UC1825B-SP Neutron Displacement Damage Characterization

ABSTRACT

This report presents the effect of neutron displacement damage (NDD) on the UC1825B-SP device. The results show that these devices remained within datasheet specifications up until 5.0×10^{12} n/cm^2. At 1.0×10^{13} n/cm^2 some specifications went outside the range specified in the datasheet.

A sample size of nine units was exposed to radiation testing per (MIL-STD-883, Method 1017 for Neutron Irradiation) and an additional unirradiated sample device was used for correlation purpose. All devices used in the experiment were from lot date code 1827B. Electrical testing was performed at Texas Instruments before and after neutron irradiation using the production test program for UC1825B-SP.

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Trademarks

1 Overview

The UC1825B-SP is a high-speed PWM controller and designed to use in either current-mode or voltage mode system.

The UC1825B-SP operates from supply of 10 V to 30 V, with low start up current of 1.1 mA. The devices are specified over the extended operating temperature range of –55°C to 125°C and are offered in a 16-pin CFP package.

General device information and testing conditions are listed in Table 1.

Table 1. Overview Information

TI PART NUMBER	UC1825B-SP (5962R8768106VYC)
Device Function	High Speed PWM Controller
Die Name	SMFDRC1825VLS
Technology	J1-PWR
A/T Lot Number / Date Code	1827B
Unbiased Quantity Tested	9
Exposure Facility	VPT Rad
Neutron Fluence (1-MeV equivalent)	1.0×10^{12}, 5.0×10^{12}, 1.0×10^{13} n/cm^2
Irradiation Temperature	25°C
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Figure 1. UC1825B-SP Device

2 Test Procedures

The UC1825B-SP was electrically pre-tested using the production automated test equipment program.

General test procedures were using IAW MIL-STD-883, Method 1017 for Neutron Irradiation of UC1825B-SP.

Table 2. Neutron Irradiation Conditions

GROUP	SAMPLE QTY	NEUTRON FLUENCE (n/cm^2)	BIAS
A	3	1.0×10^{12}	Unbiased
B	3	5.0×10^{12}	Unbiased
C	3	1.0×10^{13}	Unbiased

3 Facility

Devices were exposed via fast neutron irradiation (FNI) at the University of Massachusetts Lowell Research Reactor (UMLRR). The facility is designed to give a fast flux level ≥ 1011 n/cm^2–s, with relatively low thermal fluence and gamma dose rates. Samples with a cross-sectional area as large as 30 cm (12 in) × 30 cm (12 in) and up to 15-cm (6-in) thick can be irradiated. The fast neutron flux is designed to be nearly uniform over the 30-cm (12-in) × 30-cm (12-in) area facing the core, and the fast fluence variation through the sample thickness is minimized via a single 180° rotation of the sample canister at the midpoint of the irradiation period. The FNI facility offers a significantly larger sample volume than previously available within the University of Massachusetts Lowell Research Reactor (UMLRR).

The fluences are calculated based on 1-MeV equivalences.

Detailed information of the radiation facility is available from University of Massachusetts Lowell Research Reactor.

4 Results

At 1.0×10^{13} n/cm^2, some parametric measurements failed to remain within the range specified in the datasheet. All parametric measurements remained well within the *UC1825B-SP Class-V, Radiation Hardened High-Speed PWM Controller Data Sheet* limits for 1.0×10^{12} and 5.0×10^{12} n/cm^2 levels. The devices were no longer functional after exposure to 1.0×10^{13} n/cm^2 level when tested in the ATE. The full parameter list and graphs are found in Appendix A.

Table 3 lists the UC1825B-SP specification compliance matrix.

Table 3. UC1825B-SP Spec Table

PARAMETER	TEST CONDITION	SLUDD5				TEST # OR NAME
		MIN	TYP	MAX	UNIT	
REFERENCE						
Output voltage	TJ = 25°C, IO = 1 mA	5.02	5.10	5.18	V	1015.2__VREF_15V_1mA
						1015.3__VREF_30V_1mA
						1015.4__VREF_15V_10mA
						1015.5__VREF_30V_10mA
Line regulation	10 V < VCC < 30 V		2	20	mV	1015.6__VREF_Line_Reg
Load regulation	1 mA < IO < 10 mA		5	20	mV	1015.7__VREF_Load_Reg
OSCILLATOR SECTION						
Initial accuracy	TJ = 25°C	360	400	440	kHz	1020.1__Osc_Freq @ 15 V
						1020.1__Osc_Freq @ 130 V
ERROR AMPLIFIER						
Input offset voltage				10	mV	1025.1__Vio
SOFT-START						
Charge current	VSoftStart = 0.5 V	3	9	20	µA	1040.1__Charge Current
Discharge current	VSoftStart = 1 V	1			mA	1040.2__Discharge Current
OUTPUT						
Low-level output voltage	IOUT = 20 mA		0.25	0.40	V	1045.2__VOL(OUTA) @ 20 mA
						1045.4__VOL(OUTB) @ 20 mA
	IOUT = 200 mA		1.2	2.2	V	1045.3__VOL(OUTA) @ 200 mA
						1045.5__VOL(OUTB) @ 200 mA
High-level output voltage	IOUT = -20 mA	13.0	13.5		V	1045.8__VOH(OUTB) @ 20 mA
						1045.10__VOH(OUTA) @ 20 mA
	IOUT = -200 mA	12.0	13.0		V	1045.9__VOH(OUTB) @ 200 mA
						1045.11__VOH(OUTA) @ 200 mA
UNDER-VOLTAGE LOCKOUT						
Start threshold		8.8	9.2	9.6	V	1010.5__VCC UVLO ON
UVLO hystersis		0.4	0.8	1.2	V	1010.7__UVLO Hysteresis
SUPPLY CURRENT SECTION						
Startup current	VCC = 8 V		1.1	2.5	mA	1010.1__ICC @ 8 V
ICC	VINV = VRAMP = VILIM/SD = 0 V, VNI = 1 V		22	33	mA	1010.3__ICC @ 15 V

Test Results

Appendix A contains the detailed test results.

Delta Threshold 10.00%

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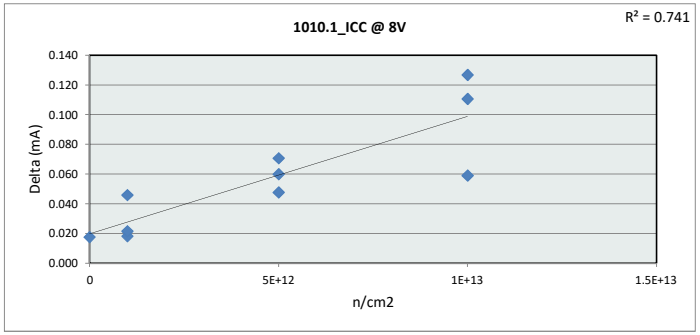
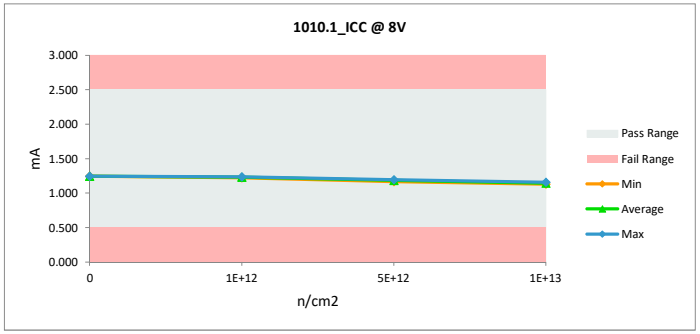
	1010.1_ICC @ 8V	
Test Site		
Tester		
Test Number		
Unit	mA	mA
Max Limit	2.5	2.5
Min Limit	0.5	0.5
n/cm2	Serial #	pre	post
0	52	1.261	1.244
1E+12	53	1.255	1.237
1E+12	54	1.257	1.235
1E+12	55	1.267	1.221
5E+12	56	1.226	1.167
5E+12	57	1.260	1.189
5E+12	58	1.240	1.193
1E+13	59	1.253	1.142
1E+13	60	1.217	1.158
1E+13	61	1.257	1.131
	Max	1.267	1.244
	Average	1.249	1.192
	Min	1.217	1.131
	Std Dev	0.016	0.041



	1010.1_ICC @ 8V			
Test Site				
Tester				
Test Number				
Max Limit	2.5	mA		
Min Limit	0.5	mA		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.500	0.500	0.500	0.500
Min	1.244	1.221	1.167	1.131
Average	1.244	1.231	1.183	1.144
Max	1.244	1.237	1.193	1.159
UL	2.500	2.500	2.500	2.500



