
11.4				23.9K
12				23.9K
13				23.9K
11.4				20K
12				20K
13				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										
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	53.53	53.57								
MIN	12	2	107.9	108								
MIN	12	3										
MIN	12	4										
MIN	12	5	—	270	271							
MIN	13	0										
MIN	13	1										
MIN	13	2										
MIN	13	3										
MIN	13	4										
MIN	13	5										

Table 3, Output ripple measurements

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	200	200								
MIN	12	2	100	100								
MIN	12	3	90	90								
MIN	12	4	130	90								
MIN	12	5	50	30								
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 (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
Nom	11.4	0										
Nom	11.4	1										
Nom	11.4	2										
Nom	11.4	3										
Nom	11.4	4										
Nom	11.4	5										
Nom	12	0										
Nom	12	1										
Nom	12	2										
Nom	12	3										
Nom	12	4	215.6	215.5	215.5	215.5	215.8		215.6		215.6	
Nom	12	5	269	269.7	269.9	269.7	269.7		269.2		269.2	
Nom	13	0										
Nom	13	1										
Nom	13	2										
Nom	13	3										
Nom	13	4										
Nom	13	5										

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
Nom	11.4	0										
Nom	11.4	1										
Nom	11.4	2										
Nom	11.4	3										
Nom	11.4	4										
Nom	11.4	5										
Nom	12	0										
Nom	12	1	200		200		210		200		250	
Nom	12	2	50		50		88		200		200	
Nom	12	3	120		120		100		100		100	
Nom	12	4	30		30		20		20		30	
Nom	12	5	20		40		20		20		30	
Nom	13	0										
Nom	13	1										
Nom	13	2										
Nom	13	3										
Nom	13	4										
Nom	13	5										

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										
Max	11.4	1										
Max	11.4	2										
Max	11.4	3										
Max	11.4	4										
Max	11.4	5										
Max	12	0										
Max	12	1										
Max	12	2	20	16.1	20.1	16.1						
Max	12	3	160	131.1	161.1	131.1						
Max	12	4	214	174.1	214.9	174.9						
Max	12	5	250	201	250	201						
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										

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										
Max	11.4	1										
Max	11.4	2										
Max	11.4	3										
Max	11.4	4										
Max	11.4	5										
Max	12	0										
Max	12	1	200	160	200	160	200	160	200	160		
Max	12	2	60	50	40	30	60	50	60	50		
Max	12	3	20	10	20	10	90	80	90	80		
Max	12	4			20	10	20	10	20	10		
Max	12	5										
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										

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

9-7-2014

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

Record Unit Temperature: +55°C NO SINK DATA

Input Voltage	Output Voltage	Output Ripple	Input Current	Load Resistor
11.4				25K
12				25K
13				25K
11.4				23.9K
12				23.9K
13				23.9K
11.4				20K
12				20K
13				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										
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										
MIN	12	2										
MIN	12	3										
MIN	12	4										
MIN	12	5										
MIN	13	0										
MIN	13	1										
MIN	13	2										
MIN	13	3										
MIN	13	4										
MIN	13	5										

Table 3, Output ripple measurements

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										
MIN	12	2										
MIN	12	3										
MIN	12	4										
MIN	12	5										
MIN	13	0										
MIN	13	1										
MIN	13	2										
MIN	13	3										
MIN	13	4										
MIN	13	5										

+50°C

8.76 Thendr Aug

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 (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
Nom	11.4	0										
Nom	11.4	1										
Nom	11.4	2									107.4	
Nom	11.4	3					107.9		107.5		161.6	
Nom	11.4	4	215		216		215.9		215.6		215.57	
Nom	11.4	5	269		270		269.9		269.9		269.3	
Nom	12	0										
Nom	12	1										
Nom	12	2										
Nom	12	3										
Nom	12	4										
Nom	12	5										
Nom	13	0										
Nom	13	1										
Nom	13	2	107		107		107		107			
Nom	13	3	161.6		169.9		162		162		161	
Nom	13	4	215.9		216.1		216		216.1		215.76	
Nom	13	5	269.6		270		270		269.9		269.9	

