Radiation Report

TLV4H390-SEP Radiation Tolerant High-Speed Comparator TID Report

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1 TLV4H390-SEP Radiation Tolerant High-Speed Comparator TID Report

This report covers the radiation characterization results of the TLV4H390-SEP, 1.65V to 5.5V comparator. This study is done to determine Total Ionizing Dose (TID) effects of high dose rate (HDR) up to 30krad(Si). The results show that all samples passed well within the specified limits.

2 Trademarks

All trademarks are the property of their respective owners.

3 Device Information

The TLV4H390-SEP is a quad channel comparator which offers low input offset voltage, fault-tolerant inputs with an excellent speed-to- power combination and a propagation delay of 100ns. Operating voltage range of 1.65V to 5.5V with a quiescent supply current of 25µA per channel. The TLV4H390-SEP also feature a no output phase inversion with fault-tolerant inputs that can go up to 6V without damage. The TLV4H390-SEP comparator has a push-pull output stage that can sink or source current.

The TLV4H390-SEP has been RHA qualified to 30 krad(Si) under HDR.

3.1 Device Details

Table 3-1 lists the device information used in the initial TID characterization and qualification for LDR.

Table 3-1. Device and Exposure Details

TID HDR Details: up to 30 krad(Si)	
TI Device Number	TLV4H390-SEP
Package	14-pin DYY (SOT-23)
Technology	LBC9
Die Lot Number	2076140
A/T Lot Number / Date Code	4153725 / 43A4Z1W
Quantity Tested	HDR: 6 biased and 6 unbiased units at 20krad(Si) levels 6 biased and 6 unbiased units at 30krad(Si) levels
Lot Accept/Reject	Devices passed 20krad(Si), 30krad(Si)
HDR Radiation Facility	Texas Instruments Inc., CLAB, Dallas Texas
LDR Radiation Facility	N/A
HDR Dose Level	20krad(Si), 30krad(Si)
HDR Dose Rate	265rad(Si)/s ionizing radiation with increments
LDR Dose Level	N/A
LDR Dose Rate	N/A
HDR Radiation Source	CLAB: Gamma rays provided by Hopewell GR420 Co60 source. Dosimetry performed by Hopewell via GEX using GEX Alanine dosimeters
Irradiation Temperature	Ambient, room temperature controlled to 4°C ± 6°C per MILSTD-883 and MIL-STD-750

4 Total Dose Test Setup

4.1 Test Overview

The TLV4H390-SEP is tested according to MIL-STD-883, Test Method 1019.9, Condition A. The product is irradiated up to 30krad(Si) and then put through full electrical parametric testing on the production Automated Test Equipment (ATE).

The TLV4H390-SEP LBC9 process technology contains Bipolar and CMOS components. HDR testing is performed on TLV4H390-SEP. LDR testing is omitted based on MIL-STD-883, Test Method 1019 section 3.13 a3 for LBC9 process technology.

4.2 Test Description and Facilities

TLV4H390-SEP HDR exposure are performed on biased and unbiased devices in a Co60 gamma cell at TI facilities. The un-attenuated dose rate of this cell is 265rad(Si)/s.

After exposure, the devices are packed in dry ice (per MIL-STD-883 Method 1019.9 section 3.10) for remote testing in TI Dallas for a full post radiation electrical evaluation using Texas Instruments ATE. ATE guard band test limits are set within data sheet electrical limits to make sure of a minimum Cpk and test error margin based on initial qualification and characterization data. Post radiation measurements are taken within 30 minutes of removal of the devices from the dry ice container. The devices are allowed to reach room temperature prior to electrical post radiation measurements. See Appendix 1 for post HDR radiation electrical measurements.

After electrical test, functional units exhibiting parametric drift are placed in extended room temperature anneal testing according to MIL-STD-883, Test Method 1019.9, section 3.11.2. Electrical measurements are taken at 72 hours after the annealing procedure. Calculated effective dose rates for each dosage level can be seen in Calculated Effective Dose Rates below. See Appendix 2 for electrical measurement data during room temperature anneal testing.

Table 4-1. Calculated Effective Dose Rates

Dosage Level	72 Hours	Units
20krad(Si)	77.2	mrads/sec
30krad(Si)	115.7	mrads/sec

4.3 Test Setup Details

The devices under HDR exposure are tested in both biased and unbiased conditions as described below:

4.3.1 Unbiased

For the unbiased HDR conditions, the exposure is performed with all pins grounded.

4.3.2 Biased

The TLV4H390-SEP Biased Diagram below shows bias conditions for each pin during HDR exposure and extended room temperature annealing.

Ch1 and Ch2 are biased output high.

Ch3 and Ch4 are biased output low.

Outputs are floating.

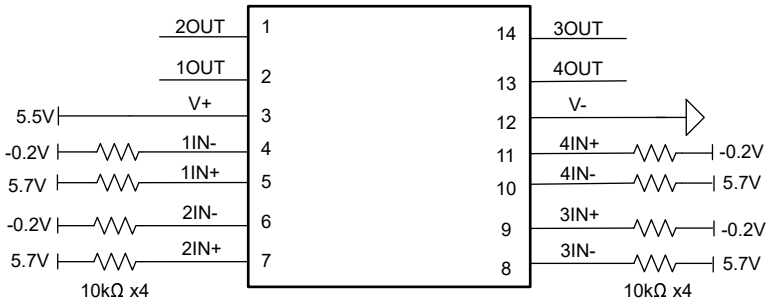


Figure 4-1. TLV4H390-SEP Biased Diagram

4.4 Test Configuration and Condition

A step-stress (20k and 30k) test method is used to determine the TID hardness level.

That is, after a predetermined TID level is reached, an electrical test is performed on a given sample of parts to verify that the units are within specified data sheet electrical test limits. MIL-STD-883, Test Method 1019.9, Condition A is used in this case. If this passes, then the wafer lot can be certified as an RHA wafer lot.

Table 4-2 list the serialized samples that are used during the RHA characterization.

Table 4-2. HDR 256rad(Si)/s Biased and Unbiased Device Information

HDR = 265rad(Si)/s	
Total Samples: 10/dose level (6 biased + 6 unbiased)	
Exposure Levels	
20krad(Si)	30krad(Si)
Biased	Biased
003, 004, 005, 006, 007, 008 (Wafer 1)	015, 016, 017, 018, 019, 020 (Wafer 1)
Unbiased	Unbiased
009, 010, 011, 012, 013, 014 (Wafer 1)	0219, 022, 023, 024, 025, 026 (Wafer 1)

5 Tested Parameters

The table provides the list of tested parameters, typical at T_A = 25°C (unless otherwise noted).

Table 5-1. TLV4H390-SEP Data Sheet Parameters

PARAMETER	TEST CONDITION	Data sheet literature number SNOSDF0				Test Number
		MIN	TYP	MAX	UNIT	
Total Quiescent current (I_Q)	V_S = 5V, V_{CM} = 0V		100	140	µA	500000
Total Quiescent current (I_Q)	V_S = 1.8V, V_{CM} = 0V		100	140	µA	600000
Output low voltage from V_{EE} (V_{OL}), Ch1	V_S = 5V, I_{SINK} = 4mA		75	125	mV	8000001
Output low voltage from V_{EE} (V_{OL}), Ch2	V_S= 5V, I_{SINK} = 4mA		75	125	mV	8000000
Output low voltage from V_{EE}(V_{OL}), Ch3	V_S= 5V, I_{SINK} = 4mA		75	125	mV	8000003
Output low voltage from V_{EE} (V_{OL}), Ch4	V_S= 5V, I_{SINK} = 4mA		75	125	mV	8000002
Output low short-circuit current (ISC_{SINK}), Ch1	V_S = 5V	90	100		mA	4100000
Output low short-circuit current (ISC_{SINK}), Ch2	V_S = 5V	90	100		mA	4000000
Output low short-circuit current (ISC_{SINK}), Ch3	V_S = 5V	90	100		mA	4000001
Output low short-circuit current (ISC_{SINK}), Ch4	V_S = 5V	90	100		mA	4100001
Output high voltage from V_{CC} (V_{OH}), Ch1	V_S= 5V, I_{SOURCE} = 4mA		75	125	mV	4200001
Output high voltage from V_{CC} (V_{OH}), Ch2	V_S= 5V, I_{SOURCE} = 4mA		75	125	mV	4200000
Output high voltage from V_{CC} (V_{OH}), Ch3	V_S= 5V, I_{SOURCE} = 4mA		75	125	mV	4200003
Output high voltage from V_{CC} (V_{OH}), Ch4	V_S= 5V, I_{SOURCE} = 4mA		75	125	mV	4200002
Output high short-circuit current (ISC_{SOURCE}), Ch1	V_S = 5V	90	100		mA	4500000
Output high short-circuit current (ISC_{SOURCE}), Ch2	V_S = 5V	90	100		mA	4400000
Output high short-circuit current (ISC_{SOURCE}), Ch3	V_S = 5V	90	100		mA	4400001
Output high short-circuit current (ISC_{SOURCE}), Ch4	V_S = 5V	90	100		mA	4500001
Input offset voltage (V_{OS}), Ch1	V_S = 1.8V, V_{CM} = 0V	-3	±0.3	3	mV	8000000
Input offset voltage (V_{OS}), Ch2	V_S = 1.8V, V_{CM} = 0V	-3	±0.3	3	mV	8000001
Input offset voltage (V_{OS}), Ch3	V_S = 1.8V, V_{CM} = 0V	-3	±0.3	3	mV	8000002
Input offset voltage (V_{OS}), Ch4	V_S = 1.8V, V_{CM} = 0V	-3	±0.3	3	mV	8000003
Input offset voltage (V_{OS}), Ch1	V_S = 5V, V_{CM} = 0V	-3	±0.3	3	mV	11000000
Input offset voltage (V_{OS}), Ch2	V_S = 5V, V_{CM} = 0V	-3	±0.3	3	mV	11000001
Input offset voltage (V_{OS}), Ch3	V_S = 5V, V_{CM} = 0V	-3	±0.3	3	mV	11000002
Input offset voltage (V_{OS}), Ch4	V_S = 5V, V_{CM} = 0V	-3	±0.3	3	mV	11000003
Input bias current (I_B) IN-, Ch1	V_S = 5V, V_{CM} = 0V		5		pA	20200000
Input bias current (I_B) IN-, Ch2	V_S = 5V, V_{CM} = 0V		5		pA	20200001
Input bias current (I_B) IN-, Ch3	V_S = 5V, V_{CM} = 0V		5		pA	20200002
Input bias current (I_B) IN-, Ch4	V_S = 5V, V_{CM} = 0V		5		pA	20200003
Input bias current (I_B) IN+, Ch1	V_S = 5V, V_{CM} = 0V		5		pA	20200004
Input bias current (I_B) IN+, Ch2	V_S = 5V, V_{CM} = 0V		5		pA	20200005
Input bias current (I_B) IN+, Ch3	V_S = 5V, V_{CM} = 0V		5		pA	20200006
Input bias current (I_B) IN+, Ch4	V_S = 5V, V_{CM} = 0V		5		pA	20200007

6 Total Ionizing Dose RHA Characterization Summary Results

6.1 HDR Characterization Results

The parametric data for the TLV4H390-SEP passes up to 30krad(Si) HDR per MIL-STD-883, TM1090 Condition A.

The TLV4H390-SEP passed post electrical test over all conditions listed below indicating that this lot can be certified as 30krad(Si) RHA.

- HDR (265rad(Si)/s) unbiased: Post 20krad(Si), 30krad(Si)
- HDR (265rad(Si)/s) biased: Post 20krad(Si), 30krad(Si)

Please see Appendix 1 and 2 for HDR report up to 30krad(Si).

6.1.1 Input Bias Current

Input bias current (I_B) for the TLV4H390-SEP is specified as 5pA typical at T_A = 25°C. The input bias current is measured at V_S = 5V.

The non-inverting input of channel 4 for one sample (unit 17) is found to measure –57.51nA after exposure to 30krad(Si) under HDR.

The non-inverting input of channel 1 for one sample (unit 17) is found to measure –29.78nA after exposure to 30krad(Si) under HDR.

The non-inverting input of channel 2 for two samples (unit 17 and 19) is found to measure –21.07nA and -33.718nA respectively, after exposure to 30krad(Si) under HDR.

After annealing under biased conditions (t = 3 days), these values recovered to <1nA, within the typical distribution of the spec prior to radiation.

6.1.2 Total Quiescent Current

Total Quiescent current (I_Q) for the TLV4H390-SEP is specified as 140µA typical at T_A = -55°C to 125°C. The total Quiescent current is measured at V_S = 1.8V and 5V.

At the V_S = 5V condition one sample (unit 19) is found to measure 147.1µA, after exposure to 30krad(Si) under HDR.

After annealing under biased conditions (t = 3 days), this value recovered to 81.6µA, within the data sheet distribution.

6.2 Summary Of Results

The parametric data for the TLV4H390-SEP show the device passes up to 30krad(Si) under HDR conditions, under biased and unbiased conditions. No functional failures are observed on any samples. The device exhibited parametric drift of the I_B, and supply current specifications under HDR conditions; of these, both recovered to levels within the data sheet limits after annealing, and IB remained within the specified post-TID exposure limits.

The data suggest that circuit designers seeking to use the TLV4H390-SEP must consider the possible effects of parametric drift of the I_B specifications when assessing circuits for fault-planning purposes.

A Appendix A: Total Ionizing Dose HDR Report

This appendix provides the TLV4H390-SEP TID HDR report.

Delta Threshold: 10%

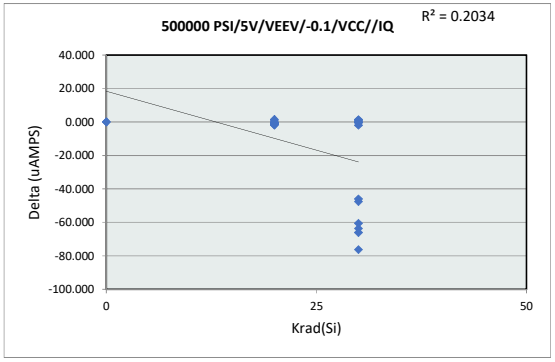
Delta Threshold 10.00%

TID Report
TLV4H390MDYYTSEP

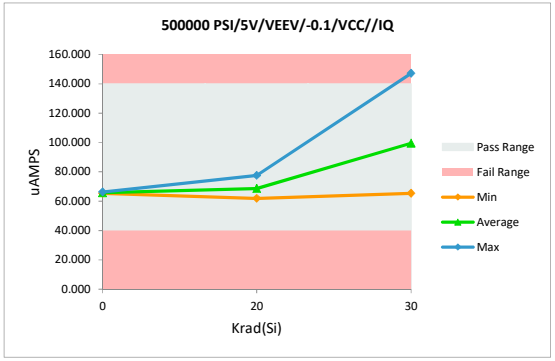
TID Report
TLV4H390MDYYTSEP

	500000 PSI/5V/VEEV/-0.1/VCC/	
Test Site		
Tester		
Test Number		
Unit	uAMPS	uAMPS
Max Limit	140	140
Min Limit	39.99999899	39.99999899

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	66.312	66.239	0.074	0.11%	0.07%
0	2	65.371	65.350	0.021	0.03%	0.02%
20	3	64.847	66.606	-1.759	-2.71%	1.76%
20	4	70.004	70.532	-0.528	-0.75%	0.53%
20	5	66.086	64.502	1.584	2.40%	1.58%
20	6	77.158	77.479	-0.321	-0.42%	0.32%
20	7	66.181	66.920	-0.739	-1.12%	0.74%
20	8	68.232	69.140	-0.908	-1.33%	0.91%
20	9 U	61.644	61.921	-0.278	-0.45%	0.28%
20	10 U	63.561	62.929	0.632	0.99%	0.63%
20	11 U	67.761	68.819	-1.058	-1.56%	1.06%
20	12 U	71.939	73.235	-1.296	-1.80%	1.30%
20	13 U	72.434	73.159	-0.725	-1.00%	0.73%
20	14 U	66.384	67.891	-1.507	-2.27%	1.51%
30	15	70.897	136.926	-66.029	-93.13%	66.03%
30	16	71.176	131.717	-60.541	-85.06%	60.54%
30	17	70.205	133.877	-63.672	-90.70%	63.67%
30	18	68.299	115.876	-47.577	-69.66%	47.58%
30	19	70.962	147.160	-76.197	-107.38%	76.20%
30	20	68.288	114.197	-45.908	-67.23%	45.91%
30	21 U	66.850	65.386	1.465	2.19%	1.46%
30	22 U	69.594	68.465	1.129	1.62%	1.13%
30	23 U	66.130	66.304	-0.175	-0.26%	0.17%
30	24 U	72.664	73.081	-0.417	-0.57%	0.42%
30	25 U	66.987	66.879	0.108	0.16%	0.11%
30	26 U	72.428	74.281	-1.853	-2.56%	1.85%
	Max	77.158	147.160	1.584	2.40%	76.20%
	Average	68.554	82.649	-14.095	-20.09%	14.48%
	Min	61.644	61.921	-76.197	-107.38%	0.02%
	Std Dev	3.386	27.262	26.162	37.19%	25.94%



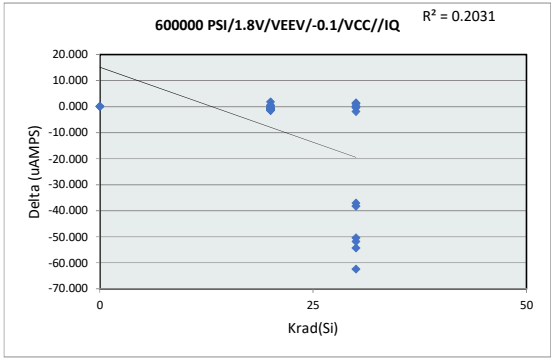
	500000 PSI/5V/VEEV/-0.1/VC		
Test Site			
Tester			
Test Number			
Max Limit	140	uAMPS	
Min Limit	39.99999899	uAMPS	
Krad(Si)	0	20	30
LL	40.000	40.000	40.000
Min	65.350	61.921	65.386
Average	65.794	68.594	99.512
Max	66.239	77.479	147.160
UL	140.000	140.000	140.000



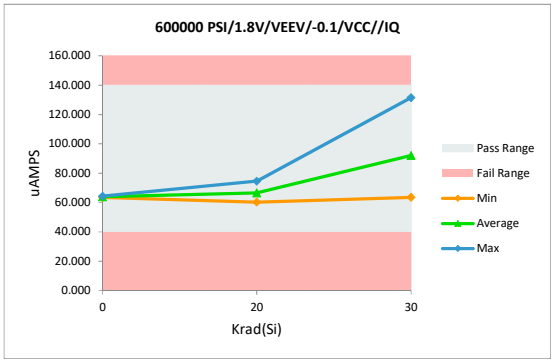
TID Report
TLV4H390MDYYTSEP

	600000 PSI/1.8V/VEEV/-0.1/VC	
Test Site		
Tester		
Test Number		
Unit	uAMPS	uAMPS
Max Limit	140	140
Min Limit	39.99999899	39.99999899

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	64.480	64.353	0.127	0.20%	0.13%
0	2	63.504	63.457	0.047	0.07%	0.05%
20	3	62.978	64.283	-1.306	-2.07%	1.31%
20	4	68.107	68.401	-0.294	-0.43%	0.29%
20	5	64.281	62.476	1.805	2.81%	1.81%
20	6	74.894	74.574	0.320	0.43%	0.32%
20	7	64.395	64.859	-0.464	-0.72%	0.46%
20	8	66.216	67.095	-0.879	-1.33%	0.88%
20	9 U	59.949	60.236	-0.287	-0.48%	0.29%
20	10 U	61.720	61.135	0.585	0.95%	0.59%
20	11 U	65.936	66.907	-0.971	-1.47%	0.97%
20	12 U	69.943	71.138	-1.195	-1.71%	1.19%
20	13 U	70.349	71.038	-0.689	-0.98%	0.69%
20	14 U	64.657	66.139	-1.481	-2.29%	1.48%
30	15	68.783	123.040	-54.257	-78.88%	54.26%
30	16	69.213	119.576	-50.363	-72.77%	50.36%
30	17	68.192	119.947	-51.755	-75.90%	51.75%
30	18	66.395	104.642	-38.247	-57.61%	38.25%
30	19	69.121	131.521	-62.400	-90.28%	62.40%
30	20	66.374	103.382	-37.007	-55.76%	37.01%
30	21 U	64.976	63.549	1.427	2.20%	1.43%
30	22 U	67.727	66.579	1.148	1.69%	1.15%
30	23 U	64.334	64.475	-0.140	-0.22%	0.14%
30	24 U	70.579	70.945	-0.366	-0.52%	0.37%
30	25 U	65.137	64.992	0.145	0.22%	0.15%
30	26 U	70.452	72.319	-1.867	-2.65%	1.87%
	Max	74.894	131.521	1.805	2.81%	62.40%
	Average	66.642	78.118	-11.476	-16.83%	11.91%
	Min	59.949	60.236	-62.400	-90.28%	0.05%
	Std Dev	3.277	22.530	21.429	31.33%	21.18%



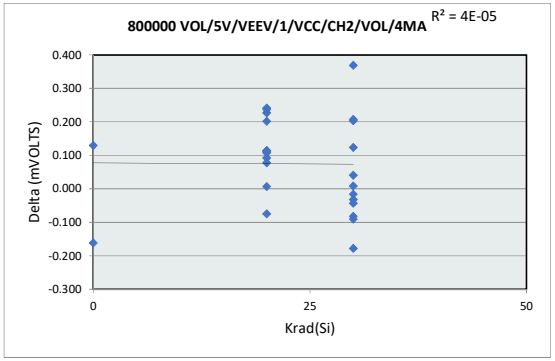
	600000 PSI/1.8V/VEEV/-0.1/		
Test Site			
Tester			
Test Number			
Max Limit	140	uAMPS	
Min Limit	39.99999899	uAMPS	
Krad(Si)	0	20	30
LL	40.000	40.000	40.000
Min	63.457	60.236	63.549
Average	63.905	66.523	92.081
Max	64.353	74.574	131.521
UL	140.000	140.000	140.000



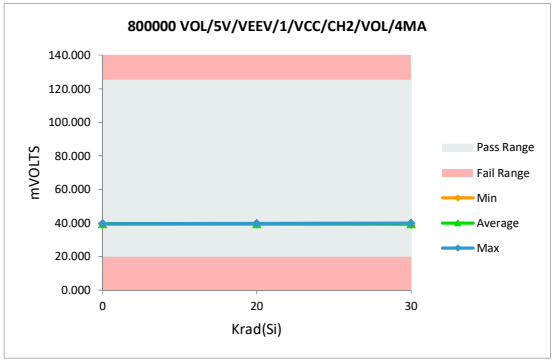
TID Report
TLV4H390MDYYTSEP

	800000 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	39.486	39.648	-0.162	-0.41%	0.15%
0	2	39.605	39.476	0.129	0.33%	0.12%
20	3	39.769	39.541	0.227	0.57%	0.22%
20	4	39.350	39.424	-0.075	-0.19%	0.07%
20	5	39.942	39.740	0.202	0.51%	0.19%
20	6	39.866	39.788	0.078	0.20%	0.07%
20	7	39.655	39.547	0.108	0.27%	0.10%
20	8	39.685	39.447	0.238	0.60%	0.23%
20	9 U	39.596	39.355	0.241	0.61%	0.23%
20	10 U	39.541	39.534	0.007	0.02%	0.01%
20	11 U	39.680	39.566	0.114	0.29%	0.11%
20	12 U	39.660	39.568	0.092	0.23%	0.09%
20	13 U	39.733	39.619	0.114	0.29%	0.11%
20	14 U	39.919	39.806	0.114	0.28%	0.11%
30	15	39.471	39.102	0.369	0.93%	0.35%
30	16	39.380	39.462	-0.082	-0.21%	0.08%
30	17	39.797	39.593	0.204	0.51%	0.19%
30	18	39.355	39.446	-0.090	-0.23%	0.09%
30	19	39.586	39.763	-0.177	-0.45%	0.17%
30	20	39.832	39.848	-0.016	-0.04%	0.02%
30	21 U	39.614	39.646	-0.032	-0.08%	0.03%
30	22 U	39.669	39.545	0.124	0.31%	0.12%
30	23 U	39.552	39.345	0.208	0.52%	0.20%
30	24 U	39.705	39.696	0.009	0.02%	0.01%
30	25 U	39.898	39.857	0.041	0.10%	0.04%
30	26 U	39.742	39.785	-0.043	-0.11%	0.04%
	Max	39.942	39.857	0.369	0.93%	0.35%
	Average	39.657	39.583	0.075	0.19%	0.12%
	Min	39.350	39.102	-0.177	-0.45%	0.01%
	Std Dev	0.167	0.178	0.136	0.34%	0.08%



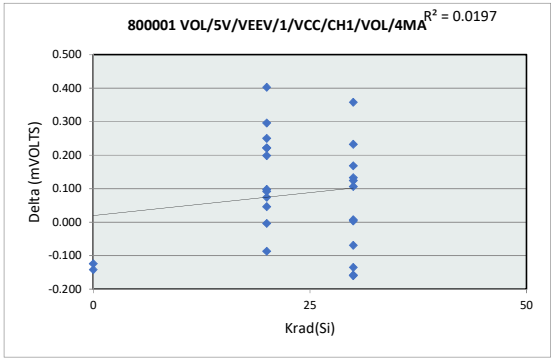
	800000 VOL/5V/VEEV/1/VCC/		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	39.476	39.355	39.102
Average	39.562	39.578	39.591
Max	39.648	39.806	39.857
UL	125.000	125.000	125.000



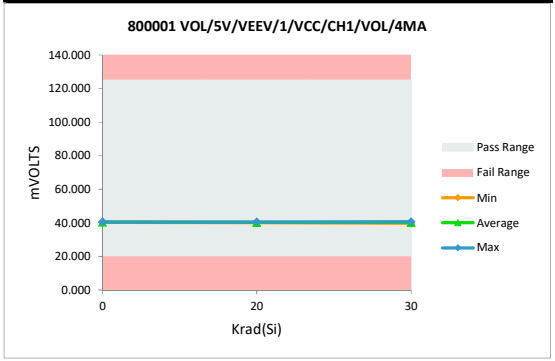
TID Report
TLV4H390MDYYTSEP

	800001 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	40.374	40.516	-0.142	-0.35%	0.14%
0	2	40.181	40.305	-0.124	-0.31%	0.12%
20	3	40.422	40.019	0.403	1.00%	0.38%
20	4	40.159	39.961	0.199	0.49%	0.19%
20	5	40.420	40.198	0.222	0.55%	0.21%
20	6	40.519	40.422	0.098	0.24%	0.09%
20	7	40.347	40.434	-0.087	-0.22%	0.08%
20	8	40.495	40.198	0.296	0.73%	0.28%
20	9 U	40.425	40.204	0.222	0.55%	0.21%
20	10 U	40.214	40.168	0.046	0.11%	0.04%
20	11 U	40.392	40.395	-0.004	-0.01%	0.00%
20	12 U	40.333	40.241	0.092	0.23%	0.09%
20	13 U	40.367	40.292	0.075	0.18%	0.07%
20	14 U	40.690	40.440	0.250	0.61%	0.24%
30	15	40.163	39.931	0.232	0.58%	0.22%
30	16	40.189	40.056	0.133	0.33%	0.13%
30	17	40.704	40.597	0.106	0.26%	0.10%
30	18	39.931	39.806	0.124	0.31%	0.12%
30	19	40.239	40.397	-0.158	-0.39%	0.15%
30	20	40.544	40.541	0.004	0.01%	0.00%
30	21 U	40.307	40.299	0.007	0.02%	0.01%
30	22 U	40.381	40.023	0.358	0.89%	0.34%
30	23 U	40.245	40.076	0.169	0.42%	0.16%
30	24 U	40.358	40.427	-0.069	-0.17%	0.07%
30	25 U	40.298	40.432	-0.135	-0.33%	0.13%
30	26 U	40.434	40.594	-0.160	-0.39%	0.15%
	Max	40.704	40.597	0.403	1.00%	0.38%
	Average	40.351	40.268	0.083	0.21%	0.14%
	Min	39.931	39.806	-0.160	-0.39%	0.00%
	Std Dev	0.168	0.216	0.164	0.41%	0.10%



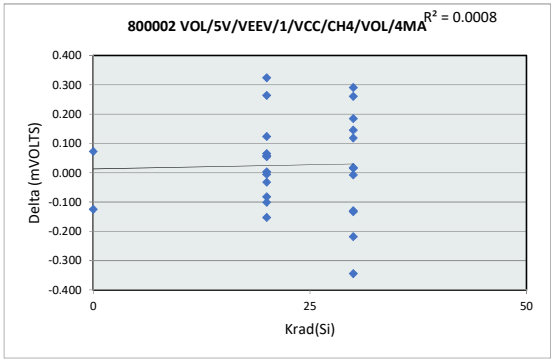
	800001 VOL/5V/VEEV/1/VCC/		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	40.305	39.961	39.806
Average	40.410	40.248	40.265
Max	40.516	40.440	40.597
UL	125.000	125.000	125.000