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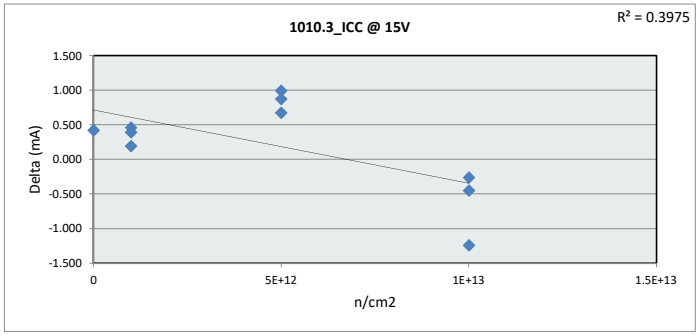
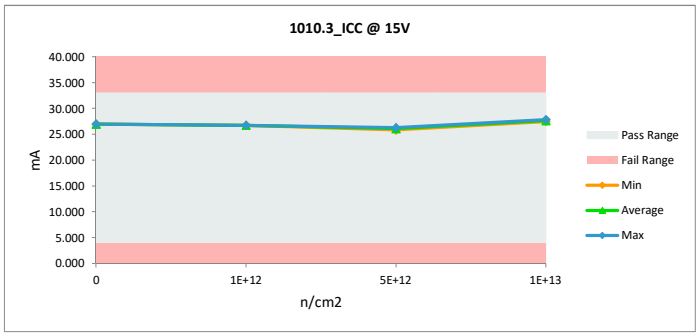
	1010.3_ICC @ 15V		
	Test Site		
	Tester		
	Test Number		
	Unit	mA	mA
	Max Limit	33	33
	Min Limit	4	4
n/cm2	Serial #	pre	post
0	52	27.358	26.938
1E+12	53	27.133	26.741
1E+12	54	26.918	26.727
1E+12	55	27.186	26.728
5E+12	56	26.806	25.817
5E+12	57	27.010	26.139
5E+12	58	26.947	26.275
1E+13	59	27.198	27.461
1E+13	60	26.600	27.843
1E+13	61	27.107	27.557
	Max	27.358	27.843
	Average	27.026	26.823
	Min	26.600	25.817
	Std Dev	0.219	0.650



	1010.3_ICC @ 15V			
Test Site				
Tester				
Test Number				
Max Limit	33	mA		
Min Limit	4	mA		
n/cm2	0	1E+12	5E+12	1E+13
LL	4.000	4.000	4.000	4.000
Min	26.938	26.727	25.817	27.461
Average	26.938	26.732	26.077	27.620
Max	26.938	26.741	26.275	27.843
UL	33.000	33.000	33.000	33.000



NDD Report
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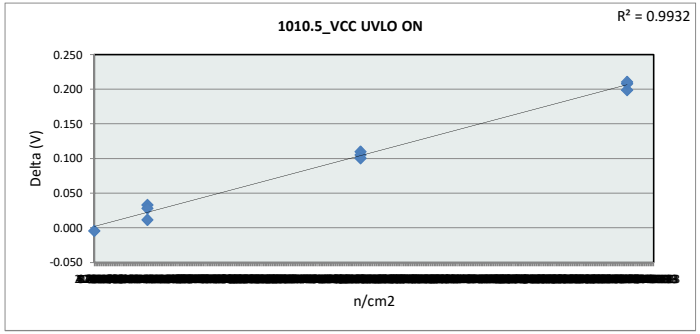
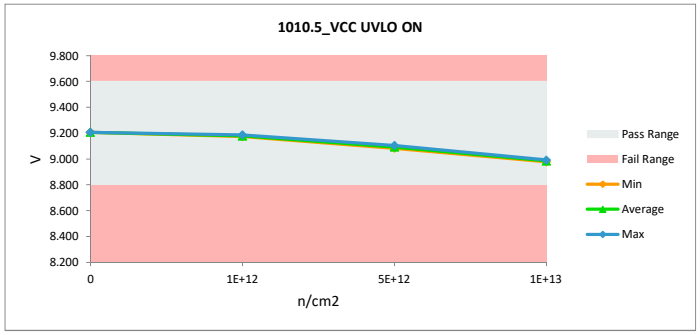
	1010.5_VCC UVLO ON	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	9.6	9.6
Min Limit	8.8	8.8
n/cm2	Serial #	pre	post
0	52	9.202	9.207
1E+12	53	9.207	9.174
1E+12	54	9.214	9.186
1E+12	55	9.188	9.177
5E+12	56	9.193	9.083
5E+12	57	9.209	9.104
5E+12	58	9.191	9.090
1E+13	59	9.184	8.985
1E+13	60	9.200	8.992
1E+13	61	9.188	8.978
	Max	9.214	9.207
	Average	9.197	9.097
	Min	9.184	8.978
	Std Dev	0.010	0.088



	1010.5_VCC UVLO ON			
Test Site				
Tester				
Test Number				
Max Limit	9.6	V		
Min Limit	8.8	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	8.800	8.800	8.800	8.800
Min	9.207	9.174	9.083	8.978
Average	9.207	9.179	9.092	8.985
Max	9.207	9.186	9.104	8.992
UL	9.600	9.600	9.600	9.600



NDD Report
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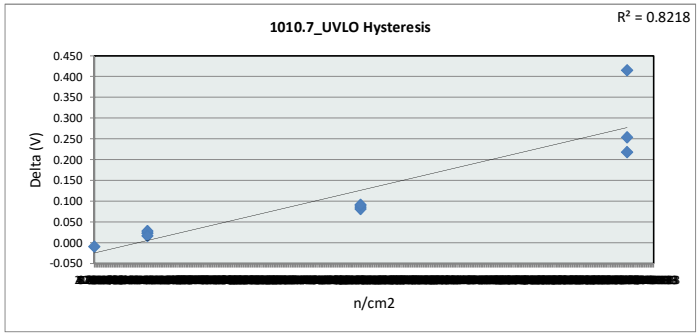
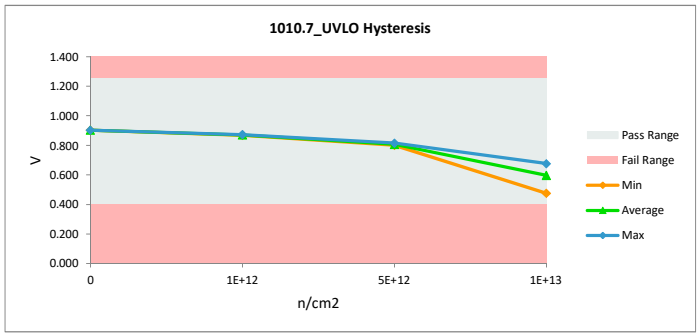
	1010.7_UVLO Hysteresis	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	1.25	1.25
Min Limit	0.4	0.4
n/cm2	Serial #	pre	post
0	52	0.894	0.903
1E+12	53	0.894	0.871
1E+12	54	0.896	0.868
1E+12	55	0.890	0.873
5E+12	56	0.889	0.804
5E+12	57	0.896	0.815
5E+12	58	0.892	0.801
1E+13	59	0.895	0.677
1E+13	60	0.892	0.477
1E+13	61	0.890	0.636
	Max	0.896	0.903
	Average	0.893	0.772
	Min	0.889	0.477
	Std Dev	0.003	0.135



	1010.7_UVLO Hysteresis			
Test Site				
Tester				
Test Number				
Max Limit	1.25	V		
Min Limit	0.4	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.400	0.400	0.400	0.400
Min	0.903	0.868	0.801	0.477
Average	0.903	0.871	0.807	0.596
Max	0.903	0.873	0.815	0.677
UL	1.250	1.250	1.250	1.250



NDD Report
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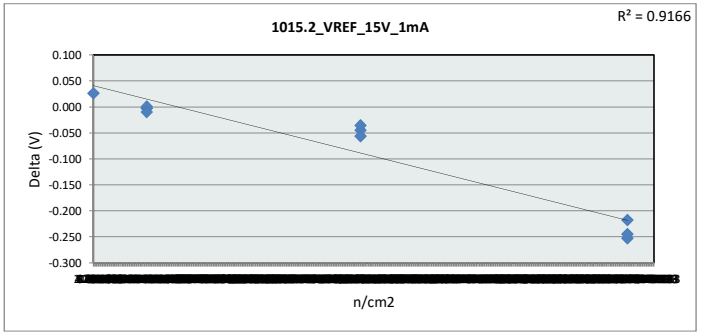
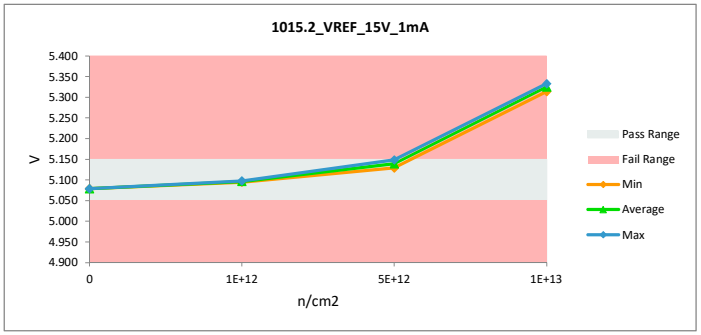
	1015.2_VREF_15V_1mA	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	5.15	5.15
Min Limit	5.05	5.05
n/cm2	Serial #	pre	post
0	52	5.105	5.079
1E+12	53	5.094	5.096
1E+12	54	5.098	5.097
1E+12	55	5.085	5.095
5E+12	56	5.095	5.140
5E+12	57	5.094	5.129
5E+12	58	5.092	5.148
1E+13	59	5.096	5.314
1E+13	60	5.080	5.332
1E+13	61	5.083	5.328
	Max	5.105	5.332
	Average	5.092	5.176
	Min	5.080	5.079
	Std Dev	0.008	0.105



