



ABSTRACT

This report covers the radiation characterization results of the SN54SC8T139-SEP, radiation tolerant dual 2 to 4-bit decoders/demultiplexers. The study was done to determine Total Ionizing Dose (TID) effects under high dose rate (HDR) to 30krad(Si). Radiation Lot Acceptance Testing (RLAT) will be performed using five units at a dose level of 30krad(Si) per MIL-STD-883 TM 1019. All future wafer lots will be tested under the same conditions. The device is manufactured in pure CMOS process. HDR TID response is the worst case. TID HDR characterization was performed per TM 1019.

The SN54SC8T139-SEP is packaged in a space enhanced plastic package for low outgassing characteristics and is Single Event Latch-Up (SEL) immune up to 50MeV-cm²/mg, which makes the device an option for low Earth orbit space applications. Single Event Transient (SET) data is also provided in the Single Event Effects Radiation Report.

For full total ionizing dose characterization results, see [SN54SC8T138-SEP Total Ionizing Dose \(TID\) Report](#).

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1 Device Information

The SN54SC8T139-SEP contains two two-to-four decoders with one active low output strobe G. When the outputs of one channel are gated by the strobe input, they are all forced into the high state. When the outputs are not disabled by the strobe input, only the selected output is low while all others are high.

1.1 Device Details

Table 1-1 lists the device information used for TID HDR characterization and qualification.

Table 1-1. Device and Exposure Details

TID HDR Details: Up To 30krad(Si)	
TI Device Number	SN54SC8T139-SEP
VID Number	V62/25623
Package	16-pin PW (TSSOP)
Technology	LBC9
Die Lot Number	3282530RFB
A/T Lot Number and Date Code	4165170ML4 / 42C6SCK
Quantity Tested	6 irradiated devices + 4 control
Lot Accept or Reject	Devices passed 30krad(Si)
HDR Radiation Facility	Texas Instruments CLAB in Dallas, Texas
HDR Dose Level	30krad(Si)
HDR Dose Rate	174.54rad(Si)/s ionizing radiation
Effective Dose Rate 30krad(Si) with 72 hour Anneal	115.74mrad(Si)/s ionizing radiation
HDR Radiation Source	Gammacell 220 Excel (GC-220E) Co-60
Irradiation Temperature	Ambient, room temperature

2 Total Dose Test Setup

2.1 Test Overview

The SN54SC8T139-SEP samples were irradiated at a high dose rate of 174.54rad(Si)/s up to 30krad(Si) (115.74mrad(Si)/s effective does rate for 30krad(Si) with 72 hour anneal) and then put through full electrical parametric testing on the production Automated Test Equipment (ATE). The samples were functional and passed all electrical parametric tests with readings within data sheet electrical specification limits.

2.2 Test Description and Facilities

The SN54SC8T139-SEP HDR exposure was performed on biased devices in a Co-60 gamma cell at TI facility in Dallas, Texas. The un-attenuated dose rate of this cell is 174.54rads(Si)/s (115.74mrad(Si)/s effective does rate of 30krad(Si) with 72 hour anneal). After exposure, the devices were packed in dry ice (per MIL-STD-883 Method 1019.9 section 3.10) and full post radiation electrical evaluation using Texas Instruments ATE was conducted. ATE test limits are set per data sheet electrical limits based on qualification and characterization data. Post radiation measurements were taken within 30 minutes of removing the devices from the dry ice container. The devices were allowed to reach room temperature prior to electrical post radiation measurements.

2.3 Test Setup Details

The devices were tested in biased conditions as described in the following sections.

2.3.1 Bias Diagram

Figure 2-1 shows the bias conditions for each pin during irradiation.