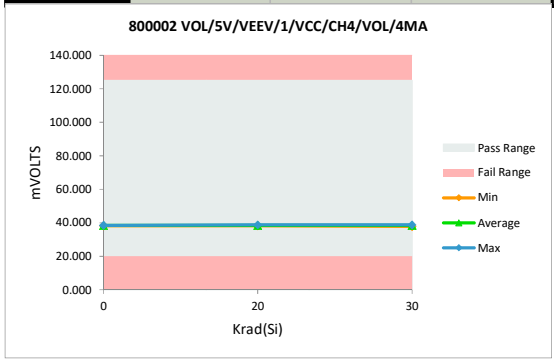
TID Report
TLV4H390MDYYTSEP

	800002 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	38.265	38.193	0.073	0.19%	0.07%
0	2	38.384	38.508	-0.124	-0.32%	0.12%
20	3	38.567	38.242	0.325	0.84%	0.31%
20	4	38.265	38.262	0.004	0.01%	0.00%
20	5	38.253	38.187	0.066	0.17%	0.06%
20	6	38.450	38.391	0.059	0.15%	0.06%
20	7	38.375	38.111	0.264	0.69%	0.25%
20	8	38.308	38.460	-0.153	-0.40%	0.15%
20	9 U	38.356	38.232	0.124	0.32%	0.12%
20	10 U	38.515	38.547	-0.032	-0.08%	0.03%
20	11 U	38.361	38.443	-0.082	-0.21%	0.08%
20	12 U	38.498	38.503	-0.005	-0.01%	0.01%
20	13 U	38.531	38.476	0.055	0.14%	0.05%
20	14 U	38.562	38.663	-0.101	-0.26%	0.10%
30	15	38.386	38.095	0.291	0.76%	0.28%
30	16	38.120	38.338	-0.218	-0.57%	0.21%
30	17	38.732	38.586	0.146	0.38%	0.14%
30	18	38.095	37.834	0.261	0.68%	0.25%
30	19	38.423	38.405	0.018	0.05%	0.02%
30	20	38.279	38.413	-0.133	-0.35%	0.13%
30	21 U	38.413	38.757	-0.344	-0.90%	0.33%
30	22 U	38.311	38.441	-0.130	-0.34%	0.12%
30	23 U	38.624	38.631	-0.007	-0.02%	0.01%
30	24 U	38.542	38.358	0.185	0.48%	0.18%
30	25 U	38.579	38.460	0.119	0.31%	0.11%
30	26 U	38.657	38.641	0.016	0.04%	0.02%
	Max	38.732	38.757	0.325	0.84%	0.33%
	Average	38.417	38.391	0.026	0.07%	0.12%
	Min	38.095	37.834	-0.344	-0.90%	0.00%
	Std Dev	0.159	0.206	0.164	0.43%	0.10%



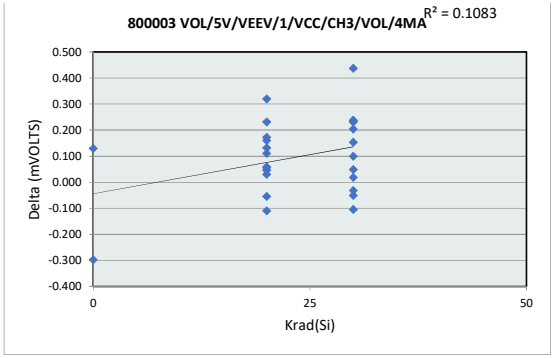
	800002 VOL/5V/VEEV/1/VCC/		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	38.193	38.111	37.834
Average	38.350	38.376	38.413
Max	38.508	38.663	38.757
UL	125.000	125.000	125.000



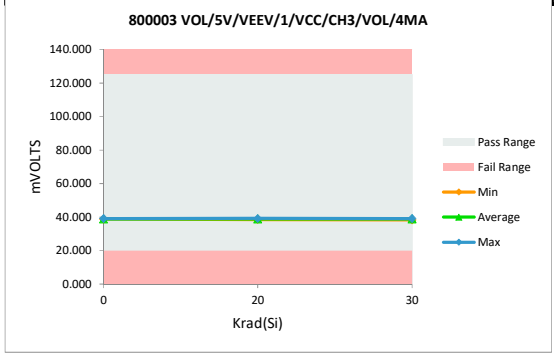
TID Report
TLV4H390MDYYTSEP

	800003 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	38.834	39.132	-0.298	-0.77%	0.28%
0	2	38.991	38.862	0.130	0.33%	0.12%
20	3	38.979	38.869	0.110	0.28%	0.10%
20	4	38.560	38.615	-0.055	-0.14%	0.05%
20	5	39.016	38.697	0.319	0.82%	0.30%
20	6	39.272	39.213	0.059	0.15%	0.06%
20	7	38.944	38.913	0.030	0.08%	0.03%
20	8	39.091	38.931	0.160	0.41%	0.15%
20	9 U	39.100	39.054	0.046	0.12%	0.04%
20	10 U	38.752	38.862	-0.110	-0.28%	0.10%
20	11 U	39.066	39.011	0.055	0.14%	0.05%
20	12 U	39.047	38.915	0.131	0.34%	0.13%
20	13 U	39.197	39.025	0.172	0.44%	0.16%
20	14 U	39.286	39.055	0.231	0.59%	0.22%
30	15	38.837	38.819	0.018	0.05%	0.02%
30	16	38.883	38.731	0.153	0.39%	0.15%
30	17	39.320	39.116	0.204	0.52%	0.19%
30	18	38.761	38.324	0.437	1.13%	0.42%
30	19	39.050	38.818	0.232	0.60%	0.22%
30	20	39.199	38.961	0.238	0.61%	0.23%
30	21 U	39.059	39.091	-0.032	-0.08%	0.03%
30	22 U	38.899	38.951	-0.051	-0.13%	0.05%
30	23 U	38.899	39.004	-0.105	-0.27%	0.10%
30	24 U	39.071	39.023	0.048	0.12%	0.05%
30	25 U	39.148	39.048	0.099	0.25%	0.09%
30	26 U	39.128	38.897	0.231	0.59%	0.22%
	Max	39.320	39.213	0.437	1.13%	0.42%
	Average	39.015	38.921	0.094	0.24%	0.14%
	Min	38.560	38.324	-0.298	-0.77%	0.02%
	Std Dev	0.180	0.185	0.153	0.39%	0.10%



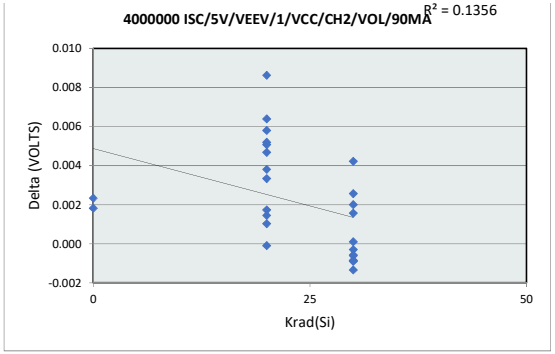
	800003 VOL/5V/VEEV/1/VCC/		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	38.862	38.615	38.324
Average	38.997	38.930	38.899
Max	39.132	39.213	39.116
UL	125.000	125.000	125.000



TID Report
TLV4H390MDYYTSEP

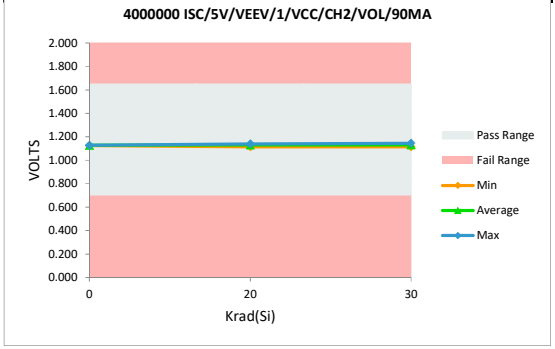
	4000000 ISC/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.128	1.126	0.002	0.21%	0.25%
0	2	1.129	1.127	0.002	0.16%	0.19%
20	3	1.136	1.127	0.009	0.76%	0.91%
20	4	1.121	1.115	0.006	0.52%	0.61%
20	5	1.145	1.139	0.006	0.56%	0.67%
20	6	1.142	1.137	0.005	0.44%	0.53%
20	7	1.133	1.128	0.005	0.41%	0.49%
20	8	1.137	1.132	0.005	0.46%	0.55%
20	9 U	1.128	1.124	0.004	0.34%	0.40%
20	10 U	1.127	1.124	0.003	0.30%	0.35%
20	11 U	1.135	1.133	0.002	0.15%	0.18%
20	12 U	1.130	1.129	0.001	0.13%	0.15%
20	13 U	1.133	1.133	0.000	-0.01%	0.01%
20	14 U	1.141	1.140	0.001	0.09%	0.11%
30	15	1.125	1.123	0.002	0.18%	0.21%
30	16	1.122	1.120	0.003	0.23%	0.27%
30	17	1.138	1.137	0.002	0.14%	0.16%
30	18	1.119	1.115	0.004	0.38%	0.44%
30	19	1.131	1.132	-0.001	-0.05%	0.06%
30	20	1.140	1.141	-0.001	-0.08%	0.09%
30	21 U	1.130	1.131	-0.001	-0.05%	0.07%
30	22 U	1.132	1.132	0.000	0.01%	0.01%
30	23 U	1.126	1.127	-0.001	-0.08%	0.10%
30	24 U	1.136	1.136	-0.001	-0.08%	0.09%
30	25 U	1.144	1.145	-0.001	-0.12%	0.14%
30	26 U	1.131	1.131	0.000	-0.03%	0.03%
	Max	1.145	1.145	0.009	0.76%	0.91%
	Average	1.132	1.130	0.002	0.19%	0.27%
	Min	1.119	1.115	-0.001	-0.12%	0.01%
	Std Dev	0.007	0.008	0.003	0.24%	0.24%



	4000000 ISC/5V/VEEV/1/VCC	
Test Site		
Tester		
Test Number		
Max Limit	1.649999976	VOLTS
Min Limit	0.699999988	VOLTS

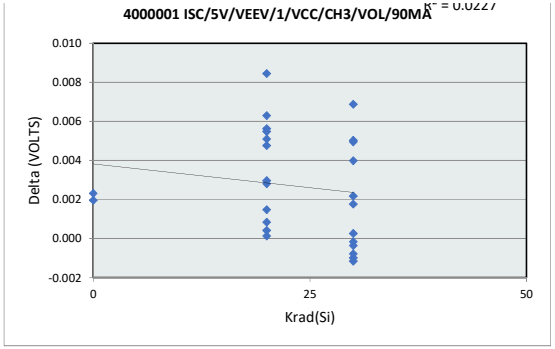
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.126	1.115	1.115
Average	1.127	1.130	1.131
Max	1.127	1.140	1.145
UL	1.650	1.650	1.650



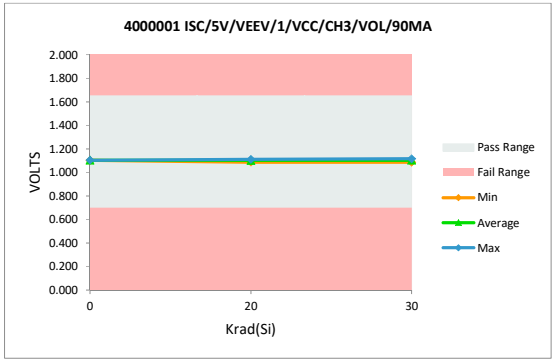
TID Report
TLV4H390MDYYTSEP

	4000001 ISC/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.107	1.104	0.002	0.21%	0.24%
0	2	1.104	1.102	0.002	0.18%	0.21%
20	3	1.110	1.101	0.008	0.76%	0.89%
20	4	1.093	1.088	0.005	0.50%	0.58%
20	5	1.109	1.103	0.006	0.57%	0.66%
20	6	1.113	1.108	0.006	0.50%	0.59%
20	7	1.105	1.100	0.005	0.46%	0.54%
20	8	1.112	1.107	0.005	0.43%	0.50%
20	9 U	1.107	1.104	0.003	0.27%	0.31%
20	10 U	1.100	1.097	0.003	0.26%	0.30%
20	11 U	1.107	1.105	0.001	0.13%	0.16%
20	12 U	1.101	1.100	0.001	0.08%	0.09%
20	13 U	1.106	1.106	0.000	0.01%	0.01%
20	14 U	1.111	1.110	0.000	0.04%	0.04%
30	15	1.099	1.094	0.005	0.45%	0.52%
30	16	1.102	1.097	0.005	0.46%	0.53%
30	17	1.119	1.115	0.004	0.36%	0.42%
30	18	1.092	1.085	0.007	0.63%	0.72%
30	19	1.106	1.104	0.002	0.20%	0.23%
30	20	1.117	1.115	0.002	0.16%	0.18%
30	21 U	1.106	1.106	0.000	0.02%	0.03%
30	22 U	1.104	1.105	0.000	-0.03%	0.04%
30	23 U	1.098	1.099	-0.001	-0.11%	0.12%
30	24 U	1.112	1.113	-0.001	-0.07%	0.08%
30	25 U	1.115	1.116	-0.001	-0.09%	0.10%
30	26 U	1.103	1.103	0.000	-0.02%	0.02%
	Max	1.119	1.116	0.008	0.76%	0.89%
	Average	1.106	1.103	0.003	0.24%	0.31%
	Min	1.092	1.085	-0.001	-0.11%	0.01%
	Std Dev	0.007	0.007	0.003	0.25%	0.25%



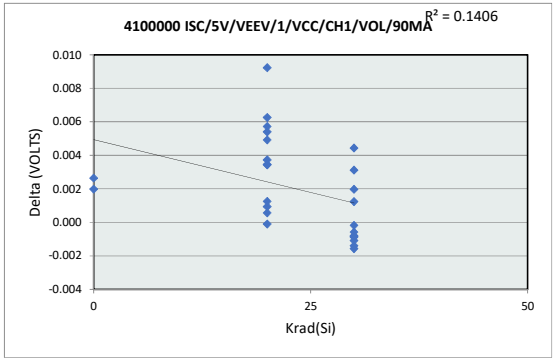
	4000001 ISC/5V/VEEV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.102	1.088	1.085
Average	1.103	1.102	1.104
Max	1.104	1.110	1.116
UL	1.650	1.650	1.650



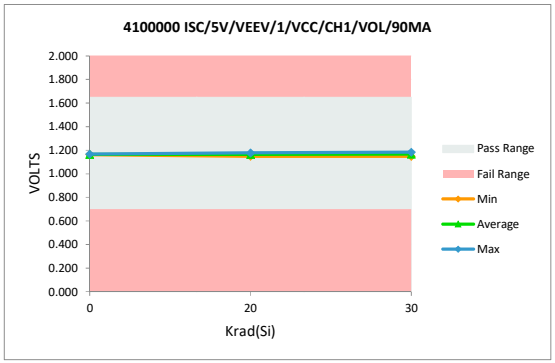
TID Report
TLV4H390MDYYTSEP

	4100000 ISC/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.170	1.167	0.003	0.23%	0.28%
0	2	1.165	1.163	0.002	0.17%	0.21%
20	3	1.174	1.164	0.009	0.79%	0.97%
20	4	1.155	1.150	0.006	0.49%	0.60%
20	5	1.172	1.166	0.006	0.53%	0.66%
20	6	1.177	1.171	0.005	0.46%	0.57%
20	7	1.170	1.165	0.005	0.42%	0.52%
20	8	1.175	1.171	0.004	0.32%	0.39%
20	9 U	1.166	1.163	0.003	0.29%	0.36%
20	10 U	1.162	1.159	0.003	0.30%	0.36%
20	11 U	1.169	1.168	0.001	0.05%	0.06%
20	12 U	1.162	1.162	0.001	0.08%	0.10%
20	13 U	1.164	1.164	0.000	-0.01%	0.01%
20	14 U	1.178	1.177	0.001	0.11%	0.13%
30	15	1.160	1.158	0.002	0.17%	0.21%
30	16	1.161	1.157	0.003	0.27%	0.33%
30	17	1.185	1.184	0.001	0.10%	0.13%
30	18	1.152	1.148	0.004	0.38%	0.47%
30	19	1.162	1.164	-0.002	-0.14%	0.17%
30	20	1.179	1.180	-0.001	-0.07%	0.09%
30	21 U	1.164	1.165	-0.001	-0.05%	0.06%
30	22 U	1.166	1.167	-0.001	-0.07%	0.08%
30	23 U	1.164	1.165	-0.001	-0.09%	0.11%
30	24 U	1.172	1.173	-0.001	-0.12%	0.15%
30	25 U	1.174	1.175	-0.001	-0.08%	0.09%
30	26 U	1.167	1.168	0.000	-0.02%	0.02%
	Max	1.185	1.184	0.009	0.79%	0.97%
	Average	1.168	1.166	0.002	0.17%	0.27%
	Min	1.152	1.148	-0.002	-0.14%	0.01%
	Std Dev	0.008	0.008	0.003	0.24%	0.24%



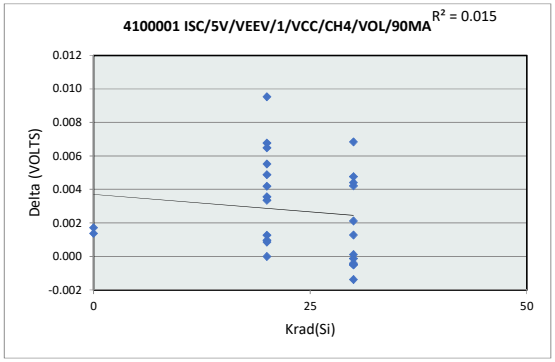
	4100000 ISC/5V/VEEV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.163	1.150	1.148
Average	1.165	1.165	1.167
Max	1.167	1.177	1.184
UL	1.650	1.650	1.650



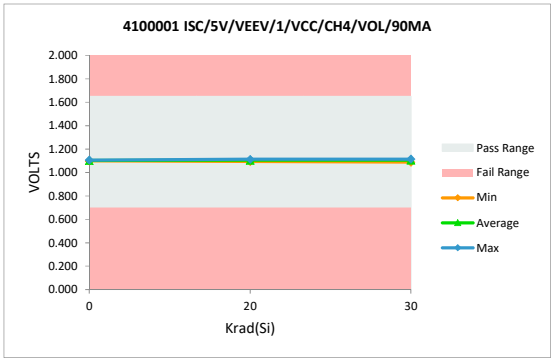
TID Report
TLV4H390MDYYTSEP

	4100001 ISC/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.101	1.099	0.002	0.16%	0.18%
0	2	1.107	1.106	0.001	0.12%	0.14%
20	3	1.112	1.103	0.010	0.86%	1.00%
20	4	1.100	1.094	0.006	0.59%	0.68%
20	5	1.107	1.100	0.007	0.61%	0.71%
20	6	1.111	1.106	0.006	0.50%	0.58%
20	7	1.104	1.099	0.005	0.44%	0.51%
20	8	1.113	1.109	0.004	0.38%	0.44%
20	9 U	1.105	1.101	0.004	0.32%	0.37%
20	10 U	1.107	1.103	0.003	0.30%	0.35%
20	11 U	1.109	1.107	0.001	0.11%	0.13%
20	12 U	1.110	1.109	0.001	0.08%	0.09%
20	13 U	1.110	1.110	0.000	0.00%	0.00%
20	14 U	1.114	1.113	0.001	0.09%	0.10%
30	15	1.100	1.095	0.005	0.43%	0.50%
30	16	1.102	1.098	0.004	0.40%	0.46%
30	17	1.119	1.114	0.004	0.38%	0.44%
30	18	1.095	1.088	0.007	0.62%	0.72%
30	19	1.110	1.108	0.002	0.19%	0.22%
30	20	1.109	1.108	0.001	0.11%	0.13%
30	21 U	1.107	1.108	0.000	-0.04%	0.04%
30	22 U	1.109	1.109	0.000	-0.04%	0.05%
30	23 U	1.106	1.106	0.000	-0.01%	0.01%
30	24 U	1.112	1.113	-0.001	-0.05%	0.05%
30	25 U	1.113	1.115	-0.001	-0.12%	0.14%
30	26 U	1.113	1.113	0.000	0.01%	0.01%
	Max	1.119	1.115	0.010	0.86%	1.00%
	Average	1.108	1.105	0.003	0.25%	0.31%
	Min	1.095	1.088	-0.001	-0.12%	0.00%
	Std Dev	0.005	0.007	0.003	0.26%	0.27%



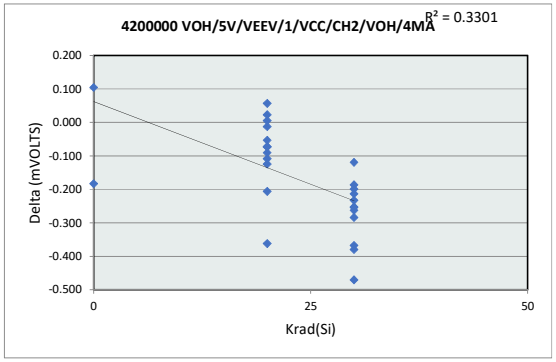
	4100001 ISC/5V/VEEV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.099	1.094	1.088
Average	1.102	1.105	1.106
Max	1.106	1.113	1.115
UL	1.650	1.650	1.650



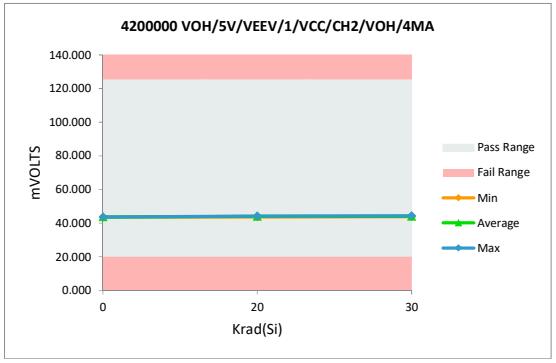
TID Report
TLV4H390MDYYTSEP

	4200000 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	43.424	43.607	-0.183	-0.42%	0.17%
0	2	43.703	43.598	0.105	0.24%	0.10%
20	3	43.985	43.979	0.005	0.01%	0.01%
20	4	43.656	43.781	-0.124	-0.28%	0.12%
20	5	43.724	43.797	-0.073	-0.17%	0.07%
20	6	44.063	44.075	-0.012	-0.03%	0.01%
20	7	43.674	43.782	-0.108	-0.25%	0.10%
20	8	44.118	44.190	-0.073	-0.16%	0.07%
20	9 U	43.532	43.623	-0.090	-0.21%	0.09%
20	10 U	43.869	43.812	0.057	0.13%	0.05%
20	11 U	44.056	44.032	0.023	0.05%	0.02%
20	12 U	43.837	44.043	-0.206	-0.47%	0.20%
20	13 U	43.921	44.283	-0.362	-0.82%	0.34%
20	14 U	43.885	43.938	-0.053	-0.12%	0.05%
30	15	43.717	43.930	-0.213	-0.49%	0.20%
30	16	43.635	43.821	-0.186	-0.43%	0.18%
30	17	43.811	44.095	-0.284	-0.65%	0.27%
30	18	43.731	43.850	-0.119	-0.27%	0.11%
30	19	44.015	44.247	-0.232	-0.53%	0.22%
30	20	43.848	44.228	-0.380	-0.87%	0.36%
30	21 U	43.614	43.981	-0.367	-0.84%	0.35%
30	22 U	43.885	44.137	-0.252	-0.57%	0.24%
30	23 U	43.688	43.887	-0.199	-0.45%	0.19%
30	24 U	43.614	43.867	-0.254	-0.58%	0.24%
30	25 U	43.820	44.290	-0.470	-1.07%	0.45%
30	26 U	43.979	44.242	-0.263	-0.60%	0.25%
	Max	44.118	44.290	0.105	0.24%	0.45%
	Average	43.800	43.966	-0.166	-0.38%	0.17%
	Min	43.424	43.598	-0.470	-1.07%	0.01%
	Std Dev	0.176	0.210	0.144	0.33%	0.12%



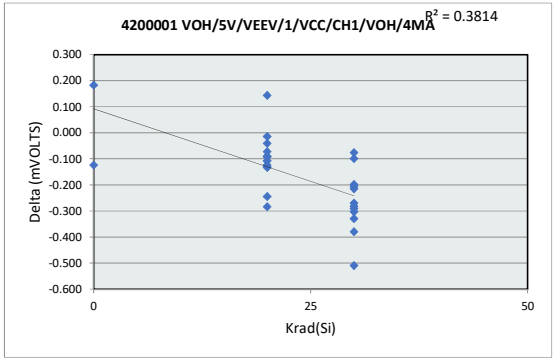
	4200000 VOH/5V/VEEV/1/VC		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	43.598	43.623	43.821
Average	43.602	43.945	44.048
Max	43.607	44.283	44.290
UL	125.000	125.000	125.000



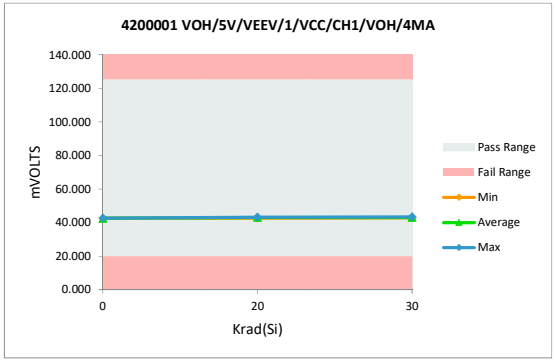
TID Report
TLV4H390MDYYTSEP

	4200001 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	42.435	42.559	-0.124	-0.29%	0.12%
0	2	42.850	42.667	0.183	0.43%	0.17%
20	3	43.034	43.107	-0.073	-0.17%	0.07%
20	4	42.823	42.947	-0.124	-0.29%	0.12%
20	5	42.715	42.729	-0.014	-0.03%	0.01%
20	6	43.132	42.988	0.144	0.33%	0.14%
20	7	42.822	43.105	-0.284	-0.66%	0.27%
20	8	42.992	43.123	-0.131	-0.31%	0.13%
20	9 U	42.699	42.790	-0.090	-0.21%	0.09%
20	10 U	42.880	42.921	-0.041	-0.10%	0.04%
20	11 U	42.988	43.121	-0.133	-0.31%	0.13%
20	12 U	42.926	43.171	-0.245	-0.57%	0.23%
20	13 U	43.146	43.254	-0.108	-0.25%	0.10%
20	14 U	42.916	43.008	-0.092	-0.21%	0.09%
30	15	42.845	42.921	-0.076	-0.18%	0.07%
30	16	42.646	42.852	-0.206	-0.48%	0.20%
30	17	43.036	43.339	-0.303	-0.70%	0.29%
30	18	42.683	42.783	-0.099	-0.23%	0.09%
30	19	42.811	43.141	-0.330	-0.77%	0.31%
30	20	42.995	43.277	-0.282	-0.66%	0.27%
30	21 U	42.781	43.050	-0.270	-0.63%	0.26%
30	22 U	42.818	43.109	-0.291	-0.68%	0.28%
30	23 U	42.797	42.995	-0.199	-0.46%	0.19%
30	24 U	42.781	42.995	-0.215	-0.50%	0.20%
30	25 U	42.889	43.398	-0.509	-1.19%	0.48%
30	26 U	42.971	43.350	-0.380	-0.88%	0.36%
	Max	43.146	43.398	0.183	0.43%	0.48%
	Average	42.862	43.027	-0.165	-0.39%	0.18%
	Min	42.435	42.559	-0.509	-1.19%	0.01%
	Std Dev	0.157	0.214	0.151	0.35%	0.11%



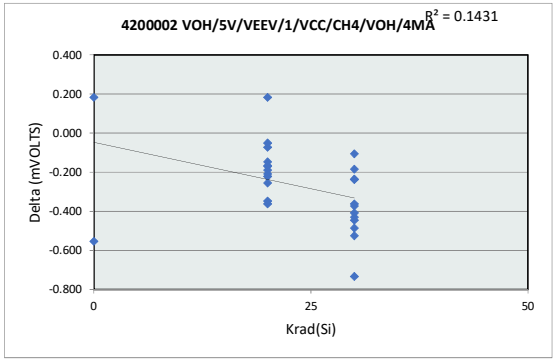
	4200001 VOH/5V/VEEV/1/VC		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	42.559	42.729	42.783
Average	42.613	43.022	43.101
Max	42.667	43.254	43.398
UL	125.000	125.000	125.000