	1015.2_VREF_15V_1mA			
Test Site				
Tester				
Test Number				
Max Limit	5.15	V		
Min Limit	5.05	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	5.050	5.050	5.050	5.050
Min	5.079	5.095	5.129	5.314
Average	5.079	5.096	5.139	5.325
Max	5.079	5.098	5.148	5.333
UL	5.150	5.150	5.150	5.150



NDD Report
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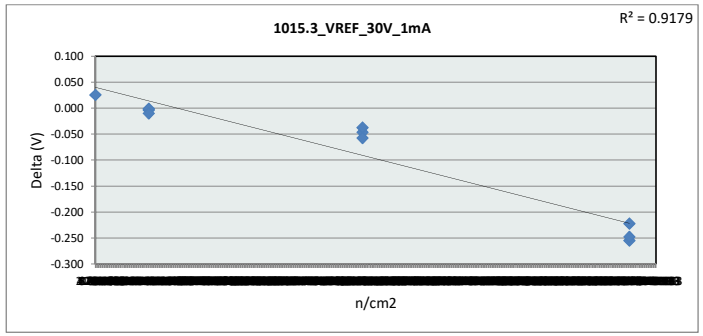
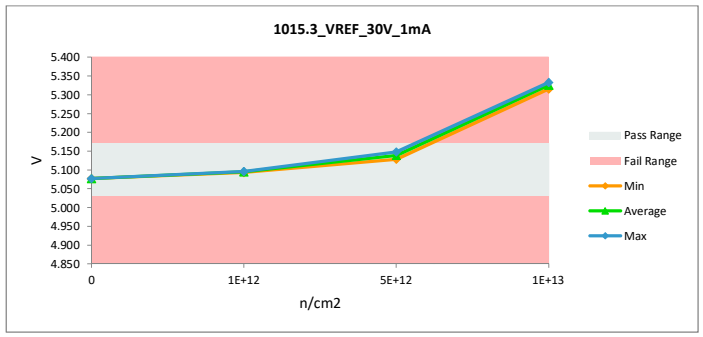
		1015.3_VREF_30V_1mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	5.17	5.17
	Min Limit	5.03	5.03
n/cm2	Serial #	pre	post
0	52	5.102	5.077
1E+12	53	5.092	5.095
1E+12	54	5.095	5.096
1E+12	55	5.083	5.093
5E+12	56	5.093	5.140
5E+12	57	5.091	5.129
5E+12	58	5.091	5.148
1E+13	59	5.093	5.315
1E+13	60	5.078	5.333
1E+13	61	5.081	5.329
	Max	5.102	5.333
	Average	5.090	5.176
	Min	5.078	5.077
	Std Dev	0.007	0.106

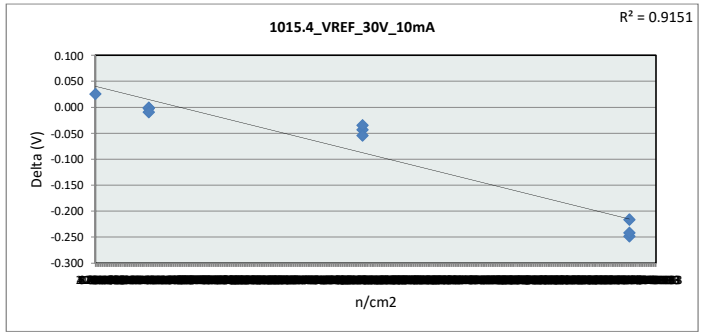


	1015.3_VREF_30V_1mA			
Test Site				
Tester				
Test Number				
Max Limit	5.17	V		
Min Limit	5.03	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	5.030	5.030	5.030	5.030
Min	5.077	5.093	5.129	5.315
Average	5.077	5.095	5.139	5.326
Max	5.077	5.096	5.148	5.333
UL	5.170	5.170	5.170	5.170

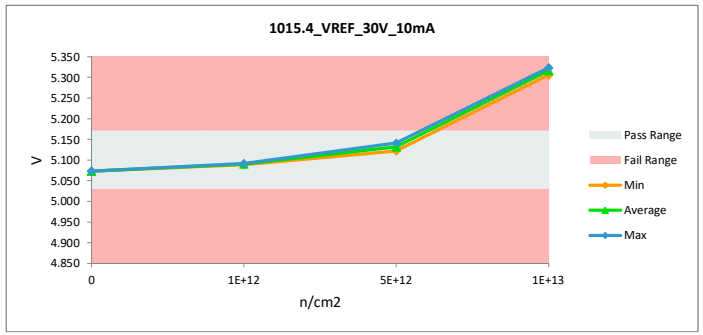


NDD Report
UC1825B-SP

		1015.4_VREF_30V_10mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	5.17	5.17
	Min Limit	5.03	5.03
n/cm2	Serial #	pre	post
0	52	5.099	5.073
1E+12	53	5.088	5.090
1E+12	54	5.091	5.091
1E+12	55	5.079	5.089
5E+12	56	5.089	5.132
5E+12	57	5.087	5.122
5E+12	58	5.087	5.141
1E+13	59	5.090	5.306
1E+13	60	5.075	5.323
1E+13	61	5.078	5.319
	Max	5.099	5.323
	Average	5.086	5.169
	Min	5.075	5.073
	Std Dev	0.007	0.104

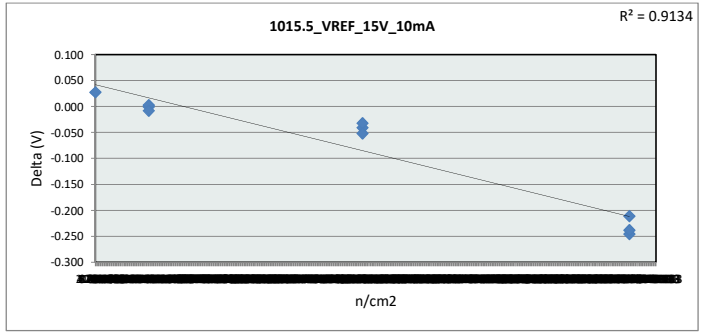


	1015.4_VREF_30V_10mA			
Test Site				
Tester				
Test Number				
Max Limit	5.17	V		
Min Limit	5.03	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	5.030	5.030	5.030	5.030
Min	5.073	5.089	5.122	5.306
Average	5.073	5.090	5.132	5.316
Max	5.073	5.092	5.141	5.323
UL	5.170	5.170	5.170	5.170

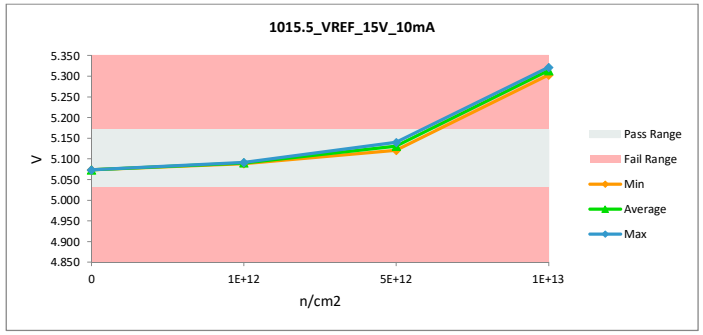


NDD Report
UC1825B-SP

	1015.5_VREF_15V_10mA	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	5.17	5.17
Min Limit	5.03	5.03
n/cm2	Serial #	pre	post
0	52	5.101	5.073
1E+12	53	5.090	5.090
1E+12	54	5.094	5.091
1E+12	55	5.080	5.089
5E+12	56	5.091	5.132
5E+12	57	5.089	5.121
5E+12	58	5.088	5.140
1E+13	59	5.092	5.303
1E+13	60	5.076	5.321
1E+13	61	5.079	5.316
	Max	5.101	5.321
	Average	5.088	5.168
	Min	5.076	5.073
	Std Dev	0.008	0.103