Table 5: Output ripple measurements for Nominal load values No SWK

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
Nom	11.4	0	200		200							
Nom	11.4	1	200		200		200		200		150	
Nom	11.4	2	150		150		60		60		75	
Nom	11.4	3	150		200		100		100		160	
Nom	11.4	4	20		20		20		20		20	
Nom	11.4	5	20		20		20		20		30	
Nom	12	0					200		200			
Nom	12	1					200		200			
Nom	12	2					100		100			
Nom	12	3					100		100			
Nom	12	4					20		20			
Nom	12	5					25		30			
Nom	13	0					250		250			
Nom	13	1	250		250		1		1		250	
Nom	13	2	180		180		1		1		200	
Nom	13	3	160		160		1		1		160	
Nom	13	4	130		140		1		1		100	
Nom	13	5	75		75		50		50		70	

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										
Max	11.4	1										
Max	11.4	2										
Max	11.4	3										
Max	11.4	4										
Max	11.4	5										
Max	12	0										
Max	12	1										
Max	12	2										
Max	12	3										
Max	12	4										
Max	12	5										
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										

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										
Max	11.4	1										
Max	11.4	2										
Max	11.4	3										
Max	11.4	4										
Max	11.4	5										
Max	12	0										
Max	12	1										
Max	12	2										
Max	12	3										
Max	12	4										
Max	12	5										
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										

-30 °C
NO SINK DATA

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: _____

Input Voltage	Output Voltage	Output Ripple	Input Current	Load Resistor
11.4				25K
12				25K
13				25K
11.4				23.9K
12				23.9K
13				23.9K
11.4				20K
12				20K
13				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										
MIN	11.4	1										
MIN	11.4	2										
MIN	11.4	3										
MIN	11.4	4										
MIN	11.4	5	270		270.6		270.4		269.9		270.4	
MIN	12	0										
MIN	12	1										
MIN	12	2										
MIN	12	3										
MIN	12	4										
MIN	12	5										
MIN	13	0										
MIN	13	1									53.47	
MIN	13	2									107.7	
MIN	13	3									162	
MIN	13	4									216	
MIN	13	5	270		270.6						269.9	

Table 3, Output ripple measurements

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	100		150		130		150		300	
MIN	11.4	2	75		75		70		65		100	
MIN	11.4	3	50		40		30		30		75	
MIN	11.4	4	20		20		50		20		20	
MIN	11.4	5	20		20		20		20		50	
MIN	12	0										
MIN	12	1										
MIN	12	2										
MIN	12	3										
MIN	12	4										
MIN	12	5										
MIN	13	0										
MIN	13	1	200		150		150		150		250	
MIN	13	2	60		60		75		75		150	
MIN	13	3	40		40		40		40		75	
MIN	13	4	40		45		50		45		100	
MIN	13	5	15		15		30		25		75	

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 (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
Nom	11.4	0										
Nom	11.4	1										
Nom	11.4	2										
Nom	11.4	3										
Nom	11.4	4										
Nom	11.4	5	268.7	268.7	268.3	268.6	269.1		268.6			
Nom	12	0										
Nom	12	1										
Nom	12	2										
Nom	12	3										
Nom	12	4										
Nom	12	5										
Nom	13	0	53.36	53.36	53.14							
Nom	13	1	107.14	107.14	107.15							
Nom	13	2	161.4	161.4	161.6							
Nom	13	3	215.3	215.3	215.6							
Nom	13	4										
Nom	13	5	268.89	268.89	269.4	269.1	269.12		268.7			

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
Nom	11.4	0	?									
Nom	11.4	1	100	100	150	150	120		120		90	
Nom	11.4	2	40		50	50	60		60		40	
Nom	11.4	3	20		20	20	20		20		20	
Nom	11.4	4	20		20	20	20		20		20	
Nom	11.4	5	20		20	20	15		15		25	
Nom	12	0										
Nom	12	1										
Nom	12	2										
Nom	12	3										
Nom	12	4										
Nom	12	5										
Nom	13	0										
Nom	13	1	200	200	100	100	200		200		150	
Nom	13	2	50	50	50	50	40		50		30	
Nom	13	3	100	100	100	100	75		75		40	
Nom	13	4	20	20	20	20	20		20		20	
Nom	13	5	20	20	20	20	15		15		20	

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										
Max	11.4	1										
Max	11.4	2										
Max	11.4	3										
Max	11.4	4										
Max	11.4	5										
Max	12	0										
Max	12	1										
Max	12	2										
Max	12	3										
Max	12	4										
Max	12	5										
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										

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										
Max	11.4	1										
Max	11.4	2										
Max	11.4	3										
Max	11.4	4										
Max	11.4	5										
Max	12	0										
Max	12	1										
Max	12	2										
Max	12	3										
Max	12	4										
Max	12	5										
Max	13	0										
Max	13	1										
Max	13	2										
Max	13	3										
Max	13	4										
Max	13	5										