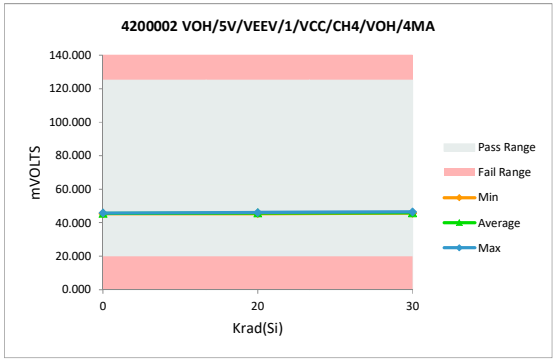
TID Report
TLV4H390MDYYTSEP

	4200002 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	45.248	45.802	-0.554	-1.22%	0.53%
0	2	45.449	45.266	0.183	0.40%	0.17%
20	3	45.536	45.725	-0.190	-0.42%	0.18%
20	4	45.481	45.702	-0.222	-0.49%	0.21%
20	5	45.411	45.582	-0.170	-0.38%	0.16%
20	6	45.692	45.743	-0.051	-0.11%	0.05%
20	7	45.576	45.724	-0.147	-0.32%	0.14%
20	8	45.747	45.956	-0.209	-0.46%	0.20%
20	9 U	45.454	45.271	0.183	0.40%	0.17%
20	10 U	45.596	45.851	-0.256	-0.56%	0.24%
20	11 U	45.704	46.052	-0.348	-0.76%	0.33%
20	12 U	45.486	45.653	-0.167	-0.37%	0.16%
20	13 U	45.686	46.048	-0.362	-0.79%	0.34%
20	14 U	45.670	45.743	-0.073	-0.16%	0.07%
30	15	45.346	45.871	-0.525	-1.16%	0.50%
30	16	45.323	45.685	-0.362	-0.80%	0.34%
30	17	45.654	46.387	-0.733	-1.61%	0.70%
30	18	45.497	45.869	-0.373	-0.82%	0.35%
30	19	45.741	46.228	-0.486	-1.06%	0.46%
30	20	45.789	45.896	-0.106	-0.23%	0.10%
30	21 U	45.360	45.805	-0.445	-0.98%	0.42%
30	22 U	45.710	46.118	-0.408	-0.89%	0.39%
30	23 U	45.434	45.672	-0.238	-0.52%	0.23%
30	24 U	45.458	45.887	-0.429	-0.94%	0.41%
30	25 U	45.741	45.977	-0.236	-0.52%	0.22%
30	26 U	45.804	45.988	-0.185	-0.40%	0.18%
	Max	45.804	46.387	0.183	0.40%	0.70%
	Average	45.561	45.827	-0.266	-0.58%	0.28%
	Min	45.248	45.266	-0.733	-1.61%	0.05%
	Std Dev	0.160	0.249	0.209	0.46%	0.16%



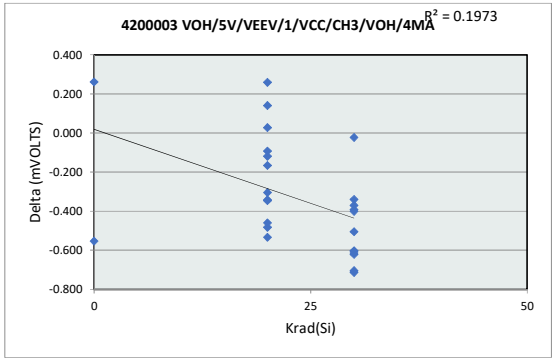
	4200002 VOH/5V/VEEV/1/VC		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	45.266	45.271	45.672
Average	45.534	45.754	45.949
Max	45.802	46.052	46.387
UL	125.000	125.000	125.000



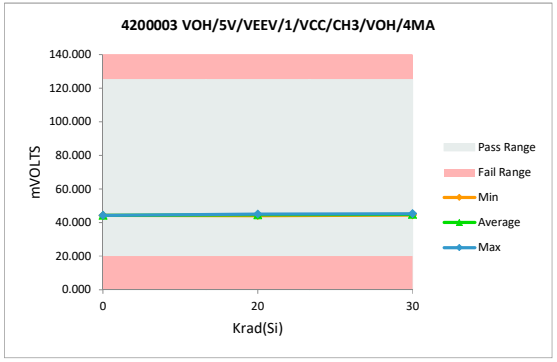
TID Report
TLV4H390MDYYTSEP

	4200003 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	43.783	44.337	-0.554	-1.26%	0.53%
0	2	44.452	44.191	0.261	0.59%	0.25%
20	3	44.481	44.963	-0.483	-1.09%	0.46%
20	4	44.269	44.804	-0.534	-1.21%	0.51%
20	5	44.415	44.156	0.259	0.58%	0.25%
20	6	44.734	44.708	0.027	0.06%	0.03%
20	7	44.326	44.669	-0.342	-0.77%	0.33%
20	8	44.692	45.038	-0.346	-0.77%	0.33%
20	9 U	43.950	44.255	-0.305	-0.69%	0.29%
20	10 U	44.463	44.582	-0.119	-0.27%	0.11%
20	11 U	44.747	44.607	0.140	0.31%	0.13%
20	12 U	44.392	44.559	-0.167	-0.38%	0.16%
20	13 U	44.592	45.052	-0.460	-1.03%	0.44%
20	14 U	44.479	44.571	-0.092	-0.21%	0.09%
30	15	44.408	45.011	-0.603	-1.36%	0.57%
30	16	44.092	44.493	-0.401	-0.91%	0.38%
30	17	44.463	45.176	-0.713	-1.60%	0.68%
30	18	44.383	44.775	-0.392	-0.88%	0.37%
30	19	44.706	45.309	-0.603	-1.35%	0.57%
30	20	44.383	44.997	-0.614	-1.38%	0.58%
30	21 U	44.071	44.692	-0.621	-1.41%	0.59%
30	22 U	44.323	44.828	-0.506	-1.14%	0.48%
30	23 U	44.497	44.520	-0.023	-0.05%	0.02%
30	24 U	44.168	44.539	-0.371	-0.84%	0.35%
30	25 U	44.374	45.079	-0.704	-1.59%	0.67%
30	26 U	44.631	44.972	-0.341	-0.76%	0.32%
	Max	44.747	45.309	0.261	0.59%	0.68%
	Average	44.395	44.726	-0.331	-0.75%	0.37%
	Min	43.783	44.156	-0.713	-1.60%	0.02%
	Std Dev	0.237	0.308	0.286	0.64%	0.20%



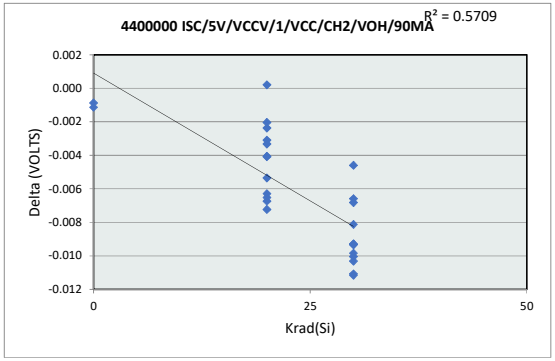
	4200003 VOH/5V/VEEV/1/VC		
Test Site			
Tester			
Test Number			
Max Limit	125	mVOLTS	
Min Limit	19.99999955	mVOLTS	
Krad(Si)	0	20	30
LL	20.000	20.000	20.000
Min	44.191	44.156	44.493
Average	44.264	44.664	44.866
Max	44.337	45.052	45.309
UL	125.000	125.000	125.000



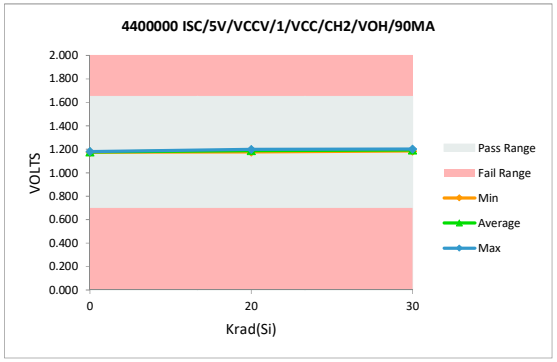
TID Report
TLV4H390MDYYTSEP

	4400000 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.174	1.175	-0.001	-0.07%	0.09%
0	2	1.179	1.181	-0.001	-0.10%	0.12%
20	3	1.192	1.191	0.000	0.02%	0.02%
20	4	1.181	1.183	-0.002	-0.17%	0.22%
20	5	1.182	1.184	-0.002	-0.20%	0.25%
20	6	1.189	1.192	-0.003	-0.26%	0.33%
20	7	1.180	1.183	-0.003	-0.28%	0.35%
20	8	1.189	1.193	-0.004	-0.34%	0.43%
20	9 U	1.173	1.177	-0.004	-0.35%	0.43%
20	10 U	1.185	1.191	-0.005	-0.45%	0.56%
20	11 U	1.190	1.197	-0.006	-0.53%	0.66%
20	12 U	1.188	1.194	-0.007	-0.55%	0.69%
20	13 U	1.192	1.200	-0.007	-0.61%	0.76%
20	14 U	1.182	1.189	-0.007	-0.57%	0.71%
30	15	1.182	1.188	-0.007	-0.56%	0.69%
30	16	1.178	1.185	-0.007	-0.58%	0.72%
30	17	1.184	1.192	-0.008	-0.69%	0.86%
30	18	1.181	1.186	-0.005	-0.39%	0.48%
30	19	1.188	1.197	-0.009	-0.78%	0.98%
30	20	1.190	1.199	-0.009	-0.78%	0.98%
30	21 U	1.180	1.190	-0.009	-0.79%	0.98%
30	22 U	1.187	1.197	-0.010	-0.83%	1.04%
30	23 U	1.179	1.190	-0.011	-0.94%	1.17%
30	24 U	1.180	1.190	-0.010	-0.87%	1.09%
30	25 U	1.190	1.201	-0.011	-0.94%	1.18%
30	26 U	1.192	1.202	-0.010	-0.84%	1.06%
	Max	1.192	1.202	0.000	0.02%	1.18%
	Average	1.184	1.190	-0.006	-0.52%	0.65%
	Min	1.173	1.175	-0.011	-0.94%	0.02%
	Std Dev	0.006	0.007	0.003	0.28%	0.35%



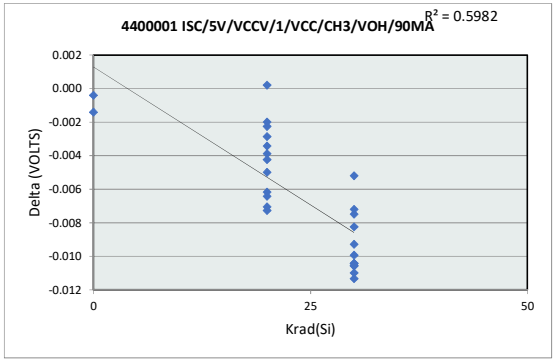
	4400000 ISC/5V/VCCV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.175	1.177	1.185
Average	1.178	1.190	1.193
Max	1.181	1.200	1.202
UL	1.650	1.650	1.650



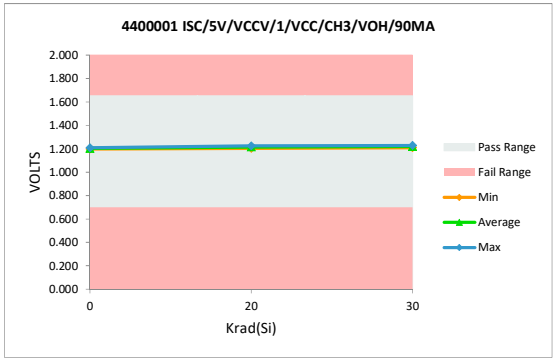
TID Report
TLV4H390MDYYTSEP

	4400001 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.198	1.199	0.000	-0.03%	0.04%
0	2	1.206	1.207	-0.001	-0.12%	0.15%
20	3	1.217	1.217	0.000	0.02%	0.02%
20	4	1.208	1.211	-0.002	-0.19%	0.24%
20	5	1.207	1.209	-0.002	-0.16%	0.21%
20	6	1.215	1.218	-0.003	-0.24%	0.30%
20	7	1.204	1.208	-0.003	-0.28%	0.36%
20	8	1.214	1.218	-0.004	-0.35%	0.45%
20	9 U	1.199	1.203	-0.004	-0.32%	0.41%
20	10 U	1.210	1.215	-0.005	-0.41%	0.53%
20	11 U	1.217	1.223	-0.006	-0.51%	0.65%
20	12 U	1.211	1.217	-0.006	-0.53%	0.68%
20	13 U	1.217	1.224	-0.007	-0.58%	0.74%
20	14 U	1.205	1.212	-0.007	-0.60%	0.77%
30	15	1.208	1.215	-0.007	-0.60%	0.76%
30	16	1.204	1.211	-0.007	-0.62%	0.79%
30	17	1.210	1.218	-0.008	-0.68%	0.87%
30	18	1.204	1.210	-0.005	-0.43%	0.55%
30	19	1.214	1.224	-0.011	-0.87%	1.11%
30	20	1.212	1.223	-0.011	-0.87%	1.11%
30	21 U	1.204	1.213	-0.009	-0.77%	0.98%
30	22 U	1.211	1.222	-0.010	-0.86%	1.10%
30	23 U	1.206	1.218	-0.011	-0.94%	1.19%
30	24 U	1.204	1.214	-0.010	-0.87%	1.10%
30	25 U	1.217	1.228	-0.011	-0.90%	1.16%
30	26 U	1.218	1.227	-0.010	-0.82%	1.05%
	Max	1.218	1.228	0.000	0.02%	1.19%
	Average	1.209	1.216	-0.006	-0.52%	0.67%
	Min	1.198	1.199	-0.011	-0.94%	0.02%
	Std Dev	0.006	0.007	0.004	0.29%	0.37%



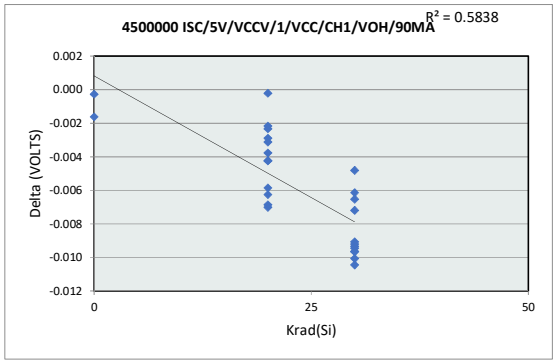
	4400001 ISC/5V/VCCV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.199	1.203	1.210
Average	1.203	1.215	1.219
Max	1.207	1.224	1.228
UL	1.650	1.650	1.650



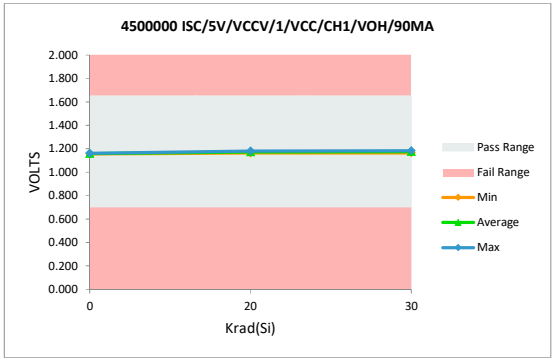
TID Report
TLV4H390MDYYTSEP

	4500000 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.157	1.157	0.000	-0.02%	0.03%
0	2	1.160	1.162	-0.002	-0.14%	0.17%
20	3	1.172	1.172	0.000	-0.02%	0.02%
20	4	1.163	1.166	-0.002	-0.19%	0.23%
20	5	1.165	1.167	-0.002	-0.20%	0.25%
20	6	1.172	1.175	-0.003	-0.25%	0.31%
20	7	1.166	1.169	-0.003	-0.27%	0.33%
20	8	1.171	1.175	-0.004	-0.36%	0.45%
20	9 U	1.160	1.164	-0.004	-0.33%	0.40%
20	10 U	1.168	1.172	-0.004	-0.36%	0.45%
20	11 U	1.171	1.177	-0.006	-0.50%	0.62%
20	12 U	1.167	1.174	-0.006	-0.54%	0.66%
20	13 U	1.174	1.181	-0.007	-0.58%	0.72%
20	14 U	1.162	1.169	-0.007	-0.60%	0.74%
30	15	1.162	1.168	-0.006	-0.53%	0.65%
30	16	1.161	1.167	-0.007	-0.56%	0.69%
30	17	1.173	1.180	-0.007	-0.61%	0.76%
30	18	1.160	1.165	-0.005	-0.42%	0.51%
30	19	1.168	1.178	-0.009	-0.80%	0.98%
30	20	1.174	1.183	-0.009	-0.79%	0.97%
30	21 U	1.163	1.172	-0.009	-0.78%	0.95%
30	22 U	1.168	1.178	-0.010	-0.83%	1.01%
30	23 U	1.163	1.173	-0.010	-0.87%	1.06%
30	24 U	1.164	1.174	-0.009	-0.81%	1.00%
30	25 U	1.171	1.182	-0.010	-0.89%	1.10%
30	26 U	1.174	1.183	-0.010	-0.82%	1.02%
	Max	1.174	1.183	0.000	-0.02%	1.10%
	Average	1.167	1.172	-0.006	-0.50%	0.62%
	Min	1.157	1.157	-0.010	-0.89%	0.02%
	Std Dev	0.005	0.007	0.003	0.27%	0.33%



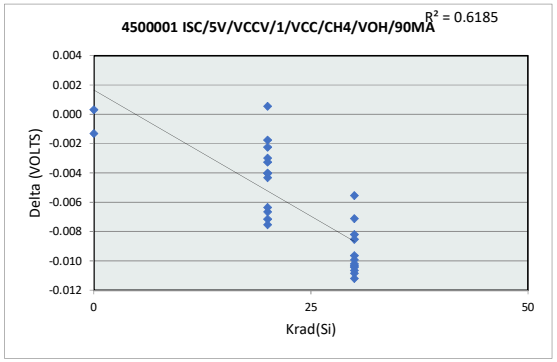
	4500000 ISC/5V/VCCV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.157	1.164	1.165
Average	1.160	1.172	1.175
Max	1.162	1.181	1.183
UL	1.650	1.650	1.650



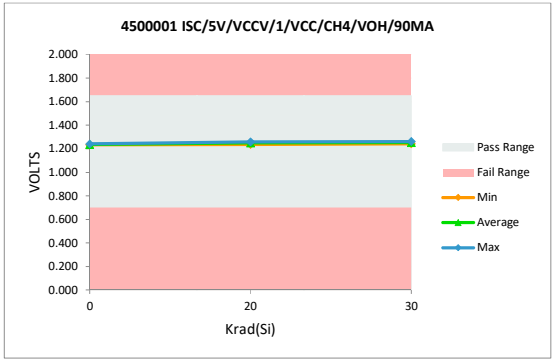
TID Report
TLV4H390MDYYTSEP

	4500001 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.234	1.234	0.000	0.03%	0.03%
0	2	1.239	1.241	-0.001	-0.11%	0.14%
20	3	1.250	1.250	0.001	0.04%	0.06%
20	4	1.243	1.245	-0.002	-0.14%	0.19%
20	5	1.243	1.245	-0.002	-0.18%	0.24%
20	6	1.250	1.253	-0.003	-0.26%	0.34%
20	7	1.243	1.246	-0.003	-0.24%	0.31%
20	8	1.248	1.252	-0.004	-0.32%	0.42%
20	9 U	1.234	1.238	-0.004	-0.33%	0.42%
20	10 U	1.246	1.250	-0.004	-0.35%	0.46%
20	11 U	1.251	1.257	-0.006	-0.51%	0.67%
20	12 U	1.246	1.253	-0.007	-0.53%	0.70%
20	13 U	1.251	1.258	-0.007	-0.57%	0.75%
20	14 U	1.243	1.251	-0.008	-0.61%	0.79%
30	15	1.242	1.249	-0.007	-0.57%	0.75%
30	16	1.238	1.246	-0.008	-0.66%	0.86%
30	17	1.248	1.256	-0.009	-0.68%	0.90%
30	18	1.237	1.242	-0.006	-0.45%	0.58%
30	19	1.245	1.256	-0.011	-0.87%	1.14%
30	20	1.250	1.261	-0.010	-0.83%	1.10%
30	21 U	1.240	1.250	-0.010	-0.78%	1.01%
30	22 U	1.246	1.256	-0.010	-0.80%	1.05%
30	23 U	1.240	1.251	-0.011	-0.86%	1.12%
30	24 U	1.241	1.251	-0.010	-0.83%	1.09%
30	25 U	1.250	1.261	-0.011	-0.90%	1.18%
30	26 U	1.252	1.262	-0.010	-0.82%	1.07%
	Max	1.252	1.262	0.001	0.04%	1.18%
	Average	1.244	1.250	-0.006	-0.51%	0.67%
	Min	1.234	1.234	-0.011	-0.90%	0.03%
	Std Dev	0.005	0.007	0.004	0.29%	0.37%



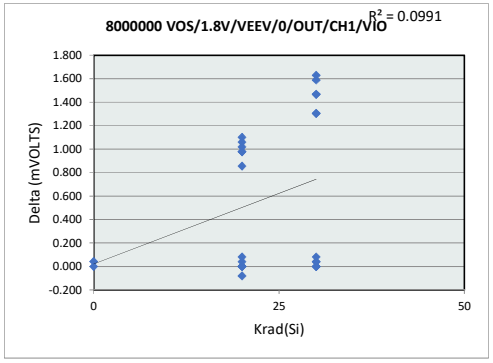
	4500001 ISC/5V/VCCV/1/VCC		
Test Site			
Tester			
Test Number			
Max Limit	1.649999976	VOLTS	
Min Limit	0.699999988	VOLTS	
Krad(Si)	0	20	30
LL	0.700	0.700	0.700
Min	1.234	1.238	1.242
Average	1.237	1.250	1.253
Max	1.241	1.258	1.262
UL	1.650	1.650	1.650



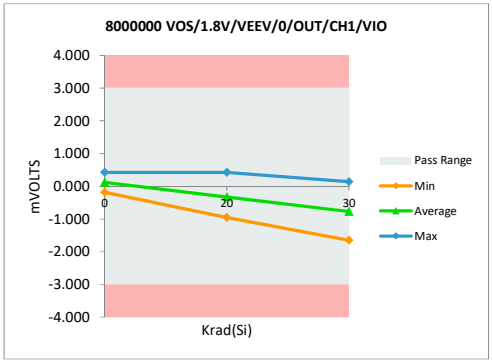
TID Report
TLV4H390MDYYTSEP

	8000000 VOS/1.8V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.469	0.428	0.041	8.74%	0.68%
0	2	-0.183	-0.183	0.000	0.05%	0.00%
20	3	0.387	-0.713	1.100	284.12%	18.33%
20	4	0.591	-0.387	0.978	165.49%	16.30%
20	5	0.061	-0.957	1.018	1665.91%	16.97%
20	6	-0.102	-0.957	0.855	-839.54%	14.26%
20	7	0.224	-0.835	1.059	472.55%	17.65%
20	8	0.020	-0.957	0.978	4797.64%	16.29%
20	9 U	0.061	0.020	0.041	66.68%	0.68%
20	10 U	0.061	0.143	-0.081	-133.22%	1.36%
20	11 U	0.428	0.428	0.000	0.05%	0.00%
20	12 U	-0.102	-0.102	0.000	0.05%	0.00%
20	13 U	0.061	0.061	0.000	0.05%	0.00%
20	14 U	0.387	0.305	0.082	21.09%	1.36%
30	15	-0.346	-1.650	1.303	-376.24%	21.72%
30	16	0.061	-1.405	1.466	2398.88%	24.44%
30	17	-0.143	-1.609	1.466	-1028.02%	24.44%
30	18	0.224	-1.080	1.304	581.85%	21.74%
30	19	0.061	-1.527	1.589	2598.79%	26.48%
30	20	0.143	-1.487	1.629	1142.35%	27.16%
30	21 U	0.183	0.143	0.041	22.26%	0.68%
30	22 U	0.020	0.020	0.000	0.05%	0.00%
30	23 U	-0.061	-0.061	0.000	0.05%	0.00%
30	24 U	0.061	0.061	0.000	0.05%	0.00%
30	25 U	-0.306	-0.346	0.041	-13.28%	0.68%
30	26 U	-0.265	-0.346	0.081	-30.71%	1.36%
	Max	0.591	0.428	1.629	4797.64%	27.16%
	Average	0.077	-0.500	0.577	454.06%	9.71%
	Min	-0.346	-1.650	-0.081	-1028.02%	0.00%
	Std Dev	0.240	0.675	0.641	1213.97%	10.58%



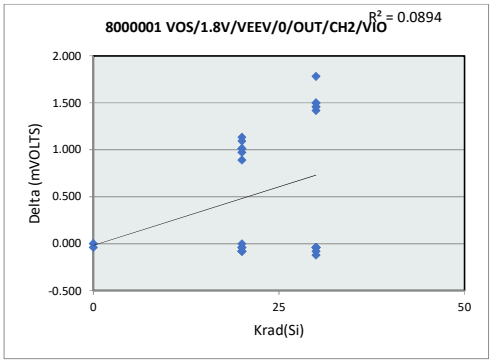
	8000000 VOS/1.8V/VEEV/0/O		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	-0.183	-0.957	-1.650
Average	0.122	-0.329	-0.774
Max	0.428	0.428	0.143
UL	3.000	3.000	3.000



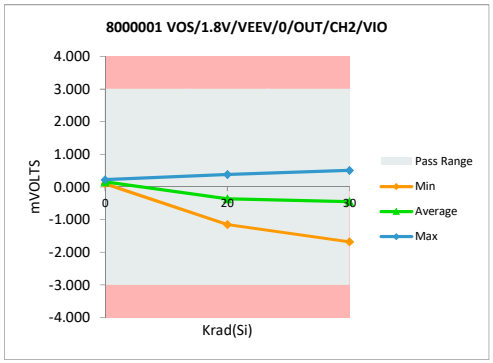
TID Report
TLV4H390MDYYTSEP

	8000001 VOS/1.8V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.061	0.101	-0.040	-66.58%	0.67%
0	2	0.223	0.223	0.000	0.05%	0.00%
20	3	0.182	-0.789	0.972	533.11%	16.20%
20	4	-0.061	-1.154	1.093	-1799.02%	18.22%
20	5	0.304	-0.830	1.134	373.19%	18.90%
20	6	0.425	-0.587	1.012	238.02%	16.87%
20	7	-0.101	-1.113	1.012	-999.43%	16.87%
20	8	-0.101	-0.992	0.891	-879.49%	14.84%
20	9 U	0.061	0.142	-0.081	-133.21%	1.35%
20	10 U	0.101	0.101	0.000	0.05%	0.00%
20	11 U	-0.263	-0.182	-0.081	30.81%	1.35%
20	12 U	0.344	0.385	-0.040	-11.71%	0.67%
20	13 U	0.304	0.385	-0.081	-26.60%	1.35%
20	14 U	0.223	0.263	-0.040	-18.12%	0.67%
30	15	0.628	-0.830	1.458	232.19%	24.30%
30	16	0.506	-0.992	1.498	295.90%	24.97%
30	17	0.628	-0.789	1.417	225.74%	23.62%
30	18	-0.182	-1.681	1.499	-822.22%	24.98%
30	19	0.587	-1.194	1.782	303.34%	29.69%
30	20	0.061	-1.397	1.457	2398.81%	24.29%
30	21 U	-0.142	-0.061	-0.081	57.17%	1.35%
30	22 U	0.304	0.344	-0.040	-13.27%	0.67%
30	23 U	0.466	0.506	-0.040	-8.64%	0.67%
30	24 U	0.101	0.142	-0.040	-39.93%	0.67%
30	25 U	0.223	0.263	-0.040	-18.12%	0.67%
30	26 U	0.223	0.344	-0.121	-54.47%	2.02%
	Max	0.628	0.506	1.782	2398.81%	29.69%
	Average	0.196	-0.361	0.558	-7.79%	10.23%
	Min	-0.263	-1.681	-0.121	-1799.02%	0.00%
	Std Dev	0.252	0.675	0.697	699.57%	10.78%



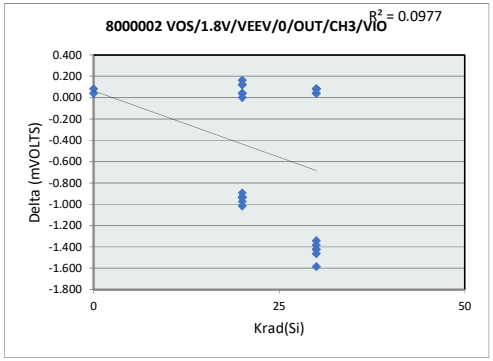
	8000001 VOS/1.8V/VEEV/0/O		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	0.101	-1.154	-1.681
Average	0.162	-0.364	-0.445
Max	0.223	0.385	0.506
UL	3.000	3.000	3.000