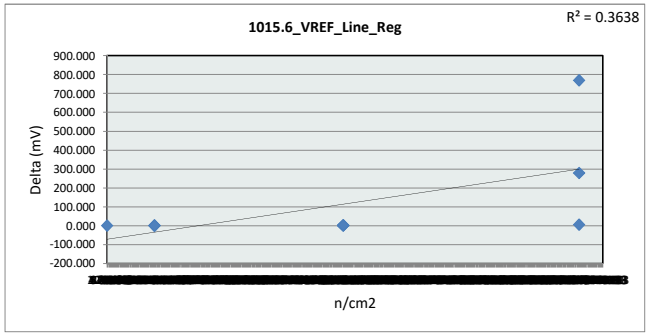


	1015.5_VREF_15V_10mA			
Test Site				
Tester				
Test Number				
Max Limit	5.17	V		
Min Limit	5.03	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	5.030	5.030	5.030	5.030
Min	5.073	5.089	5.121	5.303
Average	5.073	5.090	5.131	5.313
Max	5.073	5.092	5.140	5.321
UL	5.170	5.170	5.170	5.170



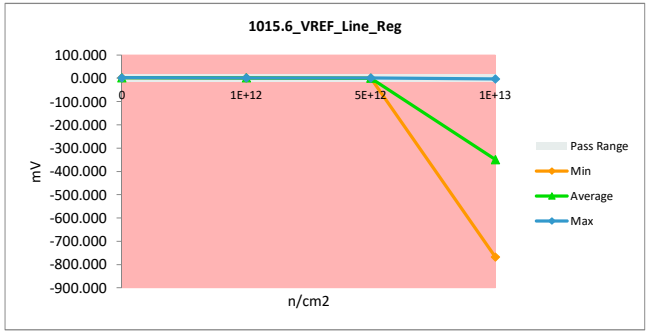
NDD Report
UC1825B-SP

	1015.6_VREF_Line_Reg		
	Test Site		
	Tester		
	Test Number		
	Unit	mV	mV
	Max Limit	15	15
	Min Limit	-15	-15
n/cm2	Serial #	pre	post
0	52	2.494	2.083
1E+12	53	2.282	1.666
1E+12	54	3.407	1.472
1E+12	55	2.030	1.585
5E+12	56	2.247	0.598
5E+12	57	2.259	0.012
5E+12	58	1.695	0.112
1E+13	59	2.863	-2.993
1E+13	60	1.821	-767.796
1E+13	61	1.647	-276.941
	Max	3.407	2.083
	Average	2.274	-104.020
	Min	1.647	-767.796
	Std Dev	0.545	249.004



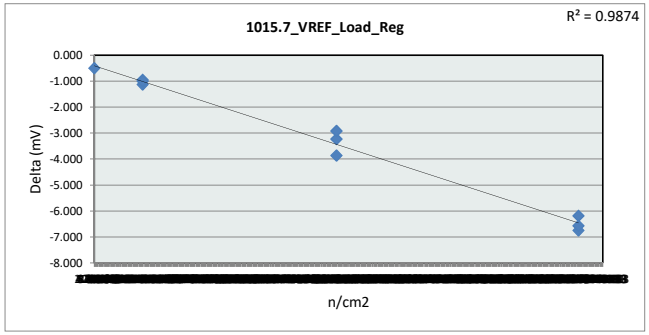
	1015.6_VREF_Line_Reg		
Test Site			
Tester			
Test Number			
Max Limit	15	mV	
Min Limit	-15	mV	

n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	2.083	1.472	0.012	-767.796
Average	2.083	1.574	0.241	-349.243
Max	2.083	1.666	0.598	-2.993
UL	15.000	15.000	15.000	15.000

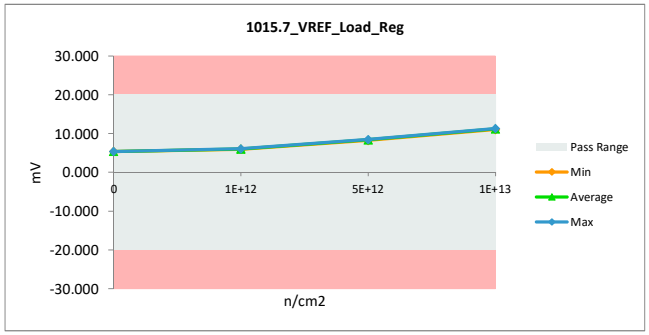


NDD Report
UC1825B-SP

		1015.7_VREF_Load_Reg	
	Test Site		
	Tester		
	Test Number		
	Unit	mV	mV
	Max Limit	20	20
	Min Limit	-20	-20
n/cm2	Serial #	pre	post
0	52	4.860	5.366
1E+12	53	4.936	6.064
1E+12	54	5.117	6.069
1E+12	55	4.962	5.958
5E+12	56	5.228	8.457
5E+12	57	5.295	8.217
5E+12	58	4.580	8.449
1E+13	59	4.857	11.048
1E+13	60	4.583	11.334
1E+13	61	4.609	11.178
	Max	5.295	11.334
	Average	4.903	8.214
	Min	4.580	5.366
	Std Dev	0.260	2.335

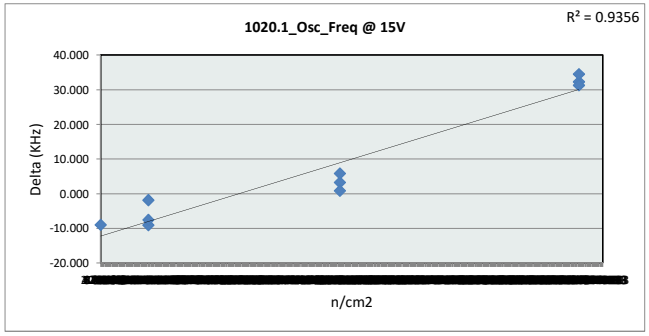


	1015.7_VREF_Load_Reg			
Test Site				
Tester				
Test Number				
Max Limit	20	mV		
Min Limit	-20	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-20.000	-20.000	-20.000	-20.000
Min	5.366	5.959	8.217	11.048
Average	5.366	6.030	8.374	11.187
Max	5.366	6.069	8.457	11.334
UL	20.000	20.000	20.000	20.000

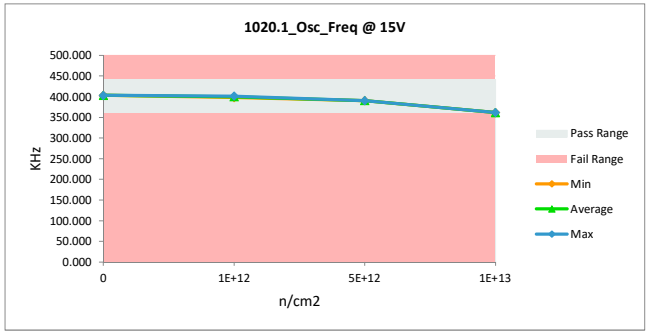


NDD Report
UC1825B-SP

	1020.1_Osc_Freq @ 15V	
Test Site		
Tester		
Test Number		
Unit	KHz	KHz
Max Limit	440	440
Min Limit	360	360
n/cm2	Serial #	pre	post
0	52	394.097	403.053
1E+12	53	396.056	397.906
1E+12	54	391.254	400.277
1E+12	55	393.797	401.335
5E+12	56	393.633	390.374
5E+12	57	391.212	390.349
5E+12	58	396.189	390.296
1E+13	59	393.895	361.604
1E+13	60	395.868	361.335
1E+13	61	392.692	361.391
	Max	396.189	403.053
	Average	393.869	385.792
	Min	391.212	361.335
	Std Dev	1.812	17.438

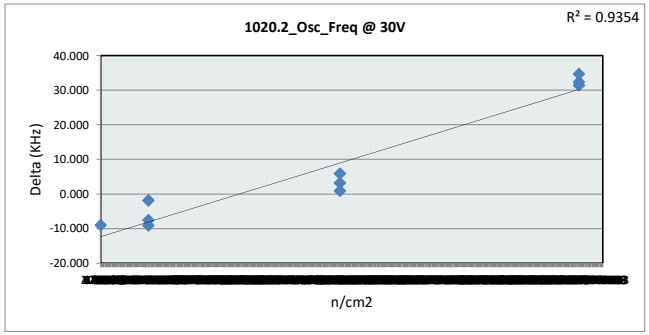


	1020.1_Osc_Freq @ 15V			
Test Site				
Tester				
Test Number				
Max Limit	440	KHz		
Min Limit	360	KHz		
n/cm2	0	1E+12	5E+12	1E+13
LL	360.000	360.000	360.000	360.000
Min	403.053	397.906	390.296	361.335
Average	403.053	399.839	390.340	361.443
Max	403.053	401.335	390.374	361.604
UL	440.000	440.000	440.000	440.000