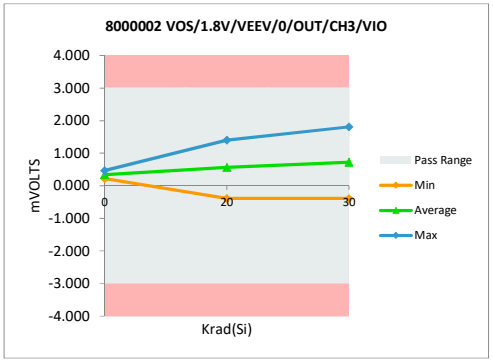
TID Report
TLV4H390MDYYTSEP

	8000002 VOS/1.8V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.264	0.224	0.041	15.42%	0.68%
0	2	0.549	0.468	0.082	14.85%	1.36%
20	3	-0.264	0.752	-1.017	384.49%	16.95%
20	4	0.427	1.403	-0.976	-228.43%	16.26%
20	5	0.183	1.118	-0.935	-510.85%	15.59%
20	6	0.102	1.037	-0.935	-919.55%	15.59%
20	7	0.020	0.956	-0.935	-4597.90%	15.59%
20	8	0.346	1.240	-0.895	-258.67%	14.91%
20	9 U	0.264	0.264	0.000	0.04%	0.00%
20	10 U	0.224	0.102	0.122	54.56%	2.04%
20	11 U	0.224	0.183	0.041	18.22%	0.68%
20	12 U	-0.224	-0.386	0.163	-72.65%	2.71%
20	13 U	0.020	-0.102	0.122	599.78%	2.03%
20	14 U	0.264	0.224	0.041	15.42%	0.68%
30	15	0.102	1.525	-1.423	-1399.34%	23.72%
30	16	0.264	1.688	-1.423	-538.19%	23.72%
30	17	0.346	1.810	-1.464	-423.30%	24.40%
30	18	0.427	1.770	-1.343	-314.26%	22.38%
30	19	-0.305	1.281	-1.586	519.82%	26.44%
30	20	0.224	1.606	-1.383	-617.87%	23.04%
30	21 U	-0.020	-0.102	0.081	-399.78%	1.36%
30	22 U	0.102	0.061	0.041	40.03%	0.68%
30	23 U	-0.061	-0.142	0.081	-133.23%	1.36%
30	24 U	-0.264	-0.305	0.041	-15.33%	0.68%
30	25 U	-0.020	-0.102	0.081	-399.78%	1.36%
30	26 U	-0.305	-0.386	0.081	-26.61%	1.35%
	Max	0.549	1.810	0.163	599.78%	26.44%
	Average	0.111	0.623	-0.511	-353.58%	9.83%
	Min	-0.305	-0.386	-1.586	-4597.90%	0.00%
	Std Dev	0.242	0.746	0.667	962.30%	9.94%



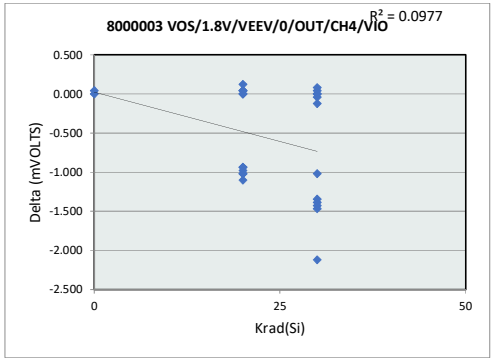
	8000002 VOS/1.8V/VEEV/0/O		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	0.224	-0.386	-0.386
Average	0.346	0.566	0.725
Max	0.468	1.403	1.810
UL	3.000	3.000	3.000



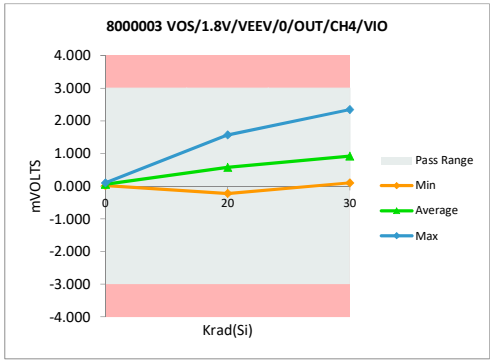
TID Report
TLV4H390MDYYTSEP

	8000003 VOS/1.8V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.102	0.102	0.000	0.05%	0.00%
0	2	0.061	0.020	0.041	66.68%	0.68%
20	3	0.469	1.570	-1.101	-234.62%	18.35%
20	4	0.265	1.203	-0.938	-353.63%	15.63%
20	5	-0.265	0.673	-0.938	353.72%	15.63%
20	6	-0.306	0.673	-0.979	319.89%	16.31%
20	7	0.224	1.244	-1.019	-454.28%	16.99%
20	8	-0.102	0.918	-1.020	999.57%	16.99%
20	9 U	-0.102	-0.224	0.122	-119.89%	2.04%
20	10 U	-0.143	-0.143	0.000	0.05%	0.00%
20	11 U	0.061	0.061	0.000	0.05%	0.00%
20	12 U	0.673	0.632	0.041	6.11%	0.69%
20	13 U	0.102	0.061	0.041	40.03%	0.68%
20	14 U	0.265	0.224	0.041	15.42%	0.68%
30	15	0.224	1.570	-1.346	-599.66%	22.43%
30	16	0.265	1.692	-1.427	-538.16%	23.79%
30	17	0.224	2.345	-2.120	-944.95%	35.34%
30	18	-0.102	1.285	-1.387	1359.98%	23.12%
30	19	0.061	1.081	-1.019	-1665.83%	16.99%
30	20	0.184	1.652	-1.468	-799.57%	24.47%
30	21 U	0.388	0.387	0.000	0.05%	0.00%
30	22 U	0.020	0.143	-0.122	-599.66%	2.04%
30	23 U	0.102	0.102	0.000	0.05%	0.00%
30	24 U	0.428	0.469	-0.041	-9.47%	0.68%
30	25 U	0.184	0.143	0.041	22.26%	0.68%
30	26 U	0.306	0.224	0.082	26.70%	1.36%
	Max	0.673	2.345	0.122	1359.98%	35.34%
	Average	0.138	0.696	-0.558	-119.58%	9.83%
	Min	-0.306	-0.224	-2.120	-1665.83%	0.00%
	Std Dev	0.227	0.692	0.676	580.65%	10.79%



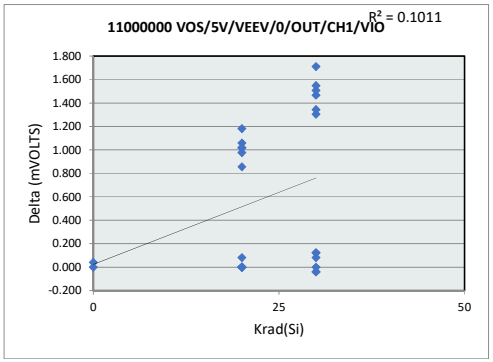
	8000003 VOS/1.8V/VEEV/0/O		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	0.020	-0.224	0.102
Average	0.061	0.574	0.924
Max	0.102	1.570	2.345
UL	3.000	3.000	3.000



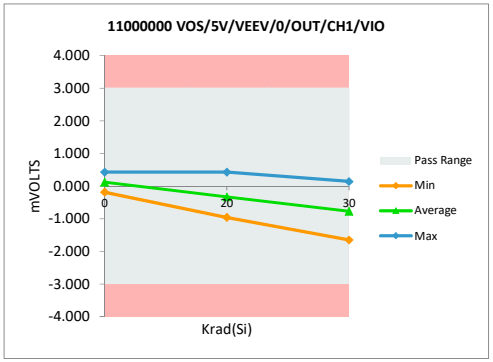
TID Report
TLV4H390MDYYTSEP

	11000000 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.469	0.428	0.041	8.74%	0.68%
0	2	-0.183	-0.183	0.000	0.05%	0.00%
20	3	0.428	-0.754	1.181	276.10%	19.69%
20	4	0.632	-0.387	1.019	161.26%	16.98%
20	5	0.061	-0.957	1.018	1665.91%	16.97%
20	6	-0.102	-0.957	0.855	-839.54%	14.26%
20	7	0.224	-0.835	1.059	472.55%	17.65%
20	8	0.020	-0.957	0.978	4797.64%	16.29%
20	9 U	0.020	0.020	0.000	0.05%	0.00%
20	10 U	0.143	0.143	0.000	0.05%	0.00%
20	11 U	0.428	0.428	0.000	0.05%	0.00%
20	12 U	-0.061	-0.061	0.000	0.05%	0.00%
20	13 U	0.061	0.061	0.000	0.05%	0.00%
20	14 U	0.387	0.305	0.082	21.09%	1.36%
30	15	-0.306	-1.650	1.344	-439.74%	22.40%
30	16	0.061	-1.446	1.507	2465.52%	25.12%
30	17	-0.143	-1.609	1.466	-1028.02%	24.44%
30	18	0.265	-1.039	1.304	492.33%	21.74%
30	19	0.020	-1.527	1.548	7596.24%	25.80%
30	20	0.183	-1.527	1.711	932.93%	28.51%
30	21 U	0.224	0.143	0.082	36.39%	1.36%
30	22 U	0.061	0.061	0.000	0.05%	0.00%
30	23 U	-0.102	-0.061	-0.041	40.03%	0.68%
30	24 U	0.061	0.102	-0.041	-66.59%	0.68%
30	25 U	-0.224	-0.346	0.122	-54.47%	2.03%
30	26 U	-0.224	-0.346	0.122	-54.47%	2.03%
	Max	0.632	0.428	1.711	7596.24%	28.51%
	Average	0.092	-0.498	0.591	634.01%	9.95%
	Min	-0.306	-1.650	-0.041	-1028.02%	0.00%
	Std Dev	0.239	0.683	0.648	1816.92%	10.70%



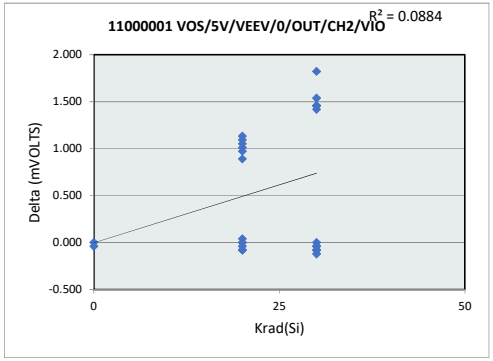
	11000000 VOS/5V/VEEV/0/OU		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	-0.183	-0.957	-1.650
Average	0.122	-0.329	-0.771
Max	0.428	0.428	0.143
UL	3.000	3.000	3.000



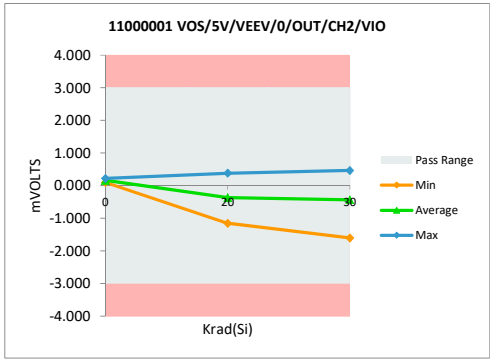
TID Report
TLV4H390MDYYTSEP

	11000001 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.101	0.101	0.000	0.05%	0.00%
0	2	0.182	0.223	-0.040	-22.16%	0.67%
20	3	0.182	-0.789	0.972	533.11%	16.20%
20	4	-0.061	-1.154	1.093	-1799.02%	18.22%
20	5	0.304	-0.830	1.134	373.19%	18.90%
20	6	0.425	-0.628	1.053	247.54%	17.55%
20	7	-0.061	-1.073	1.012	-1665.75%	16.87%
20	8	-0.061	-0.951	0.891	-1465.86%	14.84%
20	9 U	0.061	0.142	-0.081	-133.21%	1.35%
20	10 U	0.142	0.101	0.041	28.61%	0.68%
20	11 U	-0.223	-0.223	0.000	0.05%	0.00%
20	12 U	0.344	0.385	-0.040	-11.71%	0.67%
20	13 U	0.304	0.385	-0.081	-26.60%	1.35%
20	14 U	0.263	0.263	0.000	0.05%	0.00%
30	15	0.587	-0.870	1.458	248.20%	24.30%
30	16	0.506	-1.032	1.539	303.89%	25.64%
30	17	0.628	-0.789	1.417	225.74%	23.62%
30	18	-0.142	-1.600	1.458	-1028.57%	24.30%
30	19	0.628	-1.194	1.822	290.22%	30.37%
30	20	0.101	-1.356	1.458	1439.30%	24.29%
30	21 U	-0.101	-0.020	-0.081	80.01%	1.35%
30	22 U	0.344	0.385	-0.040	-11.71%	0.67%
30	23 U	0.466	0.466	0.000	0.05%	0.00%
30	24 U	0.101	0.142	-0.040	-39.93%	0.67%
30	25 U	0.263	0.344	-0.081	-30.70%	1.35%
30	26 U	0.223	0.344	-0.121	-54.47%	2.02%
	Max	0.628	0.466	1.822	1439.30%	30.37%
	Average	0.212	-0.355	0.567	-96.91%	10.23%
	Min	-0.223	-1.600	-0.121	-1799.02%	0.00%
	Std Dev	0.240	0.670	0.696	688.51%	10.90%



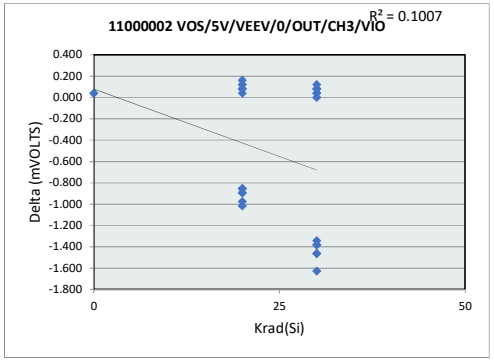
	11000001 VOS/5V/VEEV/0/OU		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	0.101	-1.154	-1.600
Average	0.162	-0.364	-0.432
Max	0.223	0.385	0.466
UL	3.000	3.000	3.000



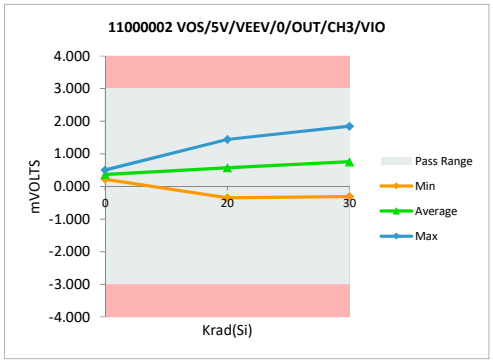
TID Report
TLV4H390MDYYTSEP

	11000002 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.264	0.224	0.041	15.42%	0.68%
0	2	0.549	0.508	0.041	7.45%	0.68%
20	3	-0.224	0.793	-1.017	454.39%	16.95%
20	4	0.468	1.444	-0.976	-208.56%	16.26%
20	5	0.183	1.078	-0.895	-488.64%	14.91%
20	6	0.142	0.996	-0.854	-599.70%	14.23%
20	7	0.102	0.996	-0.895	-879.57%	14.91%
20	8	0.387	1.240	-0.854	-220.91%	14.23%
20	9 U	0.305	0.264	0.041	13.37%	0.68%
20	10 U	0.224	0.102	0.122	54.56%	2.04%
20	11 U	0.264	0.183	0.081	30.80%	1.36%
20	12 U	-0.224	-0.346	0.122	-54.48%	2.03%
20	13 U	0.061	-0.102	0.163	266.60%	2.71%
20	14 U	0.305	0.224	0.081	26.70%	1.36%
30	15	0.102	1.566	-1.464	-1439.33%	24.40%
30	16	0.264	1.647	-1.383	-522.81%	23.04%
30	17	0.387	1.850	-1.464	-378.74%	24.40%
30	18	0.468	1.810	-1.343	-286.94%	22.38%
30	19	-0.264	1.362	-1.627	615.16%	27.11%
30	20	0.224	1.606	-1.383	-617.87%	23.04%
30	21 U	0.020	-0.102	0.122	599.78%	2.03%
30	22 U	0.142	0.102	0.041	28.60%	0.68%
30	23 U	-0.061	-0.102	0.041	-66.60%	0.68%
30	24 U	-0.224	-0.305	0.081	-36.30%	1.35%
30	25 U	0.020	-0.061	0.081	399.87%	1.36%
30	26 U	-0.305	-0.305	0.000	0.04%	0.00%
	Max	0.549	1.850	0.163	615.16%	27.11%
	Average	0.138	0.641	-0.504	-126.45%	9.75%
	Min	-0.305	-0.346	-1.627	-1439.33%	0.00%
	Std Dev	0.241	0.744	0.667	455.69%	9.89%



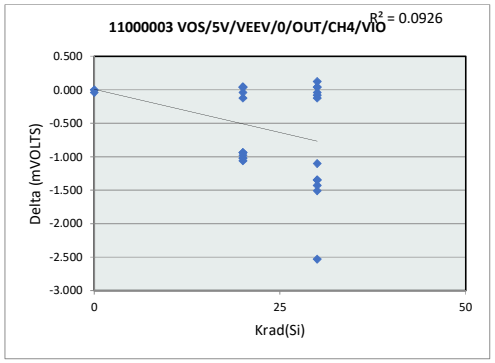
	11000002 VOS/5V/VEEV/0/OU		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	0.224	-0.346	-0.305
Average	0.366	0.573	0.756
Max	0.508	1.444	1.850
UL	3.000	3.000	3.000



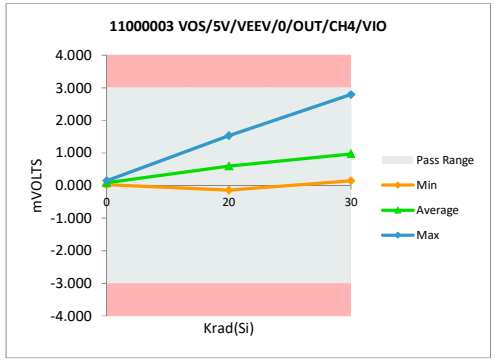
TID Report
TLV4H390MDYYTSEP

	11000003 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.102	0.143	-0.041	-39.93%	0.68%
0	2	0.020	0.020	0.000	0.05%	0.00%
20	3	0.469	1.529	-1.060	-225.93%	17.67%
20	4	0.265	1.203	-0.938	-353.63%	15.63%
20	5	-0.265	0.714	-0.979	369.10%	16.31%
20	6	-0.306	0.714	-1.020	333.22%	16.99%
20	7	0.224	1.244	-1.019	-454.28%	16.99%
20	8	-0.020	0.918	-0.938	4597.78%	15.63%
20	9 U	-0.102	-0.143	0.041	-39.93%	0.68%
20	10 U	-0.184	-0.061	-0.122	66.68%	2.04%
20	11 U	0.061	0.102	-0.041	-66.59%	0.68%
20	12 U	0.673	0.632	0.041	6.11%	0.69%
20	13 U	0.102	0.061	0.041	40.03%	0.68%
20	14 U	0.306	0.265	0.041	13.37%	0.68%
30	15	0.224	1.570	-1.346	-599.66%	22.43%
30	16	0.265	1.692	-1.427	-538.16%	23.79%
30	17	0.265	2.793	-2.528	-953.34%	42.14%
30	18	-0.061	1.285	-1.346	2199.97%	22.44%
30	19	0.020	1.121	-1.101	-5397.29%	18.35%
30	20	0.143	1.652	-1.509	-1056.59%	25.15%
30	21 U	0.388	0.347	0.041	10.57%	0.68%
30	22 U	0.061	0.184	-0.122	-199.86%	2.04%
30	23 U	0.102	0.143	-0.041	-39.93%	0.68%
30	24 U	0.428	0.510	-0.081	-18.99%	1.36%
30	25 U	0.184	0.143	0.041	22.26%	0.68%
30	26 U	0.347	0.224	0.123	35.32%	2.04%
	Max	0.673	2.793	0.123	4597.78%	42.14%
	Average	0.143	0.731	-0.588	-88.06%	10.27%
	Min	-0.306	-0.143	-2.528	-5397.29%	0.00%
	Std Dev	0.229	0.724	0.708	1526.70%	11.38%



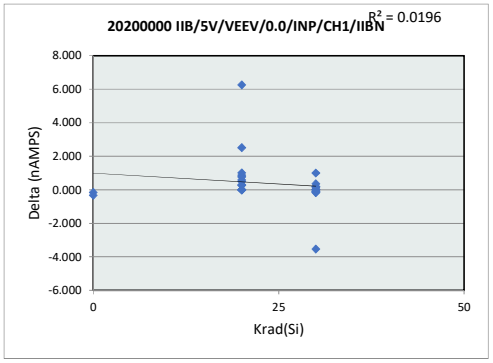
	11000003 VOS/5V/VEEV/0/OU		
Test Site			
Tester			
Test Number			
Max Limit	3	mVOLTS	
Min Limit	-3	mVOLTS	
Krad(Si)	0	20	30
LL	-3.000	-3.000	-3.000
Min	0.020	-0.143	0.143
Average	0.082	0.598	0.972
Max	0.143	1.529	2.793
UL	3.000	3.000	3.000



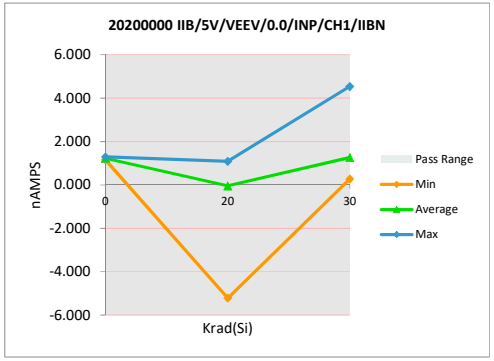
TID Report
TLV4H390MDYYTSEP

	20200000 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.966	1.292	-0.326	-33.79%	0.65%
0	2	0.993	1.153	-0.159	-16.06%	0.32%
20	3	1.027	0.745	0.282	27.48%	0.56%
20	4	1.000	1.015	-0.015	-1.47%	0.03%
20	5	1.145	0.652	0.493	43.08%	0.99%
20	6	1.040	0.173	0.866	83.34%	1.73%
20	7	1.040	-5.214	6.253	601.51%	12.51%
20	8	1.067	0.294	0.773	72.48%	1.55%
20	9 U	1.106	-1.405	2.511	227.03%	5.02%
20	10 U	1.018	0.004	1.014	99.62%	2.03%
20	11 U	0.966	0.379	0.587	60.72%	1.17%
20	12 U	0.995	0.730	0.265	26.63%	0.53%
20	13 U	1.079	1.084	-0.005	-0.45%	0.01%
20	14 U	0.995	1.010	-0.015	-1.48%	0.03%
30	15	1.000	1.101	-0.101	-10.06%	0.20%
30	16	1.057	0.703	0.353	33.44%	0.71%
30	17	1.027	1.013	0.015	1.44%	0.03%
30	18	1.003	4.540	-3.537	-352.71%	7.07%
30	19	1.027	1.170	-0.142	-13.85%	0.28%
30	20	1.138	0.964	0.174	15.32%	0.35%
30	21 U	1.261	0.269	0.992	78.66%	1.98%
30	22 U	1.059	1.150	-0.091	-8.57%	0.18%
30	23 U	1.106	0.929	0.177	15.98%	0.35%
30	24 U	1.128	1.106	0.022	1.96%	0.04%
30	25 U	0.907	1.074	-0.167	-18.39%	0.33%
30	26 U	1.079	1.086	-0.007	-0.68%	0.01%
Max		1.261	4.540	6.253	601.51%	12.51%
Average		1.047	0.654	0.393	35.81%	1.49%
Min		0.907	-5.214	-3.537	-352.71%	0.01%
Std Dev		0.072	1.516	1.528	147.44%	2.77%



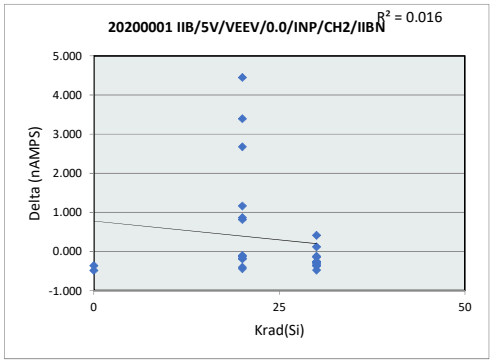
	20200000 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	1.153	-5.214	0.269
Average	1.222	-0.044	1.259
Max	1.292	1.084	4.540
UL			



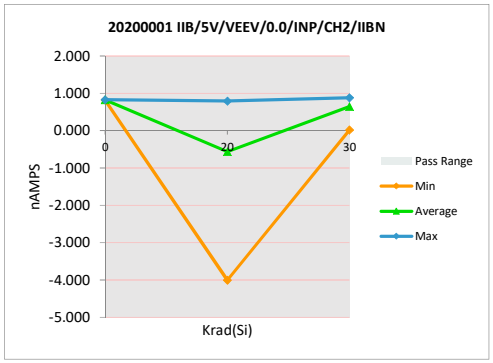
TID Report
TLV4H390MDYYTSEP

	20200001 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.344	0.830	-0.486	-141.23%	0.97%
0	2	0.459	0.820	-0.361	-78.52%	0.72%
20	3	0.440	-4.006	4.446	1010.85%	8.89%
20	4	0.469	0.570	-0.101	-21.42%	0.20%
20	5	0.486	0.678	-0.191	-39.34%	0.38%
20	6	0.364	-0.800	1.164	319.95%	2.33%
20	7	0.376	-3.014	3.391	901.69%	6.78%
20	8	0.499	-0.368	0.867	173.78%	1.73%
20	9 U	0.452	-2.224	2.676	591.90%	5.35%
20	10 U	0.405	0.580	-0.174	-42.96%	0.35%
20	11 U	0.543	-0.272	0.815	150.14%	1.63%
20	12 U	0.256	0.656	-0.400	-156.44%	0.80%
20	13 U	0.506	0.631	-0.125	-24.72%	0.25%
20	14 U	0.351	0.791	-0.439	-125.00%	0.88%
30	15	0.430	0.732	-0.302	-70.19%	0.60%
30	16	0.474	0.614	-0.140	-29.49%	0.28%
30	17	0.356	0.702	-0.346	-97.10%	0.69%
30	18	0.430	0.016	0.414	96.17%	0.83%
30	19	0.398	0.761	-0.363	-91.24%	0.73%
30	20	0.518	0.641	-0.123	-23.66%	0.25%
30	21 U	0.555	0.437	0.118	21.24%	0.24%
30	22 U	0.405	0.882	-0.476	-117.43%	0.95%
30	23 U	0.388	0.663	-0.275	-70.78%	0.55%
30	24 U	0.506	0.771	-0.265	-52.36%	0.53%
30	25 U	0.440	0.801	-0.361	-82.02%	0.72%
30	26 U	0.455	0.712	-0.258	-56.68%	0.52%
	Max	0.555	0.882	4.446	1010.85%	8.89%
	Average	0.435	0.100	0.335	74.81%	1.47%
	Min	0.256	-4.006	-0.486	-156.44%	0.20%
	Std Dev	0.070	1.267	1.268	305.34%	2.16%



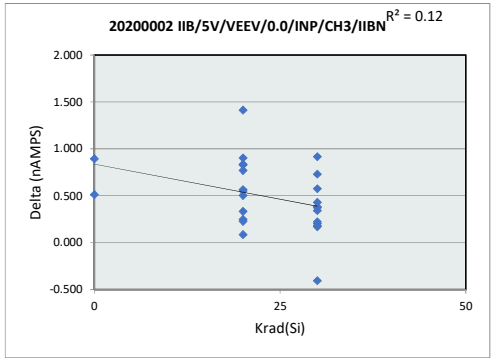
	20200001 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	0.820	-4.006	0.016
Average	0.825	-0.565	0.644
Max	0.830	0.791	0.882
UL			