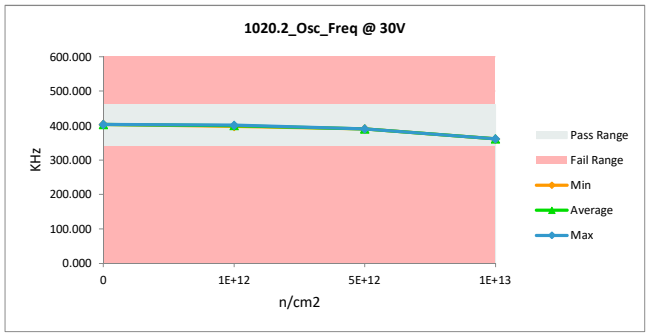


NDD Report
UC1825B-SP

		1020.2_Osc_Freq @ 30V	
	Test Site		
	Tester		
	Test Number		
	Unit	KHz	KHz
	Max Limit	460	460
	Min Limit	340	340
n/cm2	Serial #	pre	post
0	52	393.978	402.982
1E+12	53	395.976	397.814
1E+12	54	391.107	400.191
1E+12	55	393.706	401.244
5E+12	56	393.483	390.284
5E+12	57	391.120	390.238
5E+12	58	396.094	390.172
1E+13	59	393.738	361.402
1E+13	60	395.756	361.098
1E+13	61	392.582	361.200
	Max	396.094	402.982
	Average	393.754	385.662
	Min	391.107	361.098
	Std Dev	1.822	17.494

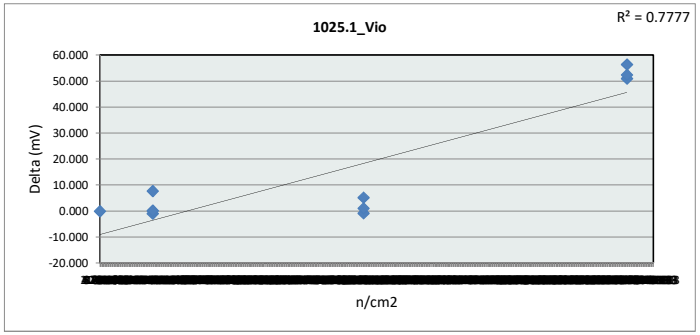


	1020.2_Osc_Freq @ 30V			
Test Site				
Tester				
Test Number				
Max Limit	460	KHz		
Min Limit	340	KHz		
n/cm2	0	1E+12	5E+12	1E+13
LL	340.000	340.000	340.000	340.000
Min	402.982	397.814	390.172	361.098
Average	402.982	399.750	390.231	361.233
Max	402.982	401.244	390.284	361.402
UL	460.000	460.000	460.000	460.000

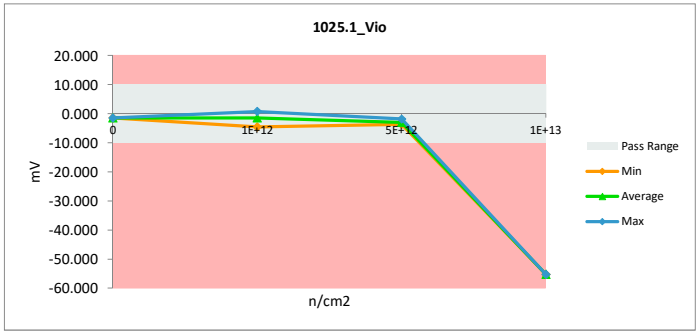


NDD Report
UC1825B-SP

		1025.1_Vio	
	Test Site		
	Tester		
	Test Number		
	Unit	mV	mV
	Max Limit	10	10
	Min Limit	-10	-10
n/cm2	Serial #	pre	post
0	52	-1.522	-1.476
1E+12	53	-0.228	0.748
1E+12	54	-0.332	-0.458
1E+12	55	3.119	-4.603
5E+12	56	-2.747	-1.855
5E+12	57	1.444	-3.706
5E+12	58	-2.339	-3.356
1E+13	59	1.076	-55.290
1E+13	60	-4.286	-55.291
1E+13	61	-2.878	-55.291
	Max	3.119	0.748
	Average	-0.869	-18.058
	Min	-4.286	-55.291
	Std Dev	2.299	25.740

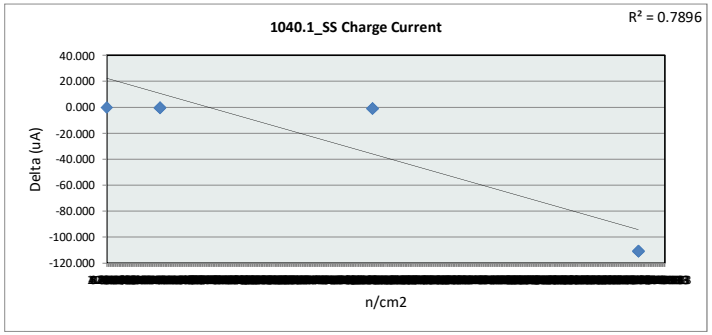


	1025.1_Vio			
Test Site				
Tester				
Test Number				
Max Limit	10	mV		
Min Limit	-10	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-10.000	-10.000	-10.000	-10.000
Min	-1.476	-4.603	-3.706	-55.291
Average	-1.476	-1.438	-2.972	-55.291
Max	-1.476	0.748	-1.855	-55.290
UL	10.000	10.000	10.000	10.000

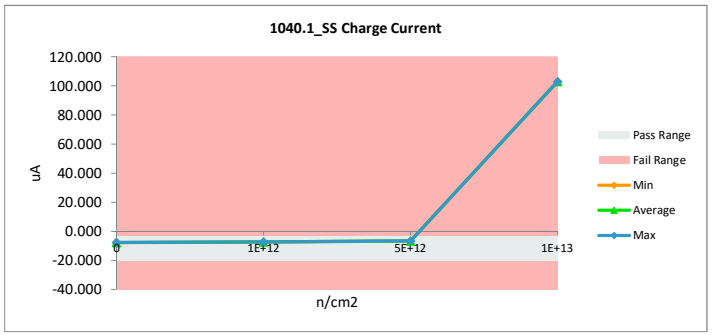


NDD Report
UC1825B-SP

	1040.1_SS Charge Current	
Test Site		
Tester		
Test Number		
Unit	uA	uA
Max Limit	-3	-3
Min Limit	-20	-20
n/cm2	Serial #	pre	post
0	52	-7.752	-7.713
1E+12	53	-7.498	-7.454
1E+12	54	-7.760	-7.263
1E+12	55	-7.816	-7.268
5E+12	56	-7.494	-6.601
5E+12	57	-7.701	-6.661
5E+12	58	-7.528	-6.682
1E+13	59	-7.841	102.976
1E+13	60	-7.593	102.976
1E+13	61	-7.790	102.976
	Max	-7.494	102.976
	Average	-7.677	25.929
	Min	-7.841	-7.713
	Std Dev	0.136	53.169

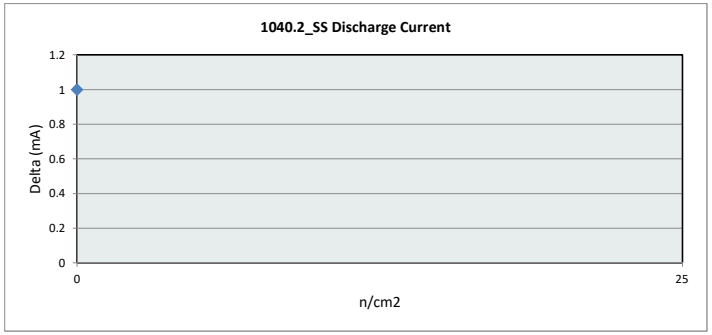


	1040.1_SS Charge Current			
Test Site				
Tester				
Test Number				
Max Limit	-3	uA		
Min Limit	-20	uA		
n/cm2	0	1E+12	5E+12	1E+13
LL	-20.000	-20.000	-20.000	-20.000
Min	-7.713	-7.454	-6.683	102.976
Average	-7.713	-7.328	-6.648	102.976
Max	-7.713	-7.263	-6.601	102.976
UL	-3.000	-3.000	-3.000	-3.000

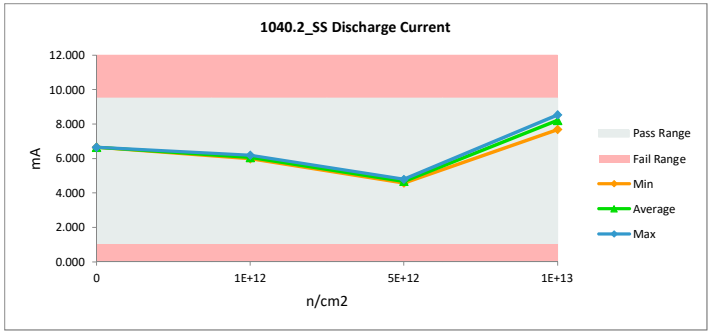


NDD Report
UC1825B-SP

		1040.2_SS Discharge Current	
	Test Site		
	Tester		
	Test Number		
	Unit	mA	mA
	Max Limit	9.5	9.5
	Min Limit	1	1
n/cm2	Serial #	pre	post
0	52	6.376	6.648
1E+12	53	6.165	6.194
1E+12	54	6.720	5.997
1E+12	55	6.259	5.985
5E+12	56	6.298	4.661
5E+12	57	6.730	4.793
5E+12	58	6.364	4.576
1E+13	59	6.399	7.683
1E+13	60	6.380	8.534
1E+13	61	6.289	8.421
	Max	6.730	8.534
	Average	6.398	6.349
	Min	6.165	4.576
	Std Dev	0.186	1.477