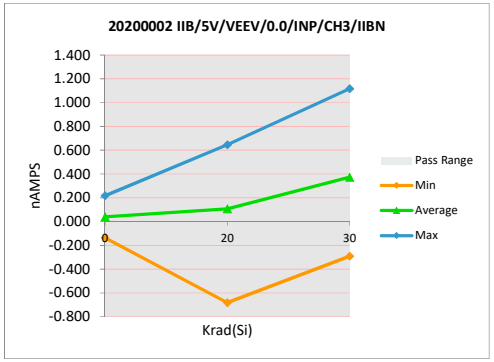
TID Report
TLV4H390MDYYTSEP

	20200002 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.728	0.218	0.511	70.13%	1.02%
0	2	0.758	-0.136	0.894	117.97%	1.79%
20	3	0.669	-0.099	0.769	114.84%	1.54%
20	4	0.672	0.424	0.248	36.91%	0.50%
20	5	0.711	0.146	0.565	79.43%	1.13%
20	6	0.706	0.156	0.550	77.89%	1.10%
20	7	0.682	-0.220	0.901	132.23%	1.80%
20	8	0.664	0.161	0.503	75.77%	1.01%
20	9 U	0.731	0.645	0.086	11.75%	0.17%
20	10 U	0.699	0.473	0.226	32.32%	0.45%
20	11 U	0.723	-0.104	0.828	114.41%	1.66%
20	12 U	0.785	-0.050	0.835	106.40%	1.67%
20	13 U	0.785	0.451	0.334	42.55%	0.67%
20	14 U	0.731	-0.681	1.412	193.25%	2.82%
30	15	0.677	0.498	0.179	26.48%	0.36%
30	16	0.625	-0.291	0.916	146.54%	1.83%
30	17	0.689	-0.040	0.729	105.86%	1.46%
30	18	0.711	1.117	-0.406	-57.10%	0.81%
30	19	0.691	0.308	0.383	55.40%	0.77%
30	20	0.765	0.335	0.430	56.16%	0.86%
30	21 U	0.885	0.311	0.575	64.90%	1.15%
30	22 U	0.632	0.463	0.169	26.78%	0.34%
30	23 U	0.687	0.463	0.223	32.54%	0.45%
30	24 U	0.630	0.426	0.204	32.34%	0.41%
30	25 U	0.846	0.505	0.341	40.33%	0.68%
30	26 U	0.753	0.380	0.373	49.58%	0.75%
	Max	0.885	1.117	1.412	193.25%	2.82%
	Average	0.717	0.225	0.491	68.68%	1.05%
	Min	0.625	-0.681	-0.406	-57.10%	0.17%
	Std Dev	0.062	0.362	0.362	51.02%	0.63%



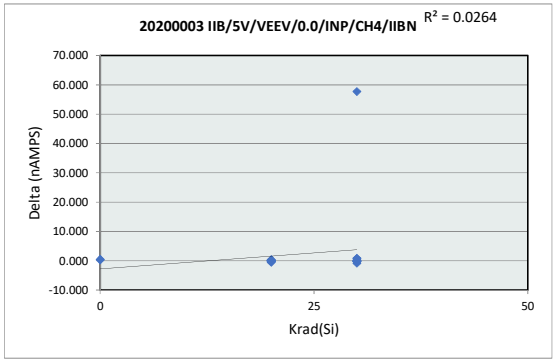
	20200002 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	-0.136	-0.681	-0.291
Average	0.041	0.108	0.373
Max	0.218	0.645	1.117
UL			



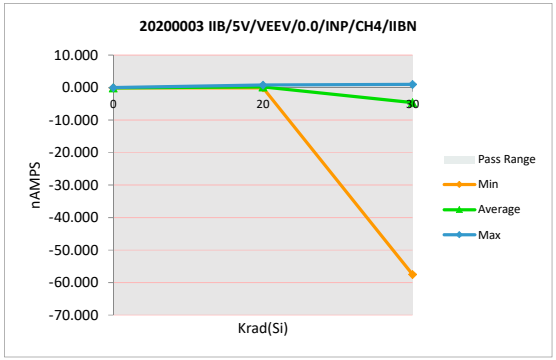
TID Report
TLV4H390MDYYTSEP

	20200003 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	0.350	-0.098	0.448	127.94%	0.90%
0	2	0.237	-0.022	0.258	109.11%	0.52%
20	3	0.180	0.209	-0.029	-16.10%	0.06%
20	4	0.269	0.020	0.249	92.49%	0.50%
20	5	0.089	0.293	-0.203	-227.53%	0.41%
20	6	0.421	0.263	0.158	37.45%	0.32%
20	7	0.298	-0.051	0.349	117.12%	0.70%
20	8	0.340	0.249	0.091	26.87%	0.18%
20	9 U	0.315	0.271	0.045	14.16%	0.09%
20	10 U	0.239	0.148	0.091	38.18%	0.18%
20	11 U	0.284	0.757	-0.474	-167.09%	0.95%
20	12 U	0.193	0.148	0.045	23.19%	0.09%
20	13 U	0.175	0.310	-0.135	-76.78%	0.27%
20	14 U	0.104	0.195	-0.090	-86.84%	0.18%
30	15	0.094	0.219	-0.125	-132.34%	0.25%
30	16	0.121	0.256	-0.135	-110.97%	0.27%
30	17	0.212	-57.513	57.725	27195.08%	115.45%
30	18	0.183	0.998	-0.815	-446.16%	1.63%
30	19	0.215	-0.687	0.902	420.12%	1.80%
30	20	0.153	-0.567	0.720	469.85%	1.44%
30	21 U	0.328	0.013	0.315	96.09%	0.63%
30	22 U	0.288	0.487	-0.199	-68.84%	0.40%
30	23 U	0.271	0.372	-0.100	-36.97%	0.20%
30	24 U	0.188	0.426	-0.238	-126.73%	0.48%
30	25 U	0.352	0.340	0.013	3.61%	0.03%
30	26 U	0.161	0.212	-0.051	-31.83%	0.10%
	Max	0.421	0.998	57.725	27195.08%	115.45%
	Average	0.233	-2.029	2.262	1047.81%	4.92%
	Min	0.089	-57.513	-0.815	-446.16%	0.03%
	Std Dev	0.089	11.322	11.318	5336.04%	22.55%



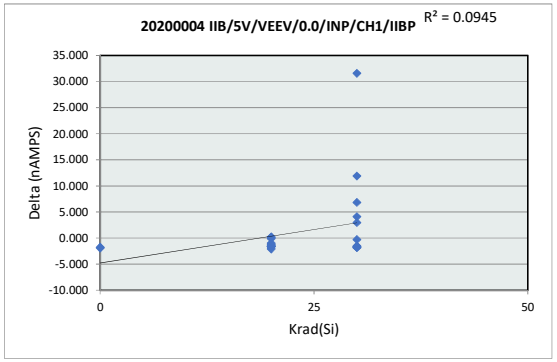
	20200003 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	-0.098	-0.051	-57.513
Average	-0.060	0.234	-4.620
Max	-0.022	0.757	0.998
UL			



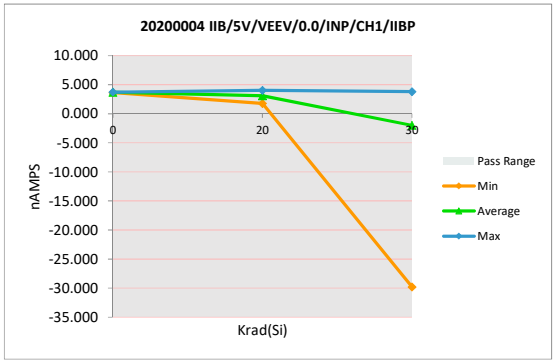
TID Report
TLV4H390MDYYTSEP

	20200004 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	1.893	3.648	-1.755	-92.75%	3.51%
0	2	1.848	3.734	-1.886	-102.01%	3.77%
20	3	1.949	4.053	-2.104	-107.95%	4.21%
20	4	2.060	3.727	-1.667	-80.93%	3.33%
20	5	1.937	2.931	-0.994	-51.32%	1.99%
20	6	1.998	1.823	0.175	8.77%	0.35%
20	7	1.986	1.776	0.210	10.56%	0.42%
20	8	2.052	3.508	-1.456	-70.93%	2.91%
20	9 U	2.040	2.147	-0.107	-5.26%	0.21%
20	10 U	1.905	3.105	-1.200	-63.01%	2.40%
20	11 U	2.077	3.707	-1.630	-78.49%	3.26%
20	12 U	1.866	3.451	-1.586	-85.01%	3.17%
20	13 U	2.035	3.623	-1.588	-78.05%	3.18%
20	14 U	2.025	3.584	-1.559	-76.97%	3.12%
30	15	1.902	-4.902	6.805	357.68%	13.61%
30	16	1.893	-2.188	4.081	215.61%	8.16%
30	17	1.785	-29.789	31.574	1769.29%	63.15%
30	18	1.853	-1.106	2.960	159.69%	5.92%
30	19	1.979	2.272	-0.294	-14.85%	0.59%
30	20	1.848	-10.051	11.899	643.74%	23.80%
30	21 U	2.096	3.591	-1.495	-71.31%	2.99%
30	22 U	2.082	3.813	-1.731	-83.14%	3.46%
30	23 U	1.969	3.628	-1.660	-84.29%	3.32%
30	24 U	1.875	3.704	-1.829	-97.53%	3.66%
30	25 U	1.895	3.528	-1.633	-86.15%	3.27%
30	26 U	1.858	3.670	-1.812	-97.50%	3.62%
	Max	2.096	4.053	31.574	1769.29%	63.15%
	Average	1.950	0.807	1.143	66.84%	6.59%
	Min	1.785	-29.789	-2.104	-107.95%	0.21%
	Std Dev	0.088	7.036	6.992	387.23%	12.48%



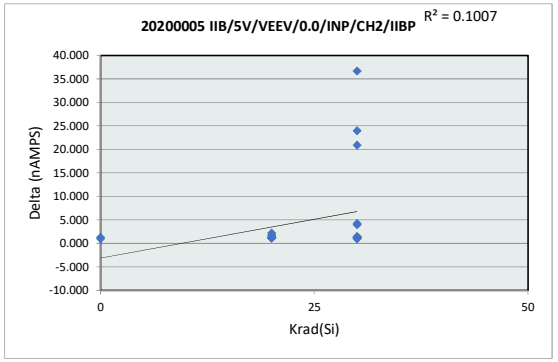
	20200004 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	3.648	1.776	-29.789
Average	3.691	3.120	-1.986
Max	3.734	4.053	3.813
UL			



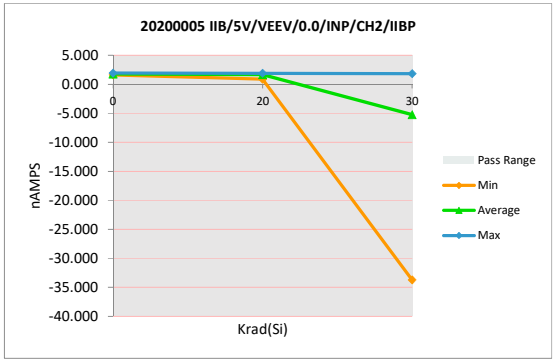
TID Report
TLV4H390MDYYTSEP

	20200005 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	2.883	1.934	0.950	32.94%	1.90%
0	2	2.923	1.627	1.296	44.34%	2.59%
20	3	2.918	1.750	1.168	40.04%	2.34%
20	4	2.955	1.759	1.195	40.46%	2.39%
20	5	3.058	1.762	1.296	42.38%	2.59%
20	6	2.906	1.637	1.269	43.68%	2.54%
20	7	3.070	1.772	1.298	42.29%	2.60%
20	8	3.050	1.904	1.146	37.58%	2.29%
20	9 U	3.048	1.320	1.728	56.70%	3.46%
20	10 U	2.876	1.759	1.117	38.83%	2.23%
20	11 U	3.031	1.831	1.200	39.60%	2.40%
20	12 U	3.068	0.893	2.175	70.90%	4.35%
20	13 U	3.082	1.902	1.181	38.30%	2.36%
20	14 U	3.011	1.804	1.208	40.11%	2.42%
30	15	3.085	-0.870	3.955	128.21%	7.91%
30	16	2.888	-18.009	20.897	723.49%	41.79%
30	17	2.879	-21.073	23.952	832.07%	47.90%
30	18	2.960	1.558	1.401	47.35%	2.80%
30	19	2.962	-33.718	36.680	1238.34%	73.36%
30	20	2.974	-1.261	4.235	142.39%	8.47%
30	21 U	2.999	1.686	1.313	43.79%	2.63%
30	22 U	2.918	1.826	1.092	37.43%	2.18%
30	23 U	3.031	1.835	1.195	39.44%	2.39%
30	24 U	3.019	1.740	1.279	42.37%	2.56%
30	25 U	2.952	1.592	1.360	46.06%	2.72%
30	26 U	2.810	1.850	0.960	34.15%	1.92%
	Max	3.085	1.934	36.680	1238.34%	73.36%
	Average	2.975	-1.507	4.483	152.43%	8.97%
	Min	2.810	-33.718	0.950	32.94%	1.90%
	Std Dev	0.077	8.742	8.724	298.10%	17.45%



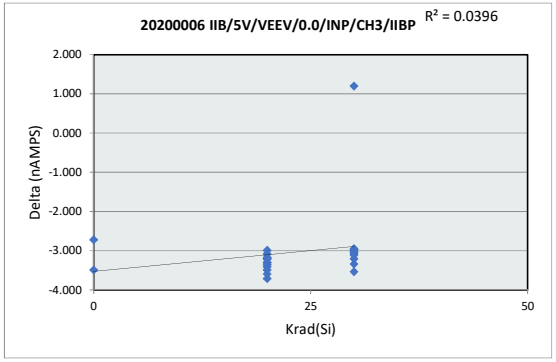
	20200005 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	1.627	0.893	-33.718
Average	1.780	1.674	-5.237
Max	1.934	1.904	1.850
UL			



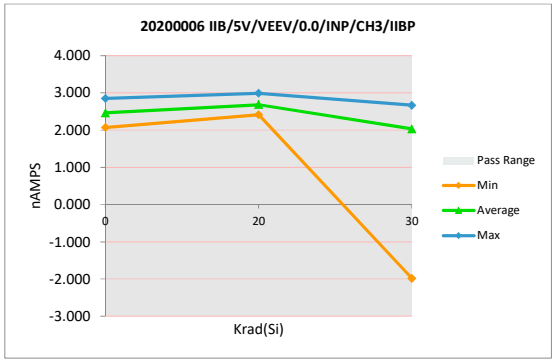
TID Report
TLV4H390MDYYTSEP

	20200006 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	-0.648	2.073	-2.721	419.74%	5.44%
0	2	-0.638	2.851	-3.490	546.62%	6.98%
20	3	-0.621	2.974	-3.595	578.75%	7.19%
20	4	-0.670	2.414	-3.084	460.12%	6.17%
20	5	-0.761	2.729	-3.490	458.43%	6.98%
20	6	-0.582	2.716	-3.298	566.76%	6.60%
20	7	-0.597	2.812	-3.409	571.29%	6.82%
20	8	-0.624	2.729	-3.352	537.48%	6.70%
20	9 U	-0.577	2.593	-3.170	549.45%	6.34%
20	10 U	-0.675	2.530	-3.205	474.60%	6.41%
20	11 U	-0.575	2.731	-3.306	575.31%	6.61%
20	12 U	-0.661	2.552	-3.212	486.30%	6.42%
20	13 U	-0.562	2.429	-2.991	531.96%	5.98%
20	14 U	-0.722	2.989	-3.711	514.01%	7.42%
30	15	-0.688	2.350	-3.038	441.83%	6.08%
30	16	-0.869	2.667	-3.536	406.81%	7.07%
30	17	-0.801	2.537	-3.337	416.90%	6.67%
30	18	-0.781	-1.980	1.199	-153.57%	2.40%
30	19	-0.624	2.380	-3.003	481.56%	6.01%
30	20	-0.761	2.316	-3.077	404.22%	6.15%
30	21 U	-0.663	2.301	-2.964	447.08%	5.93%
30	22 U	-0.636	2.471	-3.107	488.48%	6.21%
30	23 U	-0.560	2.387	-2.947	526.40%	5.89%
30	24 U	-0.692	2.279	-2.972	429.12%	5.94%
30	25 U	-0.705	2.318	-3.023	428.96%	6.05%
30	26 U	-0.840	2.365	-3.205	381.60%	6.41%
	Max	-0.560	2.989	1.199	578.75%	7.42%
	Average	-0.674	2.366	-3.040	460.39%	6.26%
	Min	-0.869	-1.980	-3.711	-153.57%	2.40%
	Std Dev	0.086	0.915	0.896	138.83%	0.92%



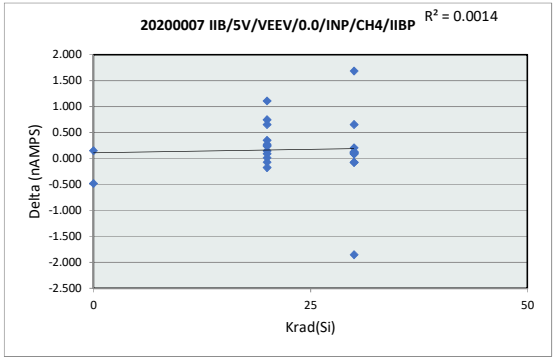
	20200006 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	2.073	2.414	-1.980
Average	2.462	2.683	2.033
Max	2.851	2.989	2.667
UL			



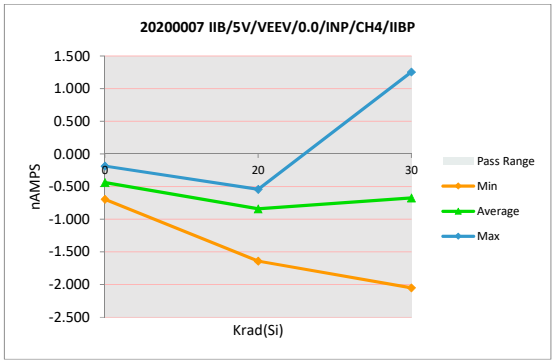
TID Report
TLV4H390MDYYTSEP

	20200007 IIB/5V/VEEV/0.0/INP	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit	25.00000029	25.00000029
Min Limit	-25.00000029	-25.00000029

Krad(Si)	Serial #	HDR_PRE	HDR_POST	Delta	Delta %	% of Limit Range
0	1	-0.665	-0.184	-0.481	72.32%	0.96%
0	2	-0.545	-0.695	0.150	-27.48%	0.30%
20	3	-0.508	-1.254	0.746	-146.87%	1.49%
20	4	-0.574	-0.587	0.012	-2.14%	0.02%
20	5	-0.525	-0.670	0.145	-27.58%	0.29%
20	6	-0.530	-0.766	0.236	-44.45%	0.47%
20	7	-0.594	-0.842	0.248	-41.74%	0.50%
20	8	-0.611	-0.540	-0.071	11.64%	0.14%
20	9 U	-0.452	-0.722	0.270	-59.79%	0.54%
20	10 U	-0.729	-0.555	-0.174	23.90%	0.35%
20	11 U	-0.533	-1.640	1.107	-207.85%	2.21%
20	12 U	-0.501	-0.592	0.091	-18.14%	0.18%
20	13 U	-0.449	-0.798	0.349	-77.61%	0.70%
20	14 U	-0.469	-1.119	0.651	-138.76%	1.30%
30	15	-0.533	-0.643	0.110	-20.74%	0.22%
30	16	-0.628	-1.281	0.653	-103.91%	1.31%
30	17	-0.665	-0.589	-0.076	11.44%	0.15%
30	18	-0.596	1.256	-1.852	310.56%	3.70%
30	19	-0.547	-0.751	0.204	-37.23%	0.41%
30	20	-0.655	-0.579	-0.076	11.61%	0.15%
30	21 U	-0.368	-2.050	1.682	-456.70%	3.36%
30	22 U	-0.619	-0.746	0.128	-20.64%	0.26%
30	23 U	-0.542	-0.663	0.120	-22.18%	0.24%
30	24 U	-0.596	-0.685	0.088	-14.82%	0.18%
30	25 U	-0.599	-0.685	0.086	-14.35%	0.17%
30	26 U	-0.572	-0.673	0.101	-17.60%	0.20%
	Max	-0.368	1.256	1.682	310.56%	3.70%
	Average	-0.562	-0.733	0.171	-40.74%	0.76%
	Min	-0.729	-2.050	-1.852	-456.70%	0.02%
	Std Dev	0.079	0.556	0.596	123.54%	0.97%



	20200007 IIB/5V/VEEV/0.0/I		
Test Site			
Tester			
Test Number			
Max Limit			
Min Limit			
Krad(Si)	0	20	30
LL			
Min	-0.695	-1.640	-2.050
Average	-0.439	-0.840	-0.674
Max	-0.184	-0.540	1.256
UL			



B Appendix B: Total Ionizing Dose HDR Report - Post-anneal

Please see the following pages for the TLV4H390-SEP TID HDR report for post-room temperature annealing test data.

Delta Threshold: 10%

Delta Threshold 10.00%

TID Report - HDR Annealing
TLV4H390MDYYTSEP

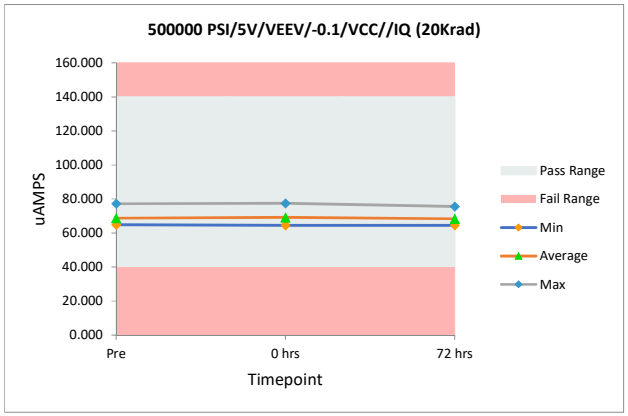
TID Report - HDR Annealing
TLV4H390MDYYTSEP

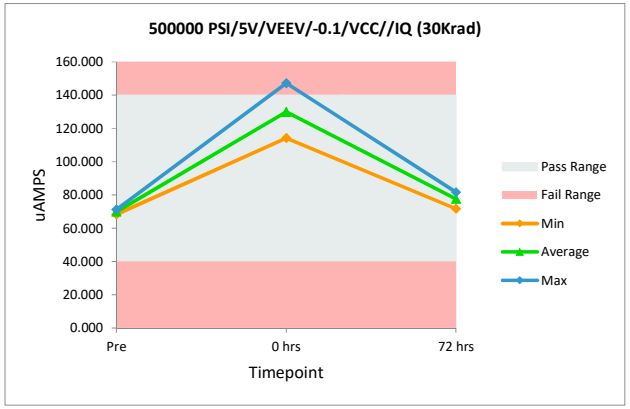
	500000 PSI/5V/VEEV/-0.1/VCC	
Test Site		
Tester		
Test Number		
Unit	uAMPS	uAMPS
Max Limit	140	140
Min Limit	39.99999899	39.99999899

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	66.312	66.239	66.292
0	2	65.371	65.350	65.311
20	3	64.847	66.606	65.891
20	4	70.004	70.532	69.858
20	5	66.086	64.502	64.464
20	6	77.158	77.479	75.585
20	7	66.181	66.920	66.206
20	8	68.232	69.140	68.309
30	15	70.897	136.926	79.653
30	16	71.176	131.717	78.749
30	17	70.205	133.877	81.316
30	18	68.299	115.876	73.211
30	19	70.962	147.160	81.617
30	20	68.288	114.197	71.713
	Max	77.158	147.160	81.617
	Average	68.858	94.751	72.013
	Min	64.847	64.502	64.464
	Std Dev	3.241	32.754	6.331

20 Krads	Pre	0 hrs	72 hrs
LL	40.000	40.000	40.000
Min	64.847	64.502	64.464
Average	68.751	69.197	68.386
Max	77.158	77.479	75.585
UL	140.000	140.000	140.000

30 Krads	Pre	0 hrs	72 hrs
LL	40.000	40.000	40.000
Min	68.288	114.197	71.713
Average	69.971	129.959	77.710
Max	71.176	147.160	81.617
UL	140.000	140.000	140.000



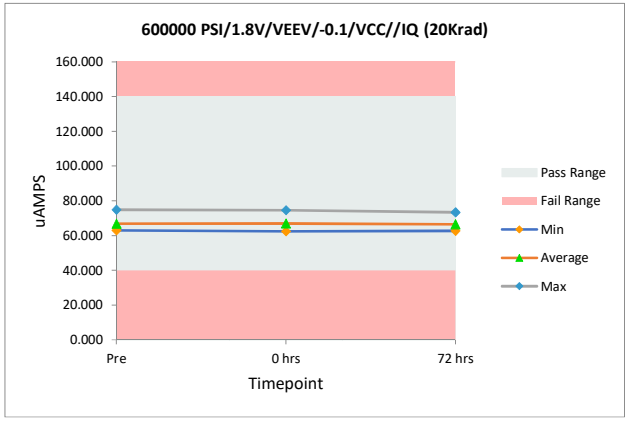


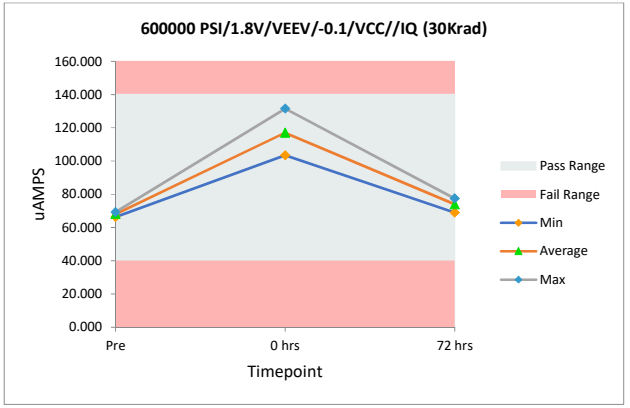
TID Report - HDR Annealing
TLV4H390MDYYTSEP

	600000 PSI/1.8V/VEEV/-0.1/VC	
Test Site		
Tester		
Test Number		
Unit	uAMPS	uAMPS
Max Limit	140	140
Min Limit	39.99999899	39.99999899

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	64.480	64.353	64.445
0	2	63.504	63.457	63.441
20	3	62.978	64.283	64.038
20	4	68.107	68.401	68.062
20	5	64.281	62.476	62.740
20	6	74.894	74.574	73.412
20	7	64.395	64.859	64.548
20	8	66.216	67.095	66.404
30	15	68.783	123.040	75.380
30	16	69.213	119.576	75.088
30	17	68.192	119.947	76.950
30	18	66.395	104.642	69.977
30	19	69.121	131.521	77.431
30	20	66.374	103.382	68.954
	Max	74.894	131.521	77.431
	Average	66.924	87.972	69.348
	Min	62.978	62.476	62.740
	Std Dev	3.135	27.126	5.361

20 Krads	Pre	0 hrs	72 hrs
LL	40.000	40.000	40.000
Min	62.978	62.476	62.740
Average	66.812	66.948	66.534
Max	74.894	74.574	73.412
UL	140.000	140.000	140.000
30 Krads	**Pre**	**0 hrs**	**72 hrs**
LL	40.000	40.000	40.000
Min	66.374	103.382	68.954
Average	68.013	117.018	73.963
Max	69.213	131.521	77.431
UL	140.000	140.000	140.000



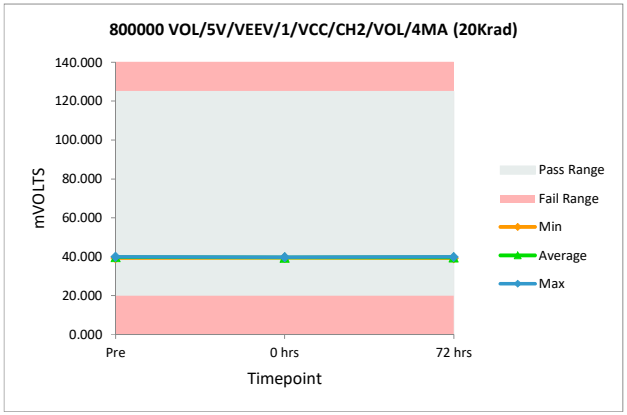


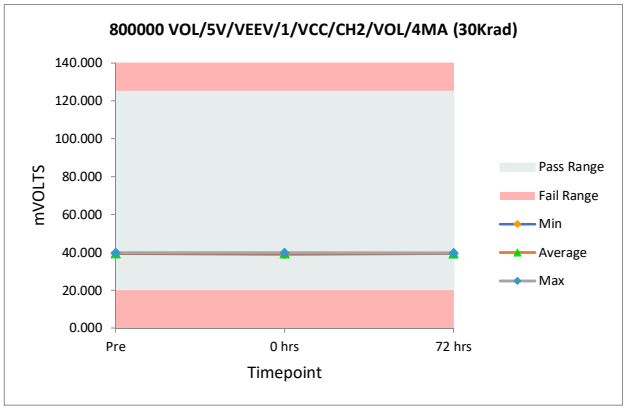
TID Report - HDR Annealing
TLV4H390MDYYTSEP

	800000 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	39.486	39.648	39.639
0	2	39.605	39.476	39.453
20	3	39.769	39.541	39.696
20	4	39.350	39.424	39.243
20	5	39.942	39.740	39.843
20	6	39.866	39.788	39.854
20	7	39.655	39.547	39.446
20	8	39.685	39.447	39.785
30	15	39.471	39.102	39.428
30	16	39.380	39.462	39.290
30	17	39.797	39.593	39.719
30	18	39.355	39.446	39.336
30	19	39.586	39.763	39.604
30	20	39.832	39.848	39.673
	Max	39.942	39.848	39.854
	Average	39.627	39.559	39.572
	Min	39.350	39.102	39.243
	Std Dev	0.198	0.194	0.205

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	39.350	39.424	39.243
Average	39.711	39.581	39.644
Max	39.942	39.788	39.854
UL	125.000	125.000	125.000
30 Krad	**Pre**	**0 hrs**	**72 hrs**
LL	20.000	20.000	20.000
Min	39.355	39.102	39.290
Average	39.570	39.536	39.508
Max	39.832	39.848	39.719
UL	125.000	125.000	125.000





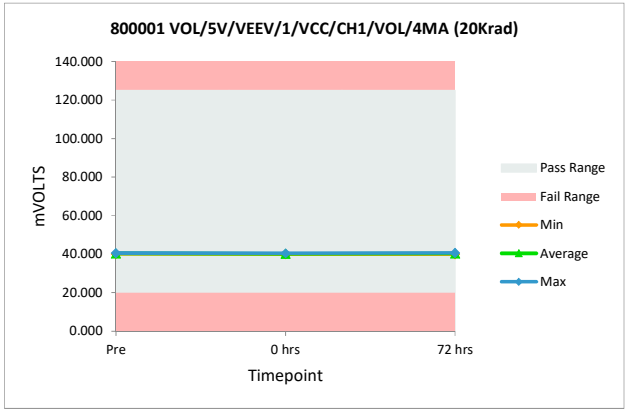
TID Report - HDR Annealing
TLV4H390MDYYTSEP

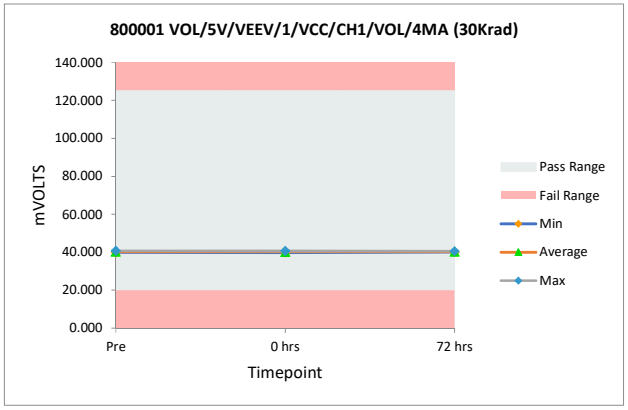
	800001 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	40.374	40.516	40.527
0	2	40.181	40.305	40.223
20	3	40.422	40.019	40.505
20	4	40.159	39.961	40.033
20	5	40.420	40.198	40.360
20	6	40.519	40.422	40.448
20	7	40.347	40.434	40.236
20	8	40.495	40.198	40.633
30	15	40.163	39.931	40.218
30	16	40.189	40.056	40.060
30	17	40.704	40.597	40.528
30	18	39.931	39.806	40.087
30	19	40.239	40.397	40.218
30	20	40.544	40.541	40.482
	Max	40.704	40.597	40.633
	Average	40.335	40.242	40.326
	Min	39.931	39.806	40.033
	Std Dev	0.203	0.254	0.197

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	40.159	39.961	40.033
Average	40.394	40.205	40.369
Max	40.519	40.434	40.633
UL	125.000	125.000	125.000

30 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	39.931	39.806	40.060
Average	40.295	40.221	40.265
Max	40.704	40.597	40.528
UL	125.000	125.000	125.000



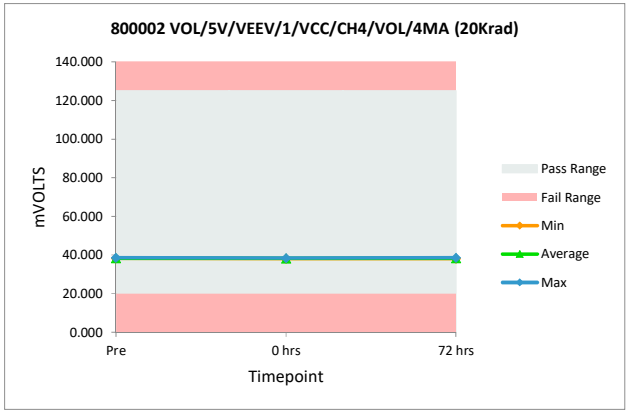


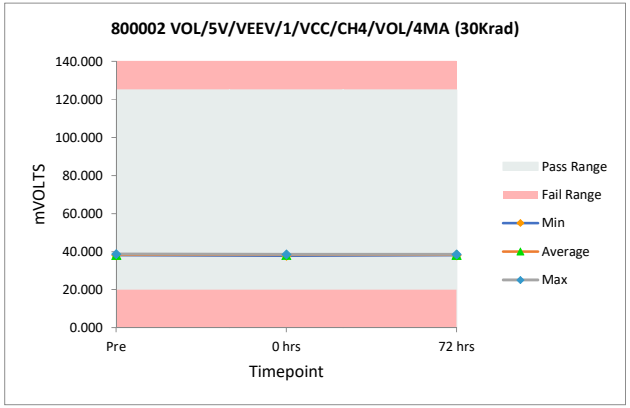
TID Report - HDR Annealing
TLV4H390MDYYTSEP

		800002 VOL/5V/VEEV/1/VCC/C	
Test Site			
Tester			
Test Number			
Unit		mVOLTS	mVOLTS
Max Limit		125	125
Min Limit		19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	38.265	38.193	38.320
0	2	38.384	38.508	38.310
20	3	38.567	38.242	38.475
20	4	38.265	38.262	38.276
20	5	38.253	38.187	38.095
20	6	38.450	38.391	38.398
20	7	38.375	38.111	38.303
20	8	38.308	38.460	38.583
30	15	38.386	38.095	38.207
30	16	38.120	38.338	38.303
30	17	38.732	38.586	38.576
30	18	38.095	37.834	38.114
30	19	38.423	38.405	38.480
30	20	38.279	38.413	38.432
	Max	38.732	38.586	38.583
	Average	38.350	38.288	38.348
	Min	38.095	37.834	38.095
	Std Dev	0.166	0.197	0.152

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	38.253	38.111	38.095
Average	38.370	38.276	38.355
Max	38.567	38.460	38.583
UL	125.000	125.000	125.000
30 Krad	**Pre**	**0 hrs**	**72 hrs**
LL	20.000	20.000	20.000
Min	38.095	37.834	38.114
Average	38.339	38.279	38.352
Max	38.732	38.586	38.576
UL	125.000	125.000	125.000





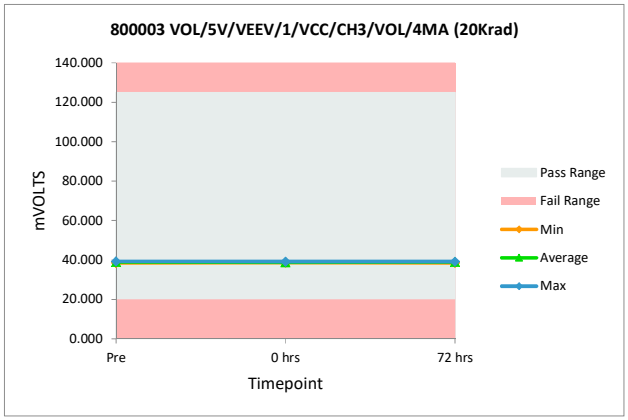
TID Report - HDR Annealing
TLV4H390MDYYTSEP

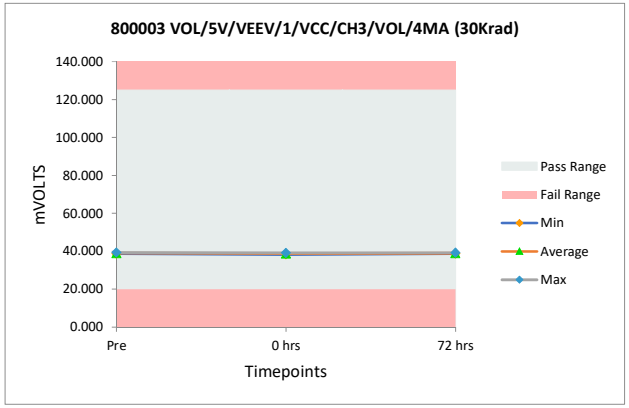
	800003 VOL/5V/VEEV/1/VCC/C	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	38.834	39.132	39.084
0	2	38.991	38.862	38.839
20	3	38.979	38.869	39.141
20	4	38.560	38.615	38.551
20	5	39.016	38.697	39.034
20	6	39.272	39.213	39.181
20	7	38.944	38.913	38.754
20	8	39.091	38.931	39.093
30	15	38.837	38.819	38.814
30	16	38.883	38.731	38.754
30	17	39.320	39.116	39.183
30	18	38.761	38.324	38.702
30	19	39.050	38.818	38.990
30	20	39.199	38.961	39.137
	Max	39.320	39.213	39.183
	Average	38.981	38.857	38.947
	Min	38.560	38.324	38.551
	Std Dev	0.205	0.228	0.206

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	38.560	38.615	38.551
Average	38.977	38.873	38.959
Max	39.272	39.213	39.181
UL	125.000	125.000	125.000

30 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	38.761	38.324	38.702
Average	39.008	38.795	38.930
Max	39.320	39.116	39.183
UL	125.000	125.000	125.000

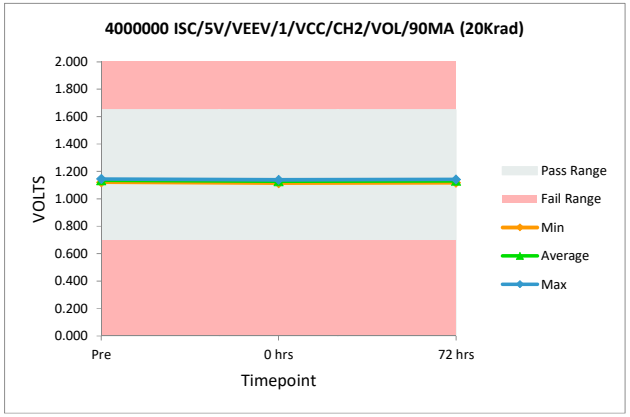




TID Report - HDR Annealing
TLV4H390MDYYTSEP

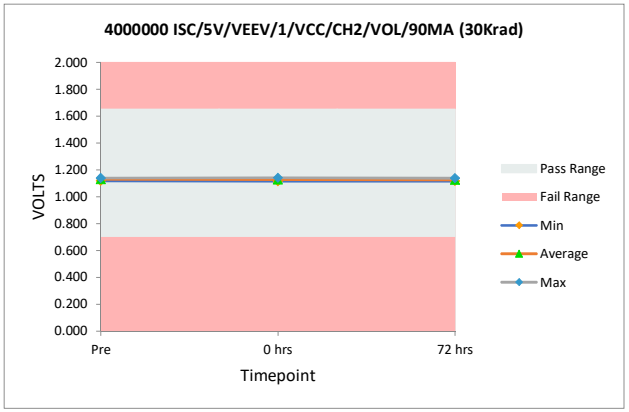
	4000000 ISC/5V/VEEV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.128	1.126	1.127
0	2	1.129	1.127	1.127
20	3	1.136	1.127	1.132
20	4	1.121	1.115	1.117
20	5	1.145	1.139	1.142
20	6	1.142	1.137	1.139
20	7	1.133	1.128	1.130
20	8	1.137	1.132	1.134
30	15	1.125	1.123	1.122
30	16	1.122	1.120	1.118
30	17	1.138	1.137	1.136
30	18	1.119	1.115	1.117
30	19	1.131	1.132	1.128
30	20	1.140	1.141	1.137
	Max	1.145	1.141	1.142
	Average	1.132	1.128	1.129
	Min	1.119	1.115	1.117
	Std Dev	0.008	0.008	0.008



20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.121	1.115	1.117
Average	1.136	1.130	1.132
Max	1.145	1.139	1.142
UL	1.650	1.650	1.650

30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.119	1.115	1.117
Average	1.129	1.128	1.126
Max	1.140	1.141	1.137
UL	1.650	1.650	1.650



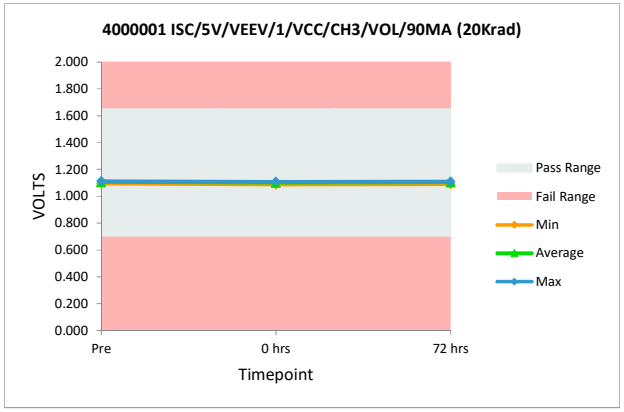
TID Report - HDR Annealing
TLV4H390MDYYTSEP

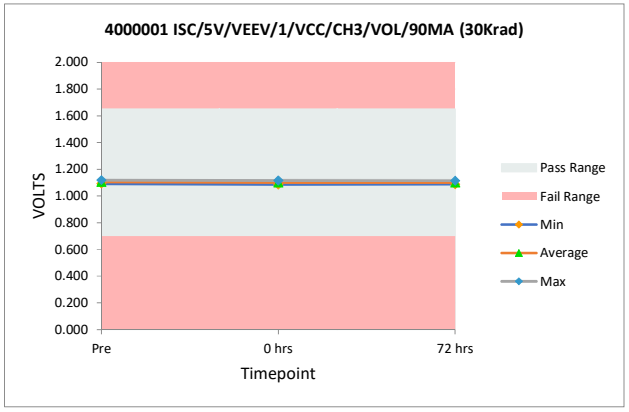
	4000001 ISC/5V/VEEV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.107	1.104	1.105
0	2	1.104	1.102	1.102
20	3	1.110	1.101	1.105
20	4	1.093	1.088	1.090
20	5	1.109	1.103	1.106
20	6	1.113	1.108	1.110
20	7	1.105	1.100	1.102
20	8	1.112	1.107	1.109
30	15	1.099	1.094	1.094
30	16	1.102	1.097	1.097
30	17	1.119	1.115	1.115
30	18	1.092	1.085	1.088
30	19	1.106	1.104	1.102
30	20	1.117	1.115	1.112
	Max	1.119	1.115	1.115
	Average	1.106	1.102	1.103
	Min	1.092	1.085	1.088
	Std Dev	0.008	0.009	0.008

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.093	1.088	1.090
Average	1.107	1.101	1.104
Max	1.113	1.108	1.110
UL	1.650	1.650	1.650

30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.092	1.085	1.088
Average	1.106	1.102	1.101
Max	1.119	1.115	1.115
UL	1.650	1.650	1.650





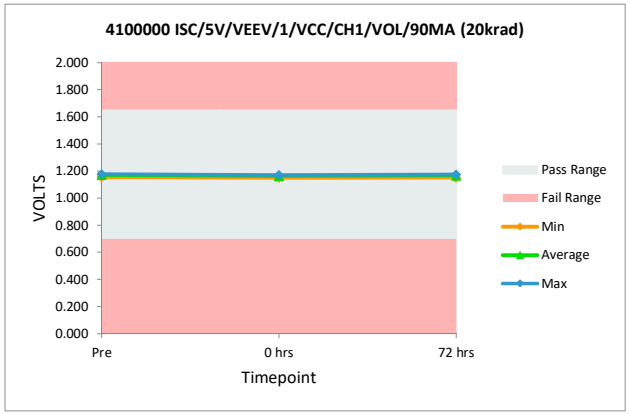
TID Report - HDR Annealing
TLV4H390MDYYTSEP

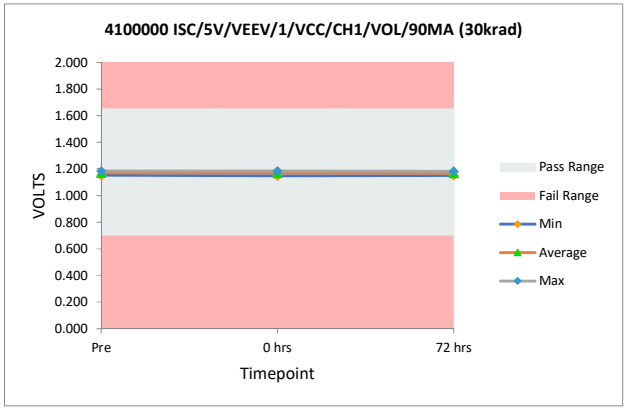
	4100000 ISC/5V/VEEV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.170	1.167	1.168
0	2	1.165	1.163	1.163
20	3	1.174	1.164	1.169
20	4	1.155	1.150	1.152
20	5	1.172	1.166	1.169
20	6	1.177	1.171	1.174
20	7	1.170	1.165	1.167
20	8	1.175	1.171	1.173
30	15	1.160	1.158	1.158
30	16	1.161	1.157	1.156
30	17	1.185	1.184	1.182
30	18	1.152	1.148	1.149
30	19	1.162	1.164	1.160
30	20	1.179	1.180	1.177
	Max	1.185	1.184	1.182
	Average	1.168	1.165	1.166
	Min	1.152	1.148	1.149
	Std Dev	0.009	0.010	0.009

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.155	1.150	1.152
Average	1.170	1.165	1.167
Max	1.177	1.171	1.174
UL	1.650	1.650	1.650

30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.152	1.148	1.149
Average	1.171	1.169	1.168
Max	1.185	1.184	1.182
UL	1.650	1.650	1.650





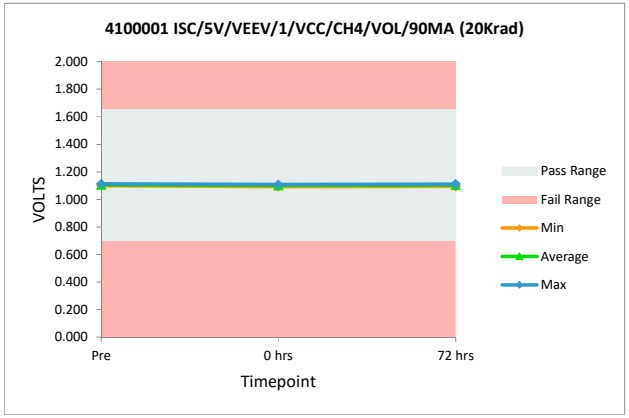
TID Report - HDR Annealing
TLV4H390MDYYTSEP

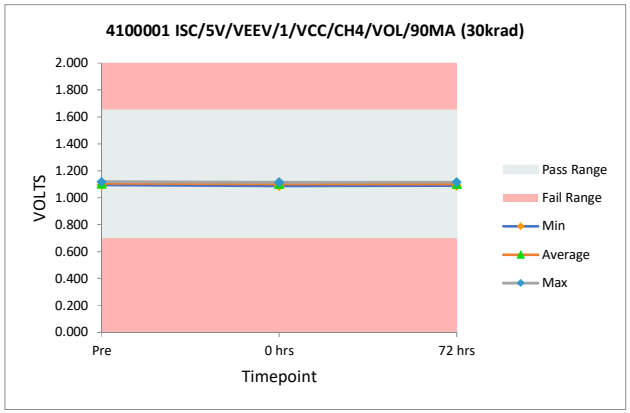
	4100001 ISC/5V/VEEV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	VOLTS	VOLTS
Max Limit	1.649999976	1.649999988
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.101	1.099	1.100
0	2	1.107	1.106	1.106
20	3	1.112	1.103	1.107
20	4	1.100	1.094	1.096
20	5	1.107	1.100	1.103
20	6	1.111	1.106	1.108
20	7	1.104	1.099	1.101
20	8	1.113	1.109	1.111
30	15	1.100	1.095	1.096
30	16	1.102	1.098	1.098
30	17	1.119	1.114	1.115
30	18	1.095	1.088	1.091
30	19	1.110	1.108	1.106
30	20	1.109	1.108	1.106
	Max	1.119	1.114	1.115
	Average	1.106	1.102	1.103
	Min	1.095	1.088	1.091
	Std Dev	0.006	0.007	0.007

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.100	1.094	1.096
Average	1.108	1.102	1.105
Max	1.113	1.109	1.111
UL	1.650	1.650	1.650

30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.095	1.088	1.091
Average	1.106	1.102	1.102
Max	1.119	1.114	1.115
UL	1.650	1.650	1.650





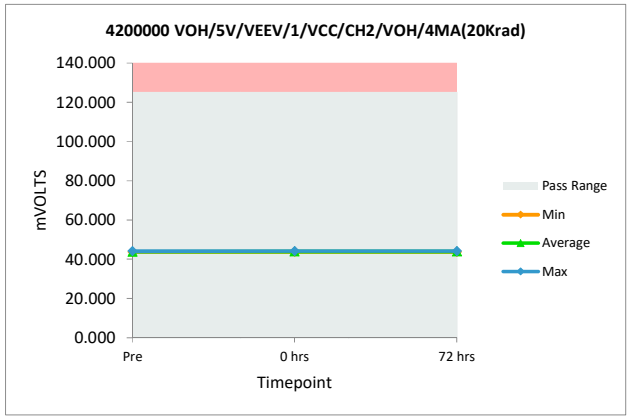
TID Report - HDR Annealing
TLV4H390MDYYTSEP

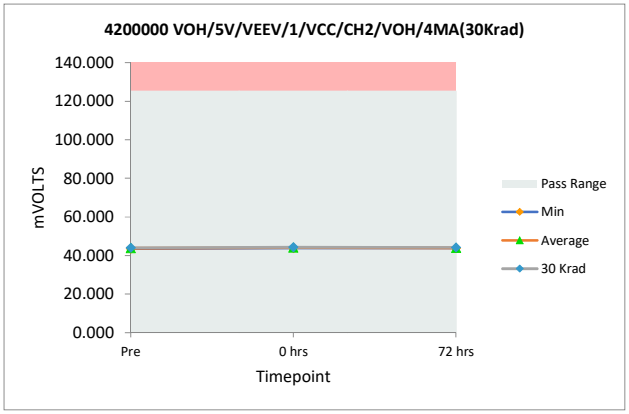
	4200000 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	43.424	43.607	43.465
0	2	43.703	43.598	43.703
20	3	43.985	43.979	44.137
20	4	43.656	43.781	43.766
20	5	43.724	43.797	43.899
20	6	44.063	44.075	44.079
20	7	43.674	43.782	43.731
20	8	44.118	44.190	44.091
30	15	43.717	43.930	43.797
30	16	43.635	43.821	43.871
30	17	43.811	44.095	44.009
30	18	43.731	43.850	43.894
30	19	44.015	44.247	44.001
30	20	43.848	44.228	44.164
	Max	44.118	44.247	44.164
	Average	43.793	43.927	43.900
	Min	43.424	43.598	43.465
	Std Dev	0.193	0.215	0.197

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	43.656	43.781	43.731
Average	43.870	43.934	43.951
Max	44.118	44.190	44.137
UL	125.000	125.000	125.000

30 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	43.635	43.821	43.797
Average	43.793	44.028	43.956
Max	44.015	44.247	44.164
UL	125.000	125.000	125.000





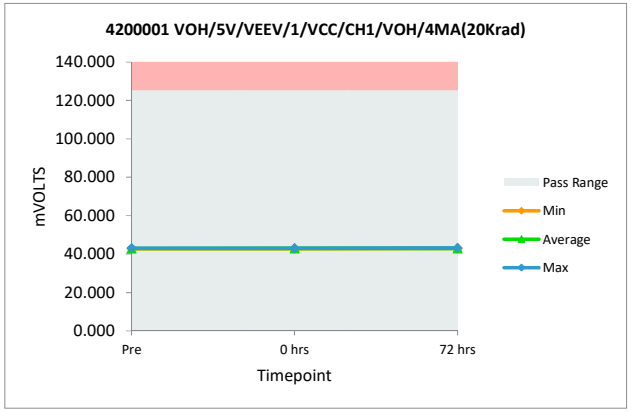
TID Report - HDR Annealing
TLV4H390MDYYTSEP

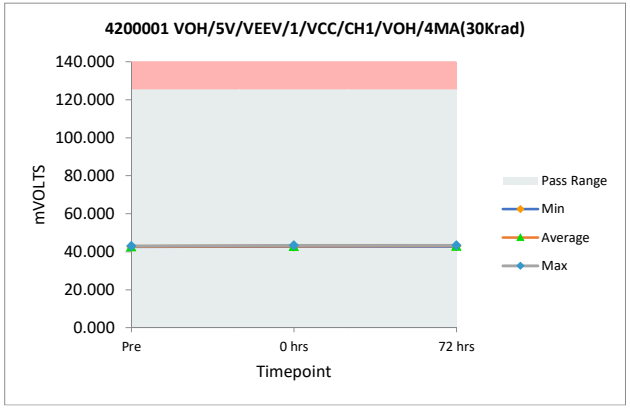
	4200001 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	42.435	42.559	42.534
0	2	42.850	42.667	42.674
20	3	43.034	43.107	42.972
20	4	42.823	42.947	42.894
20	5	42.715	42.729	42.910
20	6	43.132	42.988	43.128
20	7	42.822	43.105	42.898
20	8	42.992	43.123	43.180
30	15	42.845	42.921	42.885
30	16	42.646	42.852	42.940
30	17	43.036	43.339	43.332
30	18	42.683	42.783	42.983
30	19	42.811	43.141	43.109
30	20	42.995	43.277	43.331
	Max	43.132	43.339	43.332
	Average	42.844	42.967	42.984
	Min	42.435	42.559	42.534
	Std Dev	0.186	0.231	0.223

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	42.715	42.729	42.894
Average	42.920	43.000	42.997
Max	43.132	43.123	43.180
UL	125.000	125.000	125.000

30 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	42.646	42.783	42.885
Average	42.836	43.052	43.097
Max	43.036	43.339	43.332
UL	125.000	125.000	125.000





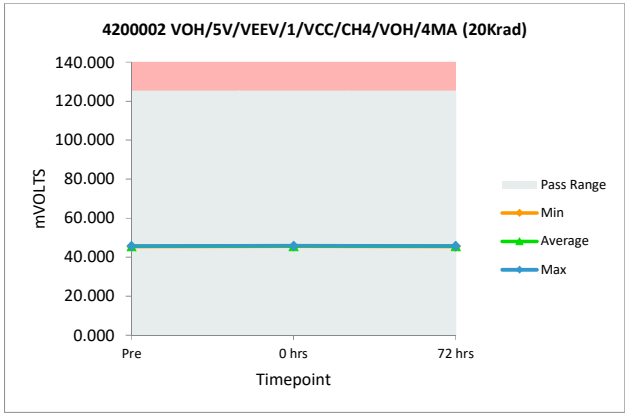
TID Report - HDR Annealing
TLV4H390MDYYTSEP

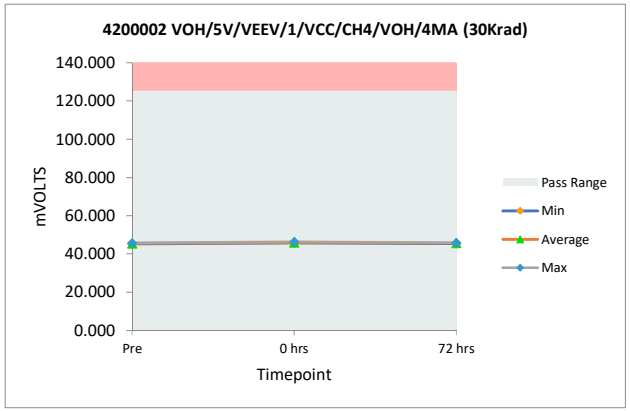
	4200002 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	45.248	45.802	45.172
0	2	45.449	45.266	45.624
20	3	45.536	45.725	45.649
20	4	45.481	45.702	45.434
20	5	45.411	45.582	45.626
20	6	45.692	45.743	45.766
20	7	45.576	45.724	45.633
20	8	45.747	45.956	45.798
30	15	45.346	45.871	45.796
30	16	45.323	45.685	45.656
30	17	45.654	46.387	45.853
30	18	45.497	45.869	45.562
30	19	45.741	46.228	45.649
30	20	45.789	45.896	45.851
	Max	45.789	46.387	45.853
	Average	45.535	45.817	45.648
	Min	45.248	45.266	45.172
	Std Dev	0.172	0.269	0.180

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	45.411	45.582	45.434
Average	45.574	45.739	45.651
Max	45.747	45.956	45.798
UL	125.000	125.000	125.000

30 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	45.323	45.685	45.562
Average	45.558	45.989	45.728
Max	45.789	46.387	45.853
UL	125.000	125.000	125.000





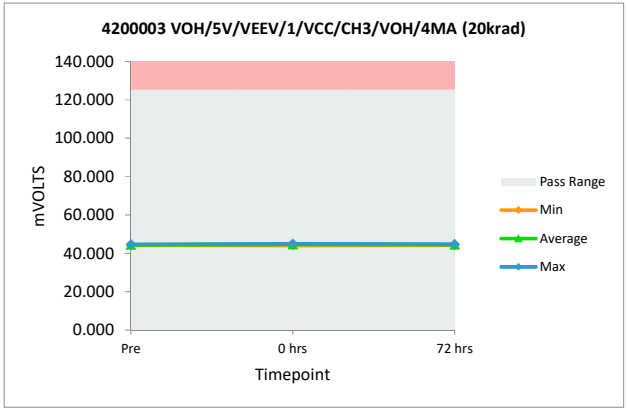
TID Report - HDR Annealing
TLV4H390MDYYTSEP