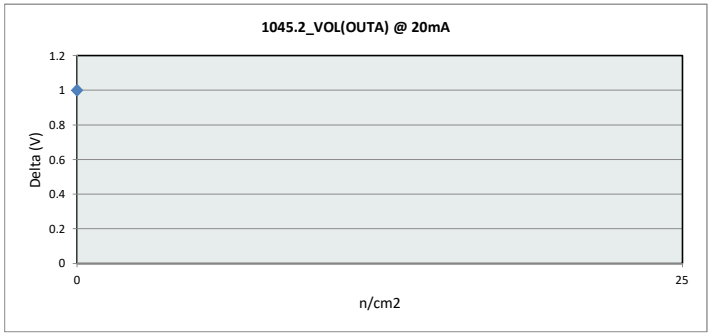


	1040.2_SS Discharge Current			
Test Site				
Tester				
Test Number				
Max Limit	9.5	mA		
Min Limit	1	mA		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.000	1.000	1.000	1.000
Min	6.648	5.985	4.576	7.683
Average	6.648	6.058	4.676	8.213
Max	6.648	6.194	4.793	8.534
UL	9.500	9.500	9.500	9.500

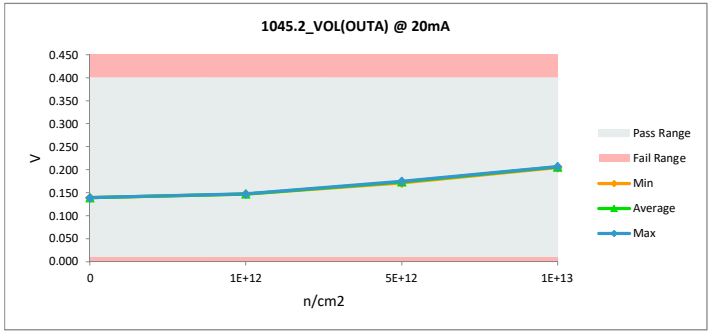


NDD Report
UC1825B-SP

		1045.2_VOL(OUTA) @ 20mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	0.4	0.4
	Min Limit	0.01	0.01
n/cm2	Serial #	pre	post
0	52	0.143	0.139
1E+12	53	0.145	0.147
1E+12	54	0.139	0.147
1E+12	55	0.142	0.147
5E+12	56	0.141	0.175
5E+12	57	0.140	0.171
5E+12	58	0.141	0.175
1E+13	59	0.144	0.204
1E+13	60	0.141	0.206
1E+13	61	0.143	0.207
	Max	0.145	0.207
	Average	0.142	0.172
	Min	0.139	0.139
	Std Dev	0.002	0.027

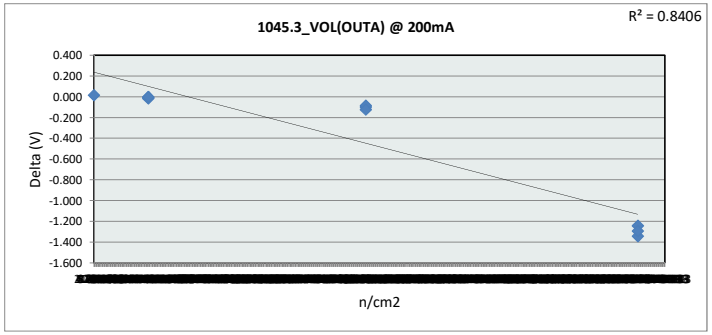


	1045.2_VOL(OUTA) @ 20mA			
Test Site				
Tester				
Test Number				
Max Limit	0.4	V		
Min Limit	0.01	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.010	0.010	0.010	0.010
Min	0.139	0.147	0.171	0.204
Average	0.139	0.147	0.174	0.206
Max	0.139	0.147	0.175	0.207
UL	0.400	0.400	0.400	0.400

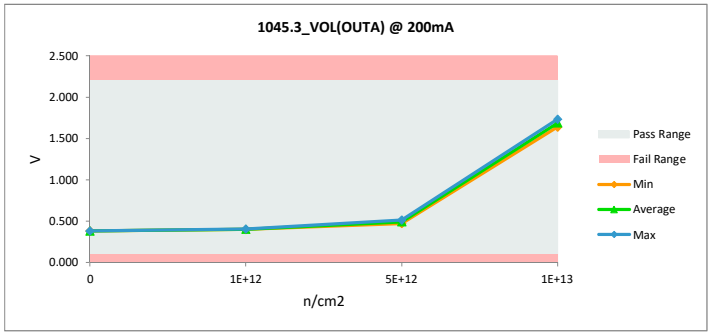


NDD Report
UC1825B-SP

		1045.3_VOL(OUTA) @ 200mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	2.2	2.2
	Min Limit	0.1	0.1
n/cm2	Serial #	pre	post
0	52	0.394	0.381
1E+12	53	0.394	0.401
1E+12	54	0.388	0.404
1E+12	55	0.402	0.405
5E+12	56	0.392	0.491
5E+12	57	0.386	0.473
5E+12	58	0.389	0.514
1E+13	59	0.396	1.639
1E+13	60	0.390	1.734
1E+13	61	0.400	1.693
	Max	0.402	1.734
	Average	0.393	0.813
	Min	0.386	0.381
	Std Dev	0.005	0.606

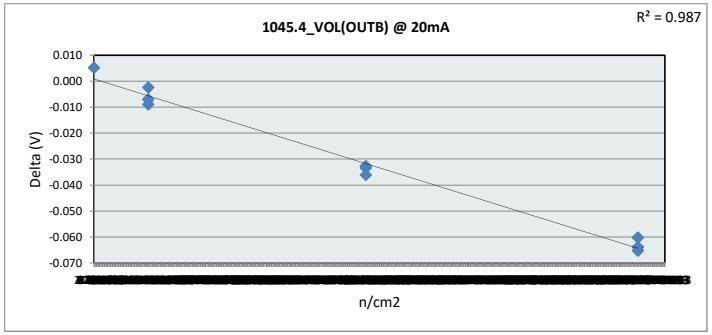


	1045.3_VOL(OUTA) @ 200mA			
Test Site				
Tester				
Test Number				
Max Limit	2.2	V		
Min Limit	0.1	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.100	0.100	0.100	0.100
Min	0.381	0.402	0.473	1.639
Average	0.381	0.403	0.493	1.688
Max	0.381	0.405	0.514	1.734
UL	2.200	2.200	2.200	2.200

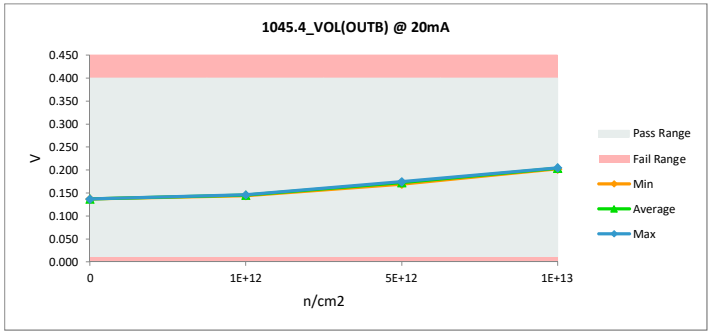


NDD Report
UC1825B-SP

		1045.4_VOL(OUTB) @ 20mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	0.4	0.4
	Min Limit	0.01	0.01
n/cm2	Serial #	pre	post
0	52	0.142	0.137
1E+12	53	0.143	0.145
1E+12	54	0.137	0.146
1E+12	55	0.137	0.144
5E+12	56	0.140	0.173
5E+12	57	0.137	0.169
5E+12	58	0.138	0.175
1E+13	59	0.142	0.202
1E+13	60	0.139	0.205
1E+13	61	0.141	0.205
	Max	0.143	0.205
	Average	0.140	0.170
	Min	0.137	0.137
	Std Dev	0.002	0.027

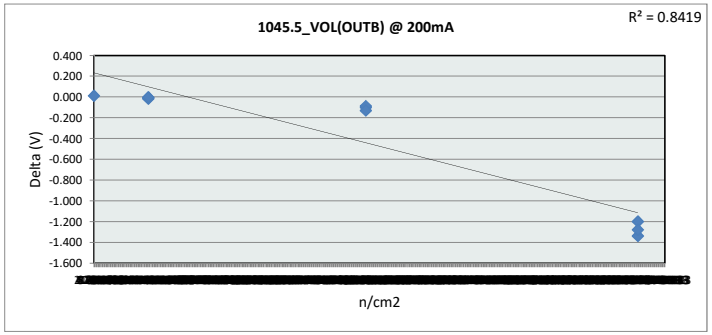


	1045.4_VOL(OUTB) @ 20mA			
Test Site				
Tester				
Test Number				
Max Limit	0.4	V		
Min Limit	0.01	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.010	0.010	0.010	0.010
Min	0.137	0.144	0.170	0.202
Average	0.137	0.145	0.172	0.204
Max	0.137	0.146	0.175	0.205
UL	0.400	0.400	0.400	0.400

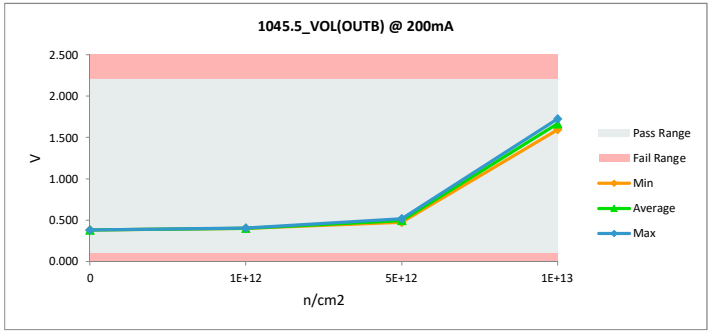


NDD Report
UC1825B-SP

		1045.5_VOL(OUTB) @ 200mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	2.2	2.2
	Min Limit	0.1	0.1
n/cm2	Serial #	pre	post
0	52	0.393	0.380
1E+12	53	0.393	0.400
1E+12	54	0.387	0.403
1E+12	55	0.399	0.402
5E+12	56	0.391	0.491
5E+12	57	0.384	0.472
5E+12	58	0.386	0.517
1E+13	59	0.395	1.594
1E+13	60	0.388	1.725
1E+13	61	0.397	1.675
	Max	0.399	1.725
	Average	0.391	0.806
	Min	0.384	0.380
	Std Dev	0.005	0.595

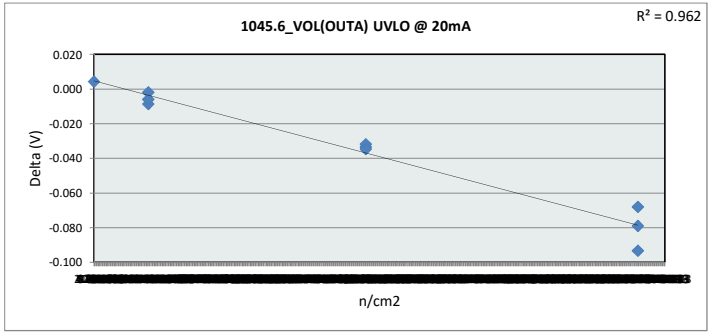


	1045.5_VOL(OUTB) @ 200mA			
Test Site				
Tester				
Test Number				
Max Limit	2.2	V		
Min Limit	0.1	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.100	0.100	0.100	0.100
Min	0.380	0.400	0.472	1.594
Average	0.380	0.402	0.494	1.664
Max	0.380	0.403	0.517	1.725
UL	2.200	2.200	2.200	2.200

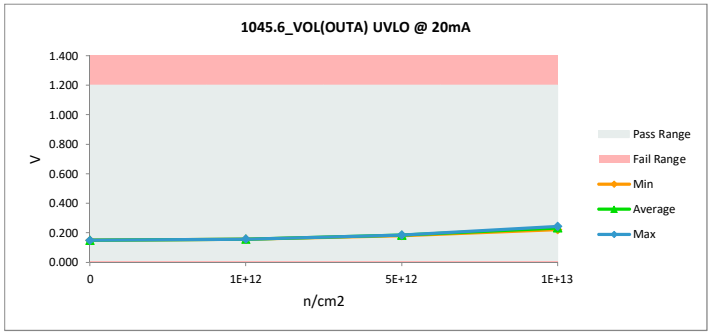


NDD Report
UC1825B-SP

	1045.6_VOL(OUTA) UVLO @ 20m	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	1.2	1.2
Min Limit	0.01	0.01
n/cm2	Serial #	pre	post
0	52	0.154	0.149
1E+12	53	0.155	0.157
1E+12	54	0.148	0.157
1E+12	55	0.152	0.157
5E+12	56	0.152	0.185
5E+12	57	0.150	0.181
5E+12	58	0.151	0.185
1E+13	59	0.154	0.222
1E+13	60	0.151	0.244
1E+13	61	0.153	0.232
	Max	0.155	0.244
	Average	0.152	0.187
	Min	0.148	0.149
	Std Dev	0.002	0.035



	1045.6_VOL(OUTA) UVLO @ 20			
Test Site				
Tester				
Test Number				
Max Limit	1.2	V		
Min Limit	0.01	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.010	0.010	0.010	0.010
Min	0.149	0.157	0.181	0.222
Average	0.149	0.157	0.184	0.233
Max	0.149	0.158	0.185	0.244
UL	1.200	1.200	1.200	1.200



NDD Report
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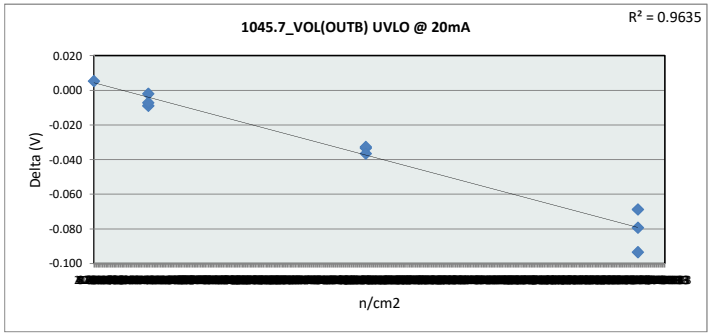
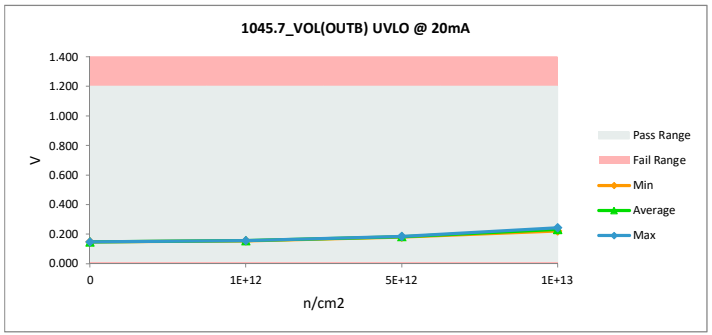
		1045.7_VOL(OUTB) UVLO @ 20m	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	1.2	1.2
	Min Limit	0.01	0.01
n/cm2	Serial #	pre	post
0	52	0.153	0.147
1E+12	53	0.153	0.155
1E+12	54	0.147	0.156
1E+12	55	0.148	0.155
5E+12	56	0.150	0.184
5E+12	57	0.147	0.180
5E+12	58	0.149	0.185
1E+13	59	0.152	0.221
1E+13	60	0.150	0.243
1E+13	61	0.152	0.231
	Max	0.153	0.243
	Average	0.150	0.186
	Min	0.147	0.147
	Std Dev	0.002	0.035

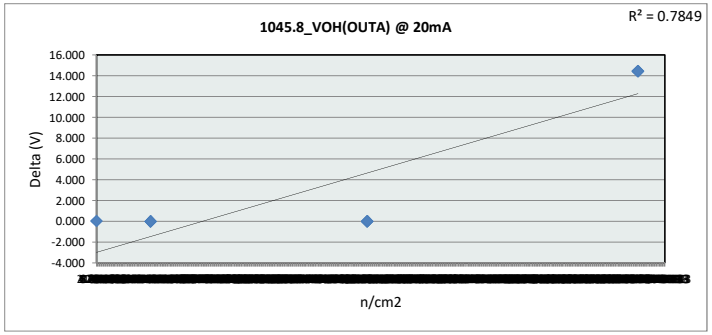


	1045.7_VOL(OUTB) UVLO @ 20			
Test Site				
Tester				
Test Number				
Max Limit	1.2	V		
Min Limit	0.01	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.010	0.010	0.010	0.010
Min	0.147	0.155	0.180	0.221
Average	0.147	0.156	0.183	0.232
Max	0.147	0.157	0.185	0.243
UL	1.200	1.200	1.200	1.200