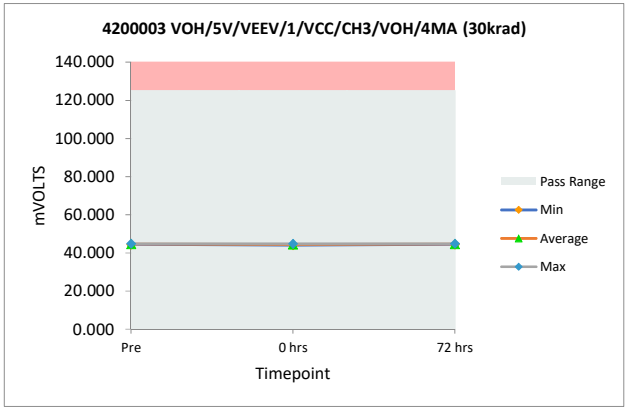
	4200003 VOH/5V/VEEV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	125	125
Min Limit	19.99999955	19.99999955

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	43.783	44.337	43.941
0	2	44.452	44.191	44.198
20	3	44.481	44.963	44.809
20	4	44.269	44.804	44.477
20	5	44.415	44.156	44.571
20	6	44.734	44.708	44.750
20	7	44.326	44.669	44.227
20	8	44.692	45.038	44.763
30	15	45.011	44.408	44.449
30	16	44.493	44.092	44.582
30	17	45.176	44.463	44.701
30	18	44.775	44.383	44.605
30	19	45.309	44.706	44.731
30	20	44.997	44.383	44.855
	Max	45.309	45.038	44.855
	Average	44.637	44.521	44.547
	Min	43.783	44.092	43.941
	Std Dev	0.405	0.297	0.266

20 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	44.269	44.156	44.227
Average	44.486	44.723	44.600
Max	44.734	45.038	44.809
UL	125.000	125.000	125.000

30 Krad	Pre	0 hrs	72 hrs
LL	20.000	20.000	20.000
Min	44.449	44.092	44.449
Average	44.654	44.406	44.654
Max	44.855	44.706	44.855
UL	125.000	125.000	125.000



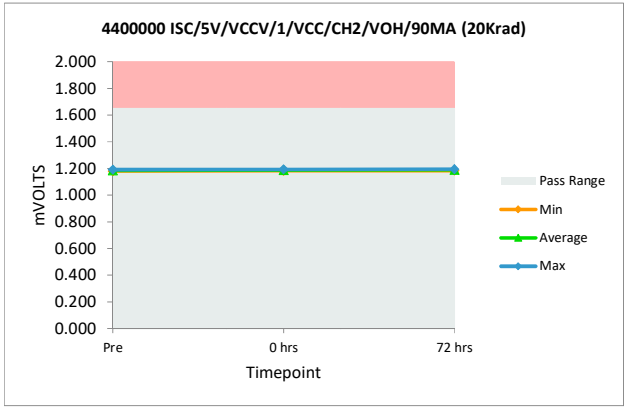


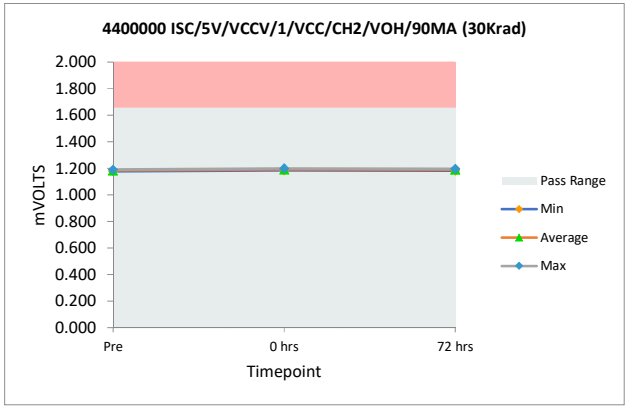
TID Report - HDR Annealing
TLV4H390MDYYTSEP

	4400000 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.174	1.175	1.176
0	2	1.179	1.181	1.181
20	3	1.192	1.191	1.194
20	4	1.181	1.183	1.184
20	5	1.182	1.184	1.186
20	6	1.189	1.192	1.194
20	7	1.180	1.183	1.184
20	8	1.189	1.193	1.194
30	15	1.182	1.188	1.188
30	16	1.178	1.185	1.184
30	17	1.184	1.192	1.191
30	18	1.181	1.186	1.187
30	19	1.188	1.197	1.194
30	20	1.190	1.199	1.196
	Max	1.192	1.199	1.196
	Average	1.183	1.188	1.188
	Min	1.174	1.175	1.176
	Std Dev	0.005	0.007	0.006

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.180	1.183	1.184
Average	1.185	1.188	1.189
Max	1.192	1.193	1.194
UL	1.650	1.650	1.650
20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.178	1.185	1.184
Average	1.184	1.191	1.190
Max	1.190	1.199	1.196
UL	1.650	1.650	1.650



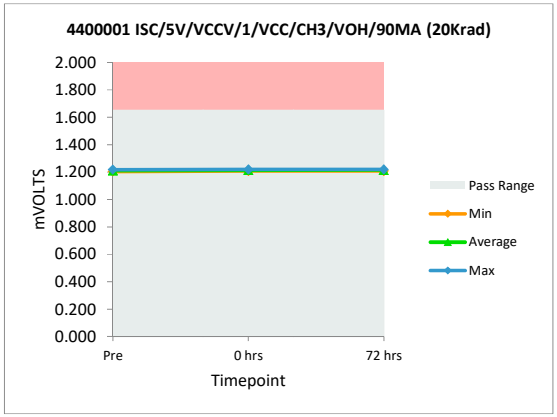


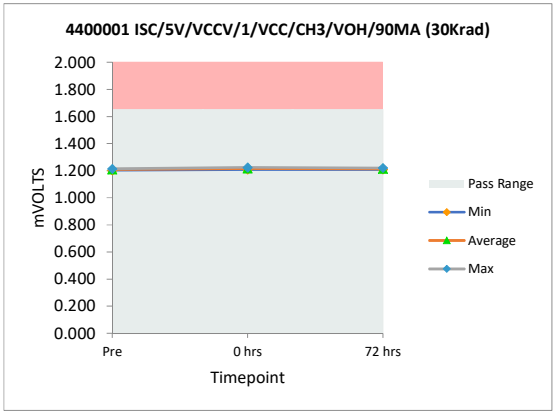
TID Report - HDR Annealing
TLV4H390MDYYTSEP

	4400001 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.198	1.199	1.200
0	2	1.206	1.207	1.207
20	3	1.217	1.217	1.219
20	4	1.208	1.211	1.211
20	5	1.207	1.209	1.210
20	6	1.215	1.218	1.219
20	7	1.204	1.208	1.208
20	8	1.214	1.218	1.219
30	15	1.208	1.215	1.212
30	16	1.204	1.211	1.209
30	17	1.210	1.218	1.216
30	18	1.204	1.210	1.210
30	19	1.214	1.224	1.220
30	20	1.212	1.223	1.218
	Max	1.217	1.224	1.220
	Average	1.209	1.213	1.213
	Min	1.198	1.199	1.200
	Std Dev	0.005	0.007	0.006

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.204	1.208	1.208
Average	1.211	1.213	1.214
Max	1.217	1.218	1.219
UL	1.650	1.650	1.650
30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.204	1.210	1.209
Average	1.209	1.217	1.214
Max	1.214	1.224	1.220
UL	1.650	1.650	1.650





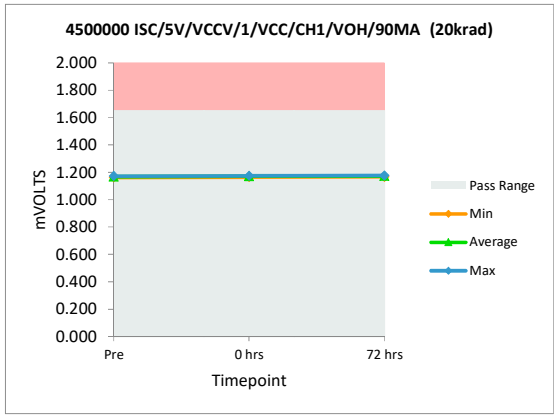
TID Report - HDR Annealing
TLV4H390MDYYTSEP

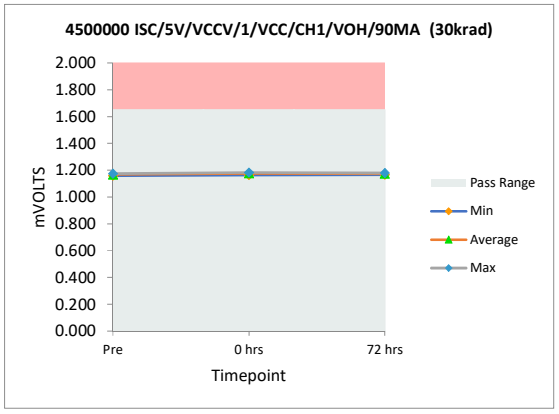
	4500000 ISC/5V/VCCV/1/VCC/	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.157	1.157	1.158
0	2	1.160	1.162	1.163
20	3	1.172	1.172	1.176
20	4	1.163	1.166	1.167
20	5	1.165	1.167	1.169
20	6	1.172	1.175	1.176
20	7	1.166	1.169	1.170
20	8	1.171	1.175	1.176
30	15	1.162	1.168	1.168
30	16	1.161	1.167	1.167
30	17	1.173	1.180	1.179
30	18	1.160	1.165	1.166
30	19	1.168	1.178	1.175
30	20	1.174	1.183	1.180
	Max	1.174	1.183	1.180
	Average	1.166	1.170	1.171
	Min	1.157	1.157	1.158
	Std Dev	0.006	0.007	0.006

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.163	1.166	1.167
Average	1.168	1.171	1.172
Max	1.172	1.175	1.176
UL	1.650	1.650	1.650

30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.160	1.165	1.166
Average	1.168	1.176	1.175
Max	1.174	1.183	1.180
UL	1.650	1.650	1.650





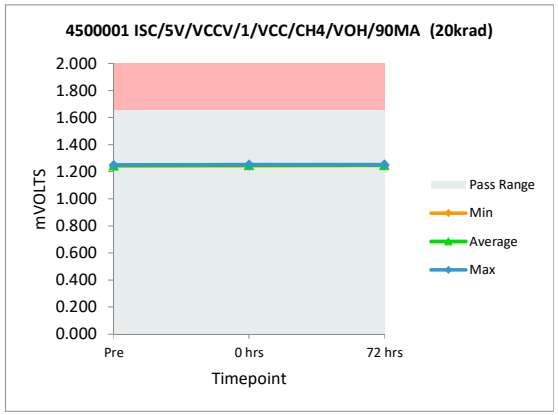
TID Report - HDR Annealing
TLV4H390MDYYTSEP

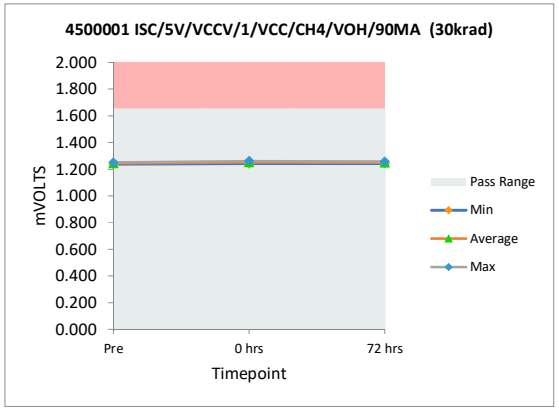
	4500001 ISC/5V/VCCV/1/VCC/(	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	1.649999976	1.649999976
Min Limit	0.699999988	0.699999988

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.234	1.234	1.236
0	2	1.239	1.241	1.241
20	3	1.250	1.250	1.253
20	4	1.243	1.245	1.245
20	5	1.243	1.245	1.246
20	6	1.250	1.253	1.254
20	7	1.243	1.246	1.247
20	8	1.248	1.252	1.253
30	15	1.242	1.249	1.247
30	16	1.238	1.246	1.244
30	17	1.248	1.256	1.253
30	18	1.237	1.242	1.243
30	19	1.245	1.256	1.252
30	20	1.250	1.261	1.256
	Max	1.250	1.261	1.256
	Average	1.244	1.248	1.248
	Min	1.234	1.234	1.236
	Std Dev	0.005	0.007	0.006

20 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.243	1.245	1.245
Average	1.246	1.248	1.250
Max	1.250	1.253	1.254
UL	1.650	1.650	1.650

30 Krad	Pre	0 hrs	72 hrs
LL	0.700	0.700	0.700
Min	1.237	1.242	1.243
Average	1.243	1.252	1.249
Max	1.250	1.261	1.256
UL	1.650	1.650	1.650





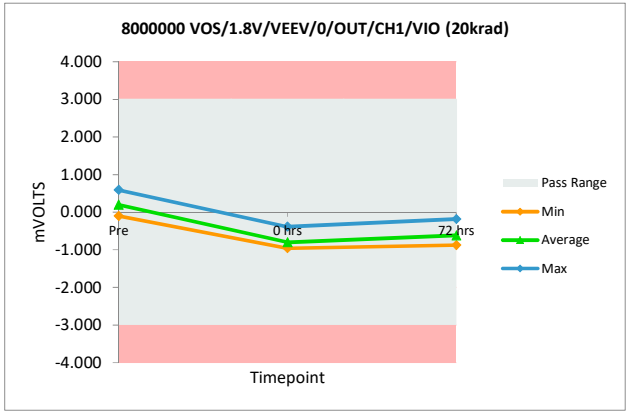
TID Report - HDR Annealing
TLV4H390MDYYTSEP

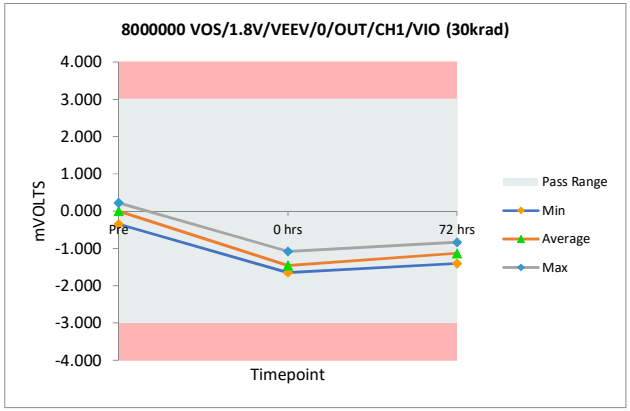
	8000000 VOS/1.8V/VEEV/0/OU	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.469	0.428	0.427
0	2	-0.183	-0.183	-0.183
20	3	0.387	-0.713	-0.468
20	4	0.591	-0.387	-0.183
20	5	0.061	-0.957	-0.753
20	6	-0.102	-0.957	-0.875
20	7	0.224	-0.835	-0.631
20	8	0.020	-0.957	-0.794
30	15	-0.346	-1.650	-1.404
30	16	0.061	-1.405	-1.119
30	17	-0.143	-1.609	-1.241
30	18	0.224	-1.080	-0.834
30	19	0.061	-1.527	-1.160
30	20	0.143	-1.487	-1.038
Max		0.591	0.428	0.427
Average		0.105	-0.951	-0.733
Min		-0.346	-1.650	-1.404
Std Dev		0.260	0.598	0.496

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.102	-0.957	-0.875
Average	0.197	-0.801	-0.617
Max	0.591	-0.387	-0.183
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.346	-1.650	-1.404
Average	0.000	-1.460	-1.133
Max	0.224	-1.080	-0.834
UL	3.000	3.000	3.000





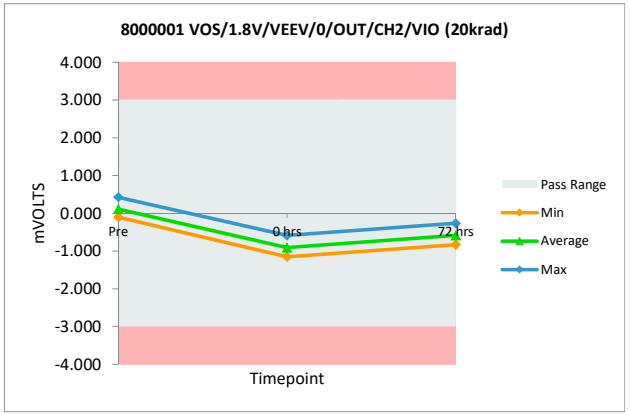
TID Report - HDR Annealing
TLV4H390MDYYTSEP

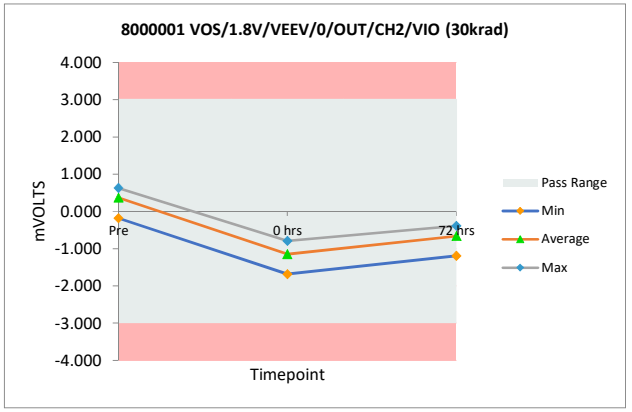
	8000001 VOS/1.8V/VEEV/0/OU	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.061	0.101	0.142
0	2	0.223	0.223	0.263
20	3	0.182	-0.789	-0.506
20	4	-0.061	-1.154	-0.829
20	5	0.304	-0.830	-0.465
20	6	0.425	-0.587	-0.263
20	7	-0.101	-1.113	-0.789
20	8	-0.101	-0.992	-0.667
30	15	0.628	-0.830	-0.384
30	16	0.506	-0.992	-0.506
30	17	0.628	-0.789	-0.425
30	18	-0.182	-1.681	-1.193
30	19	0.587	-1.194	-0.546
30	20	0.061	-1.397	-0.910
	Max	0.628	0.223	0.263
	Average	0.226	-0.859	-0.506
	Min	-0.182	-1.681	-1.193
	Std Dev	0.291	0.515	0.386

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.101	-1.154	-0.829
Average	0.108	-0.911	-0.587
Max	0.425	-0.587	-0.263
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.182	-1.681	-1.193
Average	0.371	-1.147	-0.661
Max	0.628	-0.789	-0.384
UL	3.000	3.000	3.000





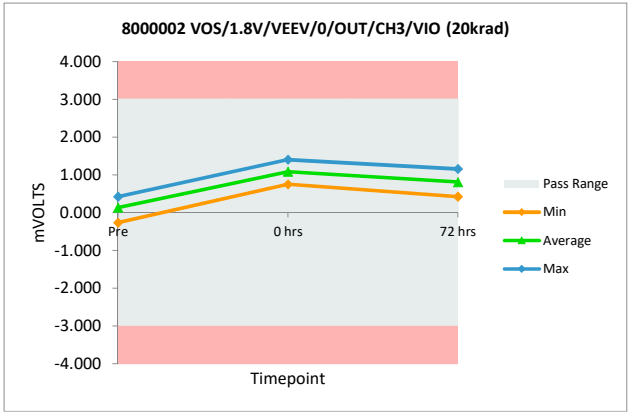
TID Report - HDR Annealing
TLV4H390MDYYTSEP

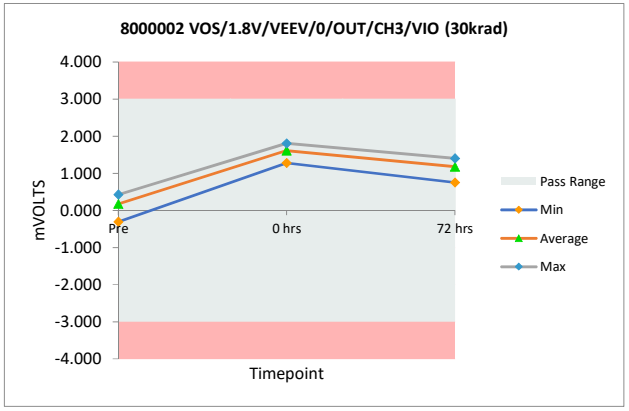
	8000002 VOS/1.8V/VEEV/0/OU	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.264	0.224	0.223
0	2	0.549	0.468	0.508
20	3	-0.264	0.752	0.427
20	4	0.427	1.403	1.158
20	5	0.183	1.118	0.874
20	6	0.102	1.037	0.752
20	7	0.020	0.956	0.711
20	8	0.346	1.240	0.955
30	15	0.102	1.525	1.158
30	16	0.264	1.688	1.239
30	17	0.346	1.810	1.361
30	18	0.427	1.770	1.402
30	19	-0.305	1.281	0.752
30	20	0.224	1.606	1.158
	Max	0.549	1.810	1.402
	Average	0.192	1.206	0.906
	Min	-0.305	0.224	0.223
	Std Dev	0.248	0.483	0.361

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.264	0.752	0.427
Average	0.136	1.084	0.813
Max	0.427	1.403	1.158
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.305	1.281	0.752
Average	0.176	1.613	1.178
Max	0.427	1.810	1.402
UL	3.000	3.000	3.000



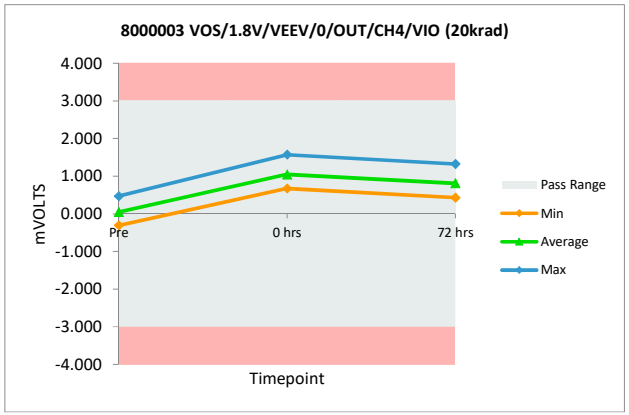


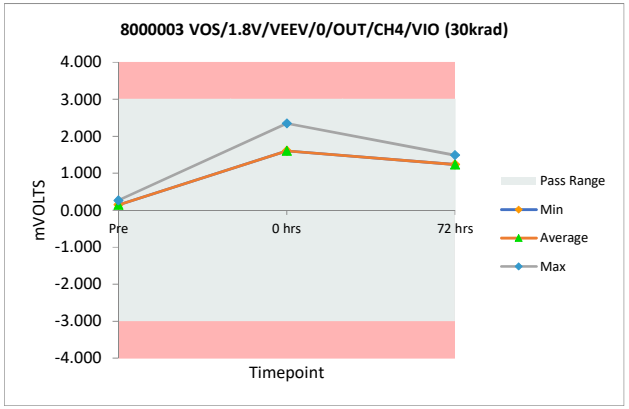
TID Report - HDR Annealing
TLV4H390MDYYTSEP

	8000003 VOS/1.8V/VEEV/0/OU	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.102	0.102	0.183
0	2	0.061	0.020	0.061
20	3	0.469	1.570	1.324
20	4	0.265	1.203	1.039
20	5	-0.265	0.673	0.428
20	6	-0.306	0.673	0.428
20	7	0.224	1.244	0.957
20	8	-0.102	0.918	0.672
30	15	0.224	1.570	1.324
30	16	0.265	1.692	1.365
30	17	0.224	2.345	1.487
30	18	-0.102	1.285	1.039
30	19	0.061	1.081	0.917
30	20	0.184	1.652	1.283
	Max	0.469	2.345	1.487
	Average	0.093	1.145	0.893
	Min	-0.306	0.020	0.061
	Std Dev	0.220	0.635	0.466

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.306	0.673	0.428
Average	0.048	1.047	0.808
Max	0.469	1.570	1.324
UL	3.000	3.000	3.000
30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.102	1.081	0.917
Average	0.143	1.604	1.236
Max	0.265	2.345	1.487
UL	3.000	3.000	3.000





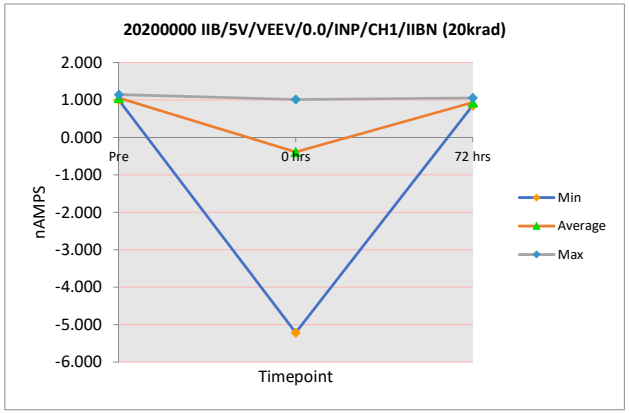
TID Report - HDR Annealing
TLV4H390MDYYTSEP

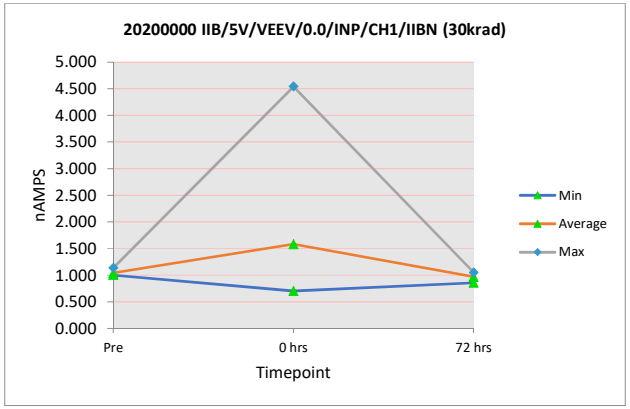
	20200000 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.966	1.292	0.993
0	2	0.993	1.153	1.157
20	3	1.027	0.745	0.934
20	4	1.000	1.015	1.057
20	5	1.145	0.652	0.924
20	6	1.040	0.173	0.951
20	7	1.040	-5.214	0.851
20	8	1.067	0.294	0.887
30	15	1.000	1.101	0.993
30	16	1.057	0.703	1.045
30	17	1.027	1.013	0.878
30	18	1.003	4.540	0.858
30	19	1.027	1.170	1.052
30	20	1.138	0.964	0.991
	Max	1.145	4.540	1.157
	Average	1.038	0.686	0.969
	Min	0.966	-5.214	0.851
	Std Dev	0.051	1.988	0.089

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	1.000	-5.214	0.851
Average	1.053	-0.389	0.934
Max	1.145	1.015	1.057
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	1.000	0.703	0.858
Average	1.042	1.582	0.969
Max	1.138	4.540	1.052
UL			





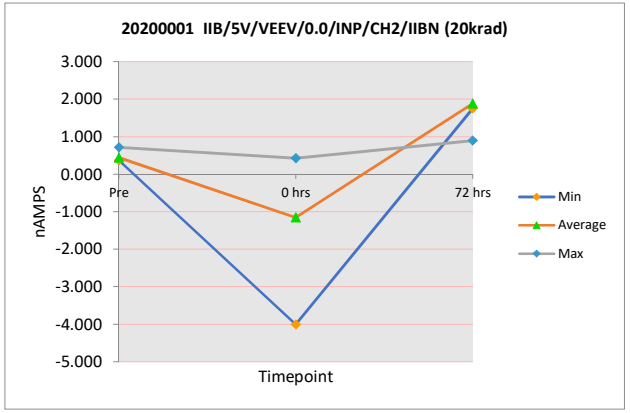
TID Report - HDR Annealing
TLV4H390MDYYTSEP

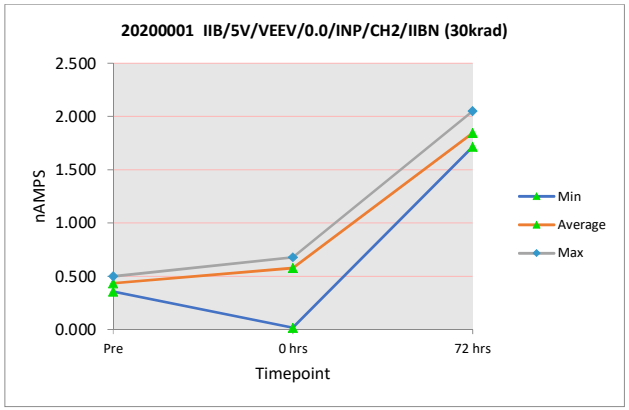
	20200001 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.344	0.830	1.947
0	2	0.459	0.820	2.094
20	3	0.440	-4.006	1.915
20	4	0.469	0.570	2.050
20	5	0.486	0.678	1.917
20	6	0.364	-0.800	1.834
20	7	0.376	-3.014	1.822
20	8	0.499	-0.368	1.750
30	15	0.430	0.732	1.949
30	16	0.474	0.614	1.900
30	17	0.356	0.702	1.767
30	18	0.430	0.016	1.713
30	19	0.398	0.761	1.942
30	20	0.518	0.641	1.799
Max		0.518	0.830	2.094
Average		0.432	-0.130	1.886
Min		0.344	-4.006	1.713
Std Dev		0.056	1.525	0.111