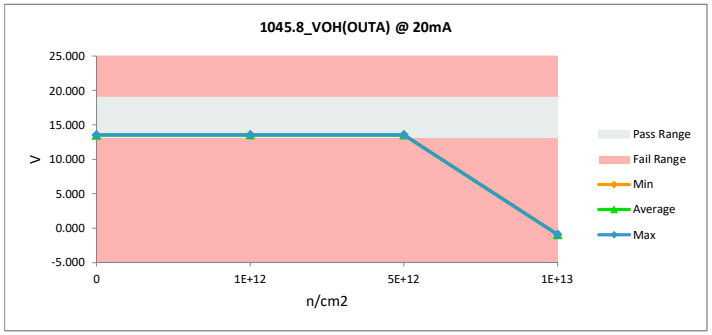


NDD Report
UC1825B-SP

		1045.8_VOH(OUTA) @ 20mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	19	19
	Min Limit	13	13
n/cm2	Serial #	pre	post
0	52	13.542	13.513
1E+12	53	13.545	13.549
1E+12	54	13.550	13.549
1E+12	55	13.540	13.550
5E+12	56	13.547	13.549
5E+12	57	13.549	13.549
5E+12	58	13.549	13.542
1E+13	59	13.544	-0.909
1E+13	60	13.551	-0.913
1E+13	61	13.543	-0.910
	Max	13.551	13.550
	Average	13.546	9.207
	Min	13.540	-0.913
	Std Dev	0.004	6.982



	1045.8_VOH(OUTA) @ 20mA			
Test Site				
Tester				
Test Number				
Max Limit	19	V		
Min Limit	13	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	13.000	13.000	13.000	13.000
Min	13.513	13.549	13.542	-0.913
Average	13.513	13.550	13.547	-0.911
Max	13.513	13.550	13.549	-0.909
UL	19.000	19.000	19.000	19.000



NDD Report
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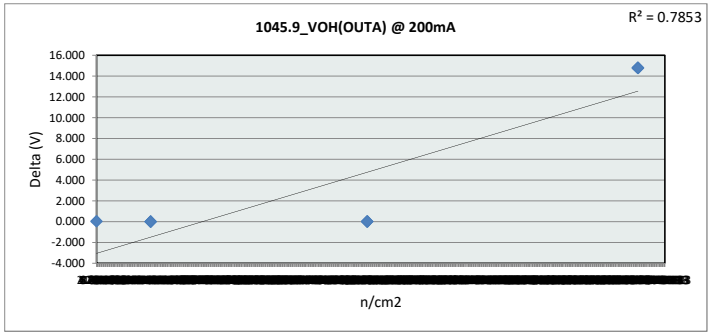
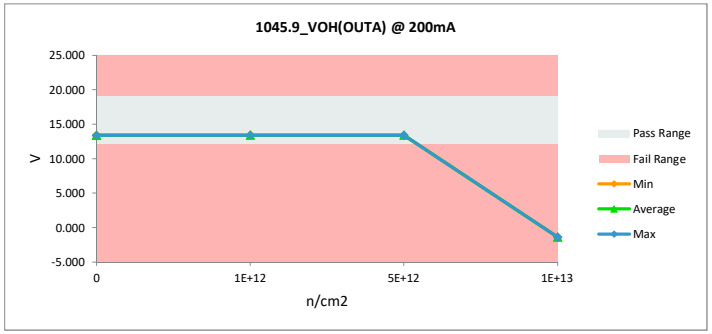
		1045.9_VOH(OUTA) @ 200mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	19	19
	Min Limit	12	12
n/cm2	Serial #	pre	post
0	52	13.392	13.370
1E+12	53	13.397	13.403
1E+12	54	13.403	13.402
1E+12	55	13.388	13.402
5E+12	56	13.400	13.396
5E+12	57	13.402	13.396
5E+12	58	13.401	13.387
1E+13	59	13.394	-1.375
1E+13	60	13.403	-1.386
1E+13	61	13.392	-1.379
	Max	13.403	13.403
	Average	13.397	8.962
	Min	13.388	-1.386
	Std Dev	0.005	7.136



	1045.9_VOH(OUTA) @ 200mA			
Test Site				
Tester				
Test Number				
Max Limit	19	V		
Min Limit	12	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	12.000	12.000	12.000	12.000
Min	13.370	13.402	13.387	-1.386
Average	13.370	13.402	13.393	-1.380
Max	13.370	13.403	13.396	-1.375
UL	19.000	19.000	19.000	19.000



NDD Report
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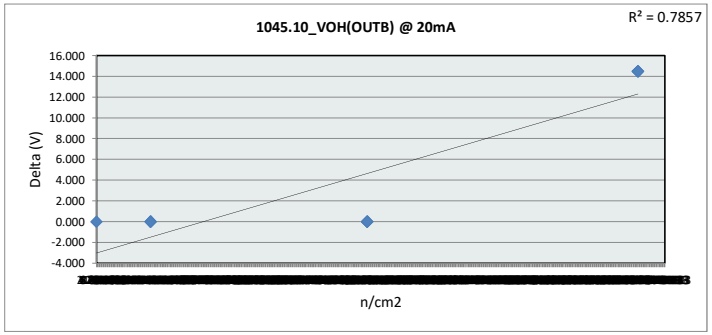
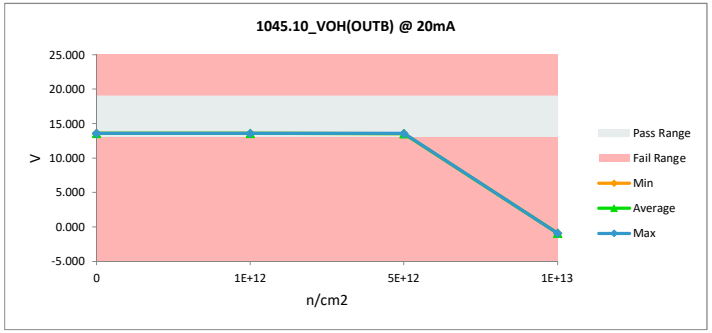
		1045.10_VOH(OUTB) @ 20mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	19	19
	Min Limit	13	13
n/cm2	Serial #	pre	post
0	52	13.550	13.565
1E+12	53	13.556	13.559
1E+12	54	13.562	13.559
1E+12	55	13.549	13.559
5E+12	56	13.555	13.555
5E+12	57	13.557	13.555
5E+12	58	13.558	13.548
1E+13	59	13.552	-0.916
1E+13	60	13.559	-0.920
1E+13	61	13.552	-0.917
	Max	13.562	13.565
	Average	13.555	9.215
	Min	13.549	-0.920
	Std Dev	0.004	6.992

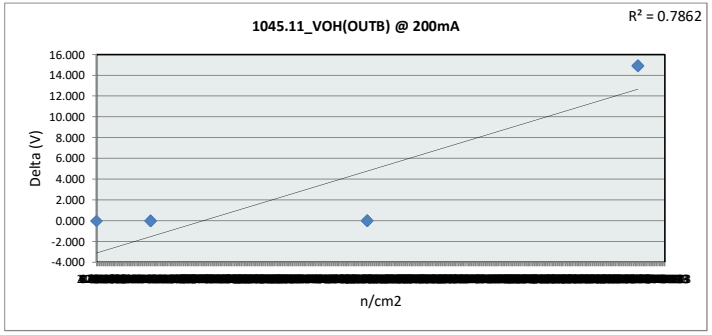


	1045.10_VOH(OUTB) @ 20mA			
Test Site				
Tester				
Test Number				
Max Limit	19	V		
Min Limit	13	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	13.000	13.000	13.000	13.000
Min	13.565	13.559	13.548	-0.920
Average	13.565	13.559	13.553	-0.918
Max	13.565	13.559	13.555	-0.916
UL	19.000	19.000	19.000	19.000

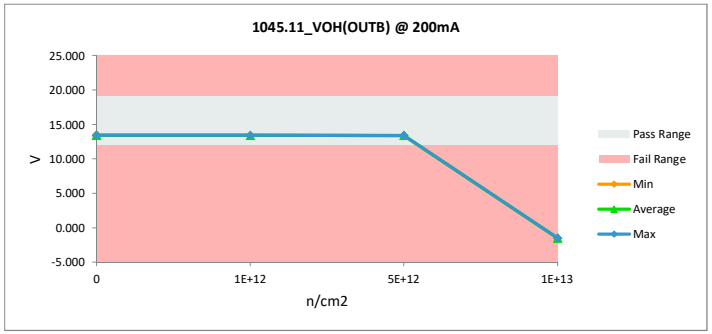


NDD Report
UC1825B-SP

		1045.11_VOH(OUTB) @ 200mA	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	19	19
	Min Limit	12	12
n/cm2	Serial #	pre	post
0	52	13.404	13.421
1E+12	53	13.409	13.411
1E+12	54	13.416	13.411
1E+12	55	13.401	13.412
5E+12	56	13.410	13.401
5E+12	57	13.413	13.402
5E+12	58	13.415	13.392
1E+13	59	13.406	-1.488
1E+13	60	13.415	-1.507
1E+13	61	13.406	-1.493
	Max	13.416	13.421
	Average	13.409	8.936
	Min	13.401	-1.507
	Std Dev	0.005	7.199



	1045.11_VOH(OUTB) @ 200mA			
Test Site				
Tester				
Test Number				
Max Limit	19	V		
Min Limit	12	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	12.000	12.000	12.000	12.000
Min	13.421	13.411	13.392	-1.507
Average	13.421	13.411	13.398	-1.496
Max	13.421	13.412	13.402	-1.489
UL	19.000	19.000	19.000	19.000



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