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	0.364	-4.006	1.750
Average	0.439	-1.157	1.881
Max	0.499	0.678	2.050
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	0.356	0.016	1.713
Average	0.435	0.578	1.845
Max	0.518	0.761	1.949
UL			





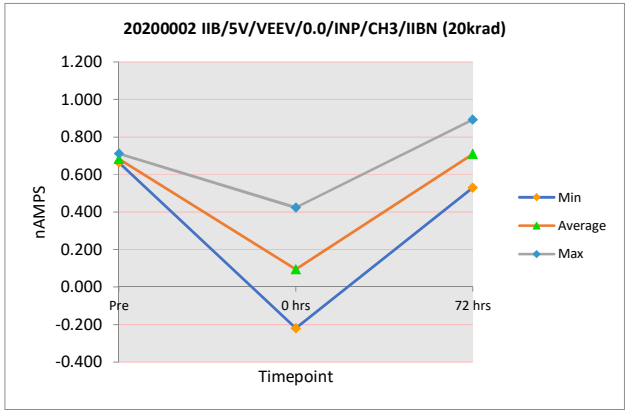
TID Report - HDR Annealing
TLV4H390MDYYTSEP

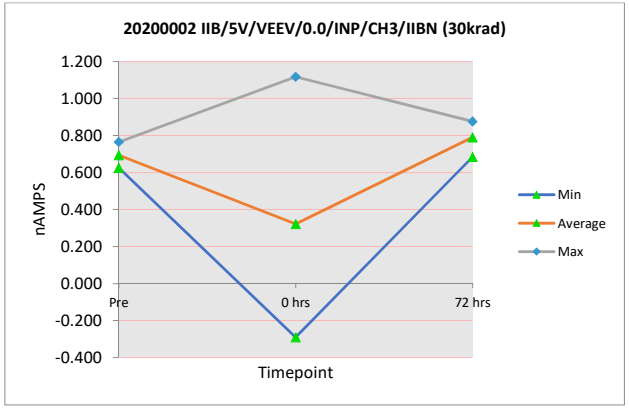
	20200002 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.728	0.218	0.952
0	2	0.758	-0.136	1.043
20	3	0.669	-0.099	0.893
20	4	0.672	0.424	0.529
20	5	0.711	0.146	0.733
20	6	0.706	0.156	0.689
20	7	0.682	-0.220	0.763
20	8	0.664	0.161	0.650
30	15	0.677	0.498	0.876
30	16	0.625	-0.291	0.780
30	17	0.689	-0.040	0.829
30	18	0.711	1.117	0.684
30	19	0.691	0.308	0.819
30	20	0.765	0.335	0.755
	Max	0.765	1.117	1.043
	Average	0.696	0.184	0.785
	Min	0.625	-0.291	0.529
	Std Dev	0.037	0.361	0.131

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	0.664	-0.220	0.529
Average	0.684	0.095	0.709
Max	0.711	0.424	0.893
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	0.625	-0.291	0.684
Average	0.693	0.321	0.790
Max	0.765	1.117	0.876
UL			





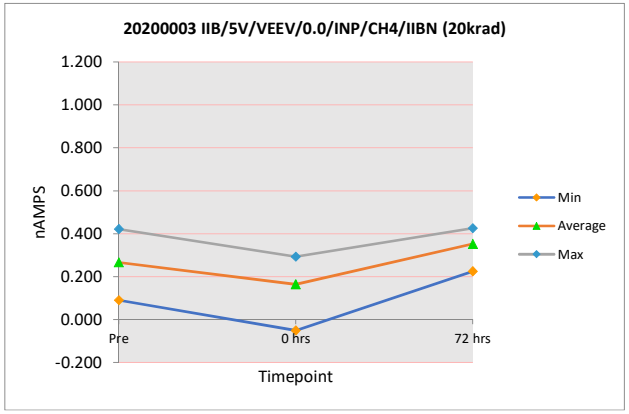
TID Report - HDR Annealing
TLV4H390MDYYTSEP

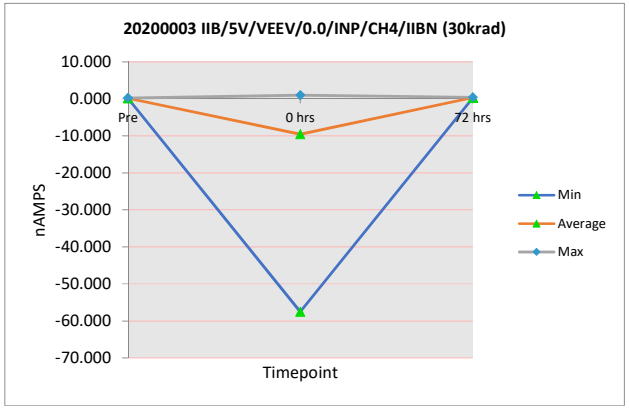
	20200003 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.350	-0.098	0.023
0	2	0.237	-0.022	0.190
20	3	0.180	0.209	0.342
20	4	0.269	0.020	0.372
20	5	0.089	0.293	0.096
20	6	0.421	0.263	0.237
20	7	0.298	-0.051	-0.031
20	8	0.340	0.249	0.180
30	15	0.094	0.219	0.426
30	16	0.121	0.256	0.406
30	17	0.212	-57.513	0.374
30	18	0.183	0.998	0.224
30	19	0.215	-0.687	0.313
30	20	0.153	-0.567	0.372
	Max	0.421	0.998	0.426
	Average	0.226	-4.031	0.252
	Min	0.089	-57.513	-0.031
	Std Dev	0.100	15.398	0.146

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	0.089	-0.051	0.224
Average	0.266	0.164	0.352
Max	0.421	0.293	0.426
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	0.094	-57.513	0.224
Average	0.163	-9.549	0.352
Max	0.215	0.998	0.426
UL			





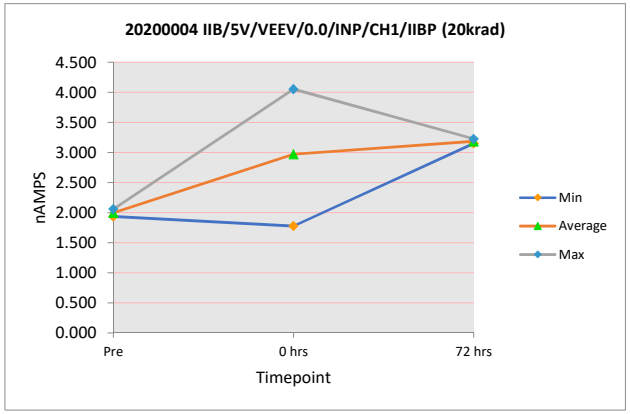
TID Report - HDR Annealing
TLV4H390MDYYTSEP

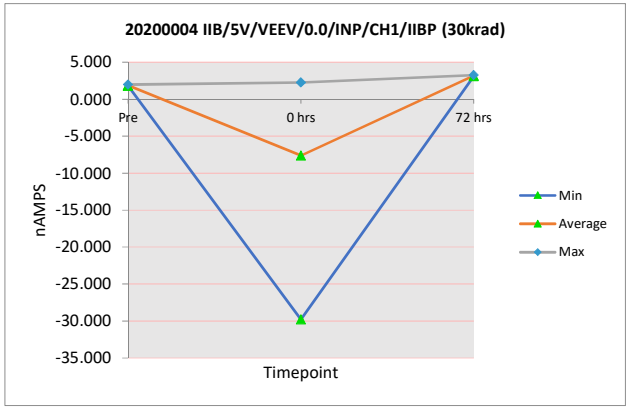
	20200004 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	1.893	3.648	3.218
0	2	1.848	3.734	3.290
20	3	1.949	4.053	3.179
20	4	2.060	3.727	3.204
20	5	1.937	2.931	3.169
20	6	1.998	1.823	3.152
20	7	1.986	1.776	3.223
20	8	2.052	3.508	3.186
30	15	1.902	-4.902	3.196
30	16	1.893	-2.188	3.108
30	17	1.785	-29.789	3.260
30	18	1.853	-1.106	3.120
30	19	1.979	2.272	3.245
30	20	1.848	-10.051	3.179
	Max	2.060	4.053	3.290
	Average	1.927	-1.469	3.195
	Min	1.785	-29.789	3.108
	Std Dev	0.081	9.108	0.051

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	1.937	1.776	3.152
Average	1.997	2.970	3.186
Max	2.060	4.053	3.223
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	1.785	-29.789	3.108
Average	1.877	-7.627	3.185
Max	1.979	2.272	3.260
UL			





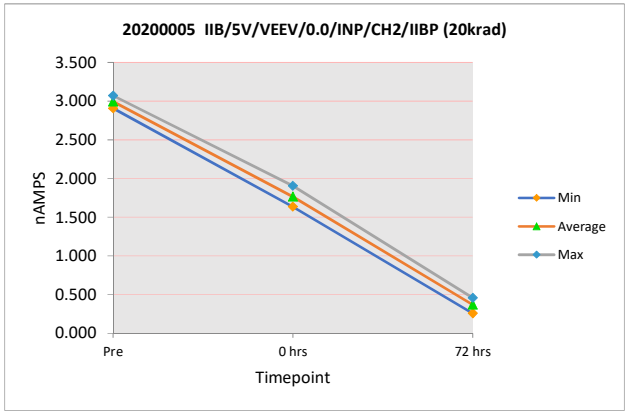
TID Report - HDR Annealing
TLV4H390MDYYTSEP

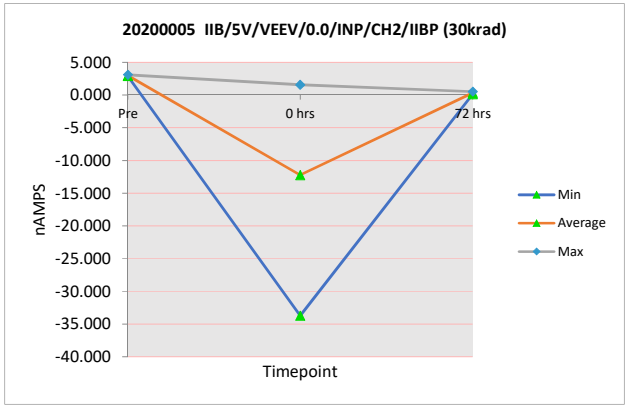
	20200005 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	2.883	1.934	0.549
0	2	2.923	1.627	0.485
20	3	2.918	1.750	0.458
20	4	2.955	1.759	0.370
20	5	3.058	1.762	0.404
20	6	2.906	1.637	0.328
20	7	3.070	1.772	0.409
20	8	3.050	1.904	0.257
30	15	3.085	-0.870	0.245
30	16	2.888	-18.009	0.120
30	17	2.879	-21.073	0.326
30	18	2.960	1.558	0.343
30	19	2.962	-33.718	0.338
30	20	2.974	-1.261	0.508
	Max	3.085	1.934	0.549
	Average	2.965	-4.231	0.367
	Min	2.879	-33.718	0.120
	Std Dev	0.073	11.383	0.115

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	2.906	1.637	0.257
Average	2.993	1.764	0.371
Max	3.070	1.904	0.458
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	2.879	-33.718	0.120
Average	2.958	-12.229	0.313
Max	3.085	1.558	0.508
UL			





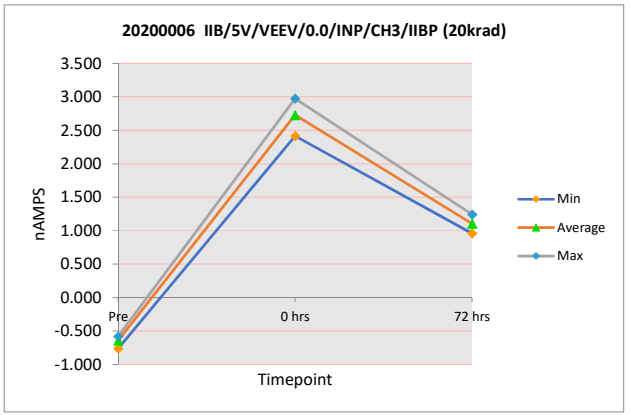
TID Report - HDR Annealing
TLV4H390MDYYTSEP

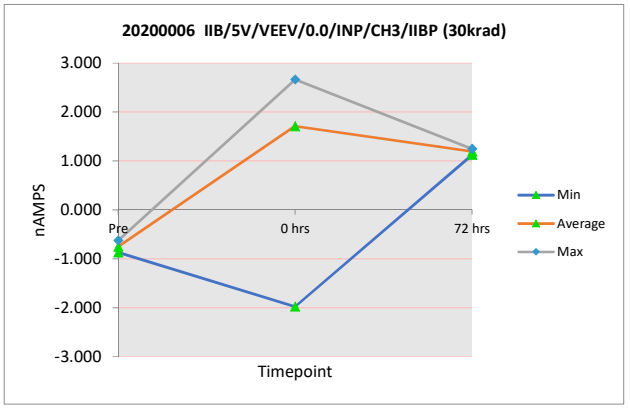
	20200006 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	-0.648	2.073	1.072
0	2	-0.638	2.851	1.106
20	3	-0.621	2.974	1.118
20	4	-0.670	2.414	1.241
20	5	-0.761	2.729	1.069
20	6	-0.582	2.716	1.224
20	7	-0.597	2.812	0.959
20	8	-0.624	2.729	1.013
30	15	-0.688	2.350	1.126
30	16	-0.869	2.667	1.226
30	17	-0.801	2.537	1.246
30	18	-0.781	-1.980	1.204
30	19	-0.624	2.380	1.192
30	20	-0.761	2.316	1.172
Max		-0.582	2.974	1.246
Average		-0.690	2.255	1.141
Min		-0.869	-1.980	0.959
Std Dev		0.088	1.244	0.090

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	-0.761	2.414	0.959
Average	-0.643	2.729	1.104
Max	-0.582	2.974	1.241
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	-0.869	-1.980	1.126
Average	-0.754	1.712	1.194
Max	-0.624	2.667	1.246
UL			





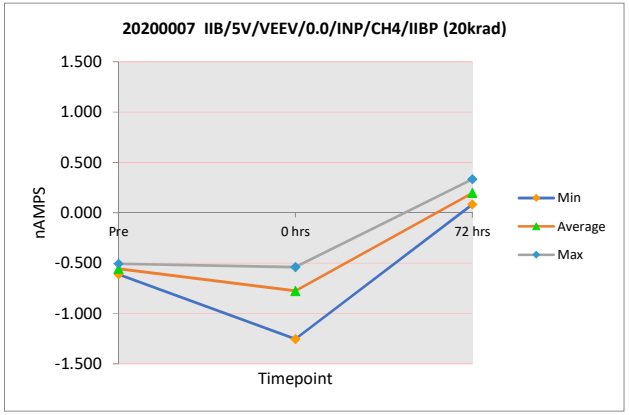
TID Report - HDR Annealing
TLV4H390MDYYTSEP

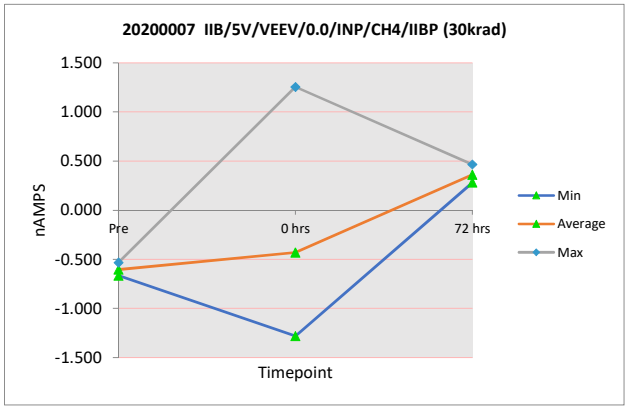
	20200007 IIB/5V/VEEV/0.0/IN	
Test Site		
Tester		
Test Number		
Unit	nAMPS	nAMPS
Max Limit		
Min Limit		

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	-0.665	-0.184	-0.970
0	2	-0.545	-0.695	0.176
20	3	-0.508	-1.254	0.145
20	4	-0.574	-0.587	0.307
20	5	-0.525	-0.670	0.125
20	6	-0.530	-0.766	0.083
20	7	-0.594	-0.842	0.334
20	8	-0.611	-0.540	0.186
30	15	-0.533	-0.643	0.434
30	16	-0.628	-1.281	0.282
30	17	-0.665	-0.589	0.466
30	18	-0.596	1.256	0.326
30	19	-0.547	-0.751	0.299
30	20	-0.655	-0.579	0.361
	Max	-0.508	1.256	0.466
	Average	-0.584	-0.580	0.182
	Min	-0.665	-1.281	-0.970
	Std Dev	0.055	0.597	0.351

20 Krad	Pre	0 hrs	72 hrs
LL			
Min	-0.611	-1.254	0.083
Average	-0.557	-0.777	0.197
Max	-0.508	-0.540	0.334
UL			

30 Krad	Pre	0 hrs	72 hrs
LL			
Min	-0.665	-1.281	0.282
Average	-0.604	-0.431	0.361
Max	-0.533	1.256	0.466
UL			





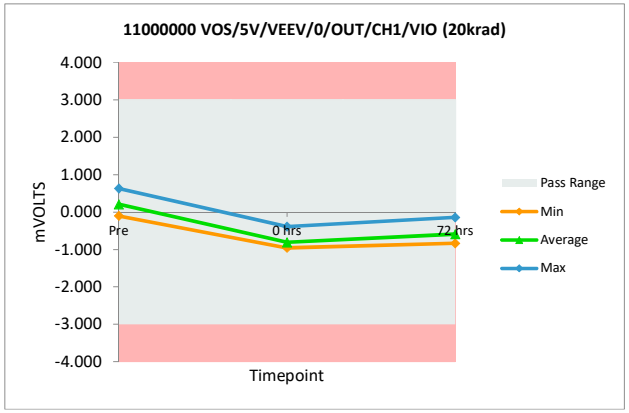
TID Report HDR Annealing VOS3

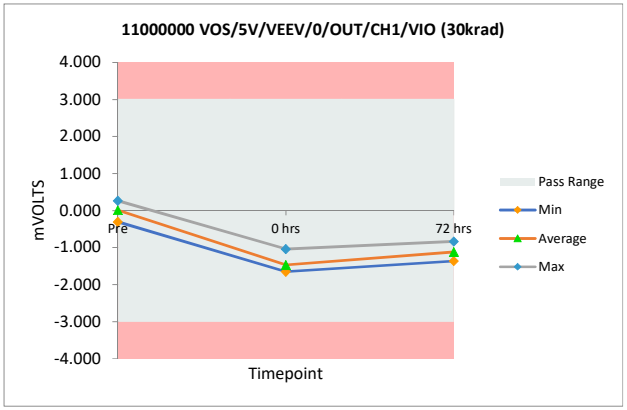
	11000000 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.469	0.428	0.468
0	2	-0.183	-0.183	-0.183
20	3	0.428	-0.754	-0.468
20	4	0.632	-0.387	-0.142
20	5	0.061	-0.957	-0.753
20	6	-0.102	-0.957	-0.834
20	7	0.224	-0.835	-0.590
20	8	0.020	-0.957	-0.753
30	15	-0.306	-1.650	-1.363
30	16	0.061	-1.446	-1.119
30	17	-0.143	-1.609	-1.241
30	18	0.265	-1.039	-0.834
30	19	0.020	-1.527	-1.119
30	20	0.183	-1.527	-1.038
	Max	0.632	0.428	0.468
	Average	0.116	-0.957	-0.712
	Min	-0.306	-1.650	-1.363
	Std Dev	0.268	0.601	0.500

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.102	-0.957	-0.834
Average	0.211	-0.808	-0.590
Max	0.632	-0.387	-0.142
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.306	-1.650	-1.363
Average	0.014	-1.466	-1.119
Max	0.265	-1.039	-0.834
UL	3.000	3.000	3.000





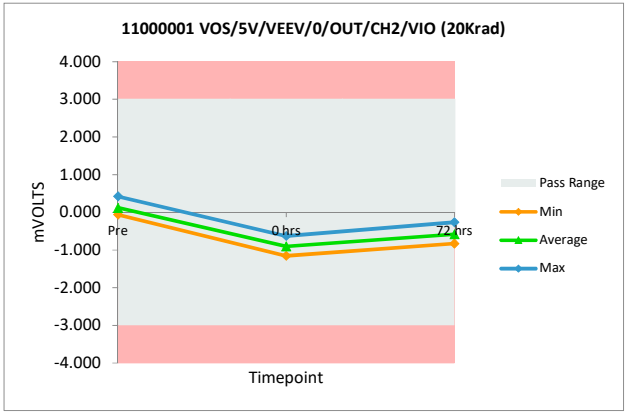
TID Report HDR Annealing VOS3

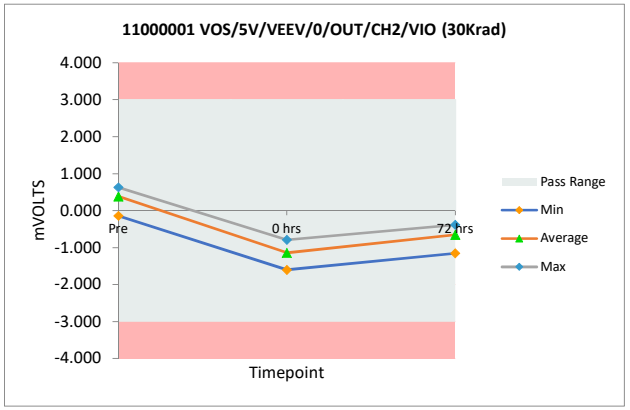
	11000001 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.101	0.101	0.142
0	2	0.182	0.223	0.222
20	3	0.182	-0.789	-0.506
20	4	-0.061	-1.154	-0.829
20	5	0.304	-0.830	-0.465
20	6	0.425	-0.628	-0.263
20	7	-0.061	-1.073	-0.748
20	8	-0.061	-0.951	-0.667
30	15	0.587	-0.870	-0.425
30	16	0.506	-1.032	-0.506
30	17	0.628	-0.789	-0.384
30	18	-0.142	-1.600	-1.153
30	19	0.628	-1.194	-0.506
30	20	0.101	-1.356	-0.951
	Max	0.628	0.223	0.222
	Average	0.237	-0.853	-0.503
	Min	-0.142	-1.600	-1.153
	Std Dev	0.276	0.499	0.376

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.061	-1.154	-0.829
Average	0.122	-0.904	-0.580
Max	0.425	-0.628	-0.263
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.142	-1.600	-1.153
Average	0.385	-1.140	-0.654
Max	0.628	-0.789	-0.384
UL	3.000	3.000	3.000





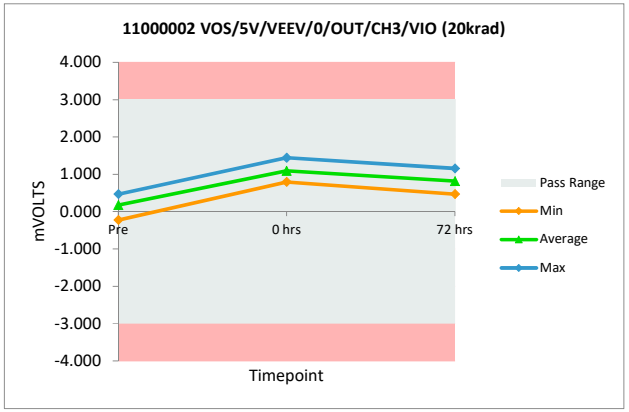
TID Report HDR Annealing VOS3

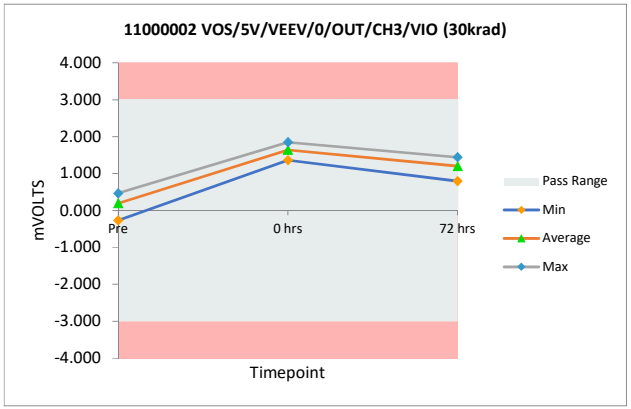
	11000002 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.264	0.224	0.223
0	2	0.549	0.508	0.508
20	3	-0.224	0.793	0.467
20	4	0.468	1.444	1.158
20	5	0.183	1.078	0.874
20	6	0.142	0.996	0.792
20	7	0.102	0.996	0.711
20	8	0.387	1.240	0.914
30	15	0.102	1.566	1.158
30	16	0.264	1.647	1.239
30	17	0.387	1.850	1.402
30	18	0.468	1.810	1.443
30	19	-0.264	1.362	0.792
30	20	0.224	1.606	1.158
	Max	0.549	1.850	1.443
	Average	0.218	1.223	0.917
	Min	-0.264	0.224	0.223
	Std Dev	0.241	0.486	0.363

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.224	0.793	0.467
Average	0.176	1.091	0.819
Max	0.468	1.444	1.158
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.264	1.362	0.792
Average	0.197	1.640	1.199
Max	0.468	1.850	1.443
UL	3.000	3.000	3.000





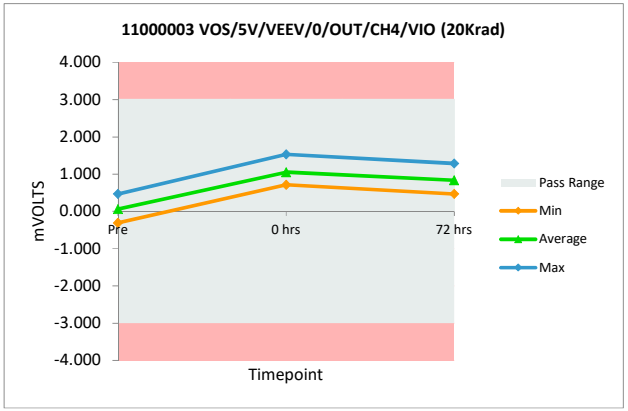
TID Report HDR Annealing VOS3

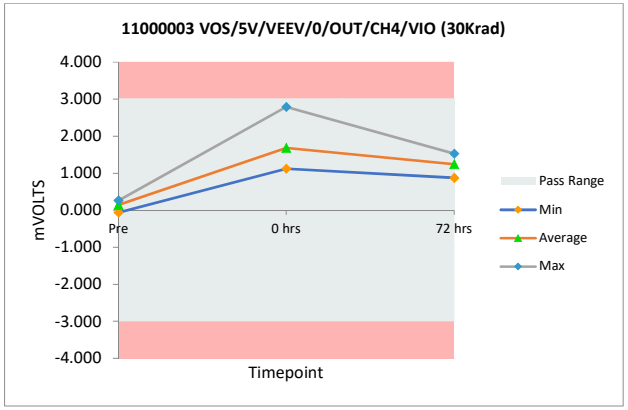
	11000003 VOS/5V/VEEV/0/OUT	
Test Site		
Tester		
Test Number		
Unit	mVOLTS	mVOLTS
Max Limit	3	3
Min Limit	-3	-3

Krads	Serial #	HDR_PRE	HDR_POST	Anneal 72 hrs
0	1	0.102	0.143	0.143
0	2	0.020	0.020	0.061
20	3	0.469	1.529	1.283
20	4	0.265	1.203	1.039
20	5	-0.265	0.714	0.509
20	6	-0.306	0.714	0.469
20	7	0.224	1.244	0.998
20	8	-0.020	0.918	0.713
30	15	0.224	1.570	1.324
30	16	0.265	1.692	1.406
30	17	0.265	2.793	1.528
30	18	-0.061	1.285	1.080
30	19	0.020	1.121	0.876
30	20	0.143	1.652	1.243
	Max	0.469	2.793	1.528
	Average	0.096	1.186	0.905
	Min	-0.306	0.020	0.061
	Std Dev	0.215	0.696	0.465

20 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.306	0.714	0.469
Average	0.061	1.053	0.835
Max	0.469	1.529	1.283
UL	3.000	3.000	3.000

30 Krad	Pre	0 hrs	72 hrs
LL	-3.000	-3.000	-3.000
Min	-0.061	1.121	0.876
Average	0.143	1.686	1.243
Max	0.265	2.793	1.528
UL	3.000	3.000	3.000





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