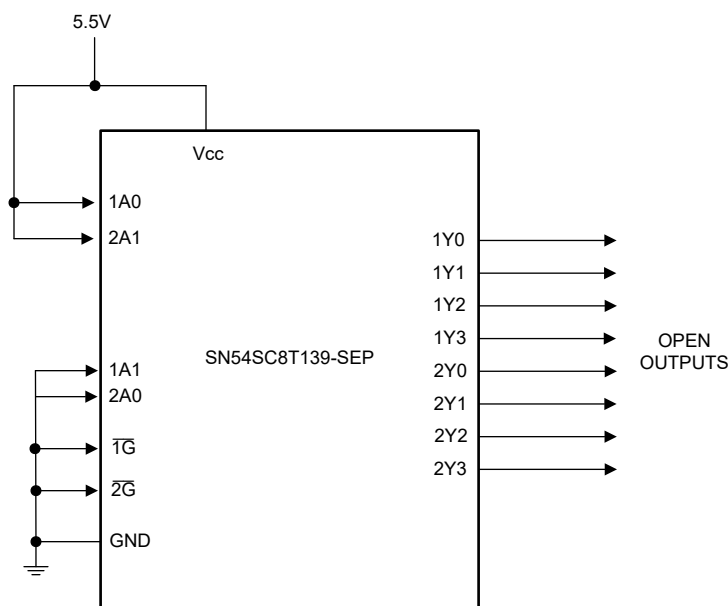


Figure 2-1. SN54SC8T139-SEP Bias Diagram

2.4 Test Configuration and Condition

The HDR RLAT units were irradiated to 30krad(Si), parametrically tested on ATE, and then were annealed at 25°C for 72 hours. The units that were irradiated to 30krad(Si) and were annealed for 72 hours are denoted as 31krad(Si) in [Section 5](#). ATE parametric testing was completed before and after the anneal.

[Table 2-1](#) lists the serialized samples used for TID characterization.

Table 2-1. HDR Device Information

Control Group	HDR Dose Rate = 174.54rad(Si)/s Effective Dose Rate (30krad + Anneal 72 hours) = 115.74mrad(Si)/s	
Total Samples: 4	Total Samples: 6 Biased	
	Exposure Levels	
0krad (Si)	30krad(Si)	
Biased	Biased	Biased + 72 hour anneal
1 - 4	5 - 10	5a - 10a

3 TID Characterization Test Results

3.1 TID Characterization Summary Results

The parametric data for the SN54SC8T139-SEP passes up to 30krad(Si) (with 72 hour room temperature anneal) HDR TID irradiation. The drifts of the electrical parameters through HDR were within the data sheet limits.

Overall, the SN54SC8T139-SEP showed a strong degree of hardness to HDR TID irradiation up to 30krad(Si). The measurements taken post-irradiation for each sample set showed a marginal shift for most parameters at each dose level. The parameters that did show a greater degree of change between pre- and post-irradiation were still within the electrical performance characteristics specified in the data sheet electrical parameters. For the data sheet electrical parameters and associated tests, see [SN54SC8T139-SEP Radiation-Tolerant, Dual 2 to 4-Bit Decoders/Demultiplexers](#).

See [Section 5](#) for HDR report up to 30 krad(Si).

3.2 Specification Compliance Matrix

Table 3-1. Electrical Parameters Table

Parameter	Test Conditions	V _{CC}	T _A = -55°C to +125°C			Unit	Test Name
			MIN	TYP	MAX		
V _{T+} 1	Positive-going input threshold voltage	1.2V to 1.3V	0.31	0.655	1.1	V	VTP_1P2V
		1.65V to 2V	0.39	0.915	1.32		VTP_1P65V
		2.25V to 2.75V	0.51	1.09	1.51		VTP_2P25V
		3V to 3.6V	0.65	1.2	1.7		VTP_3V
		4.5V to 5.5V	0.87	1.51	2.16		VTP_4P5V, VTP_5P5V
V _{T-} 1	Negative-going input threshold voltage	1.2V to 1.3V	0.11	0.349	0.60	V	VTN_1P2V
		1.65V to 2V	0.18	0.455	0.63		VTN_1P65V
		2.25V to 2.75V	0.25	0.545	0.74		VTN_2P25V
		3V to 3.6V	0.33	0.635	0.85		VTN_3V
		4.5V to 5.5V	0.45	0.755	1.14		VTN_4P5V, VTN_5P5V
ΔV _T 1	Hysteresis (V _{T+} - V _{T-})	1.2V to 1.3V	0.2	0.29	0.77	V	DELTAVT_1P2V
		1.65V to 2V	0.21	0.43	0.88		DELTAVT_1P65V
		2.25V to 2.75V	0.25	0.54	0.91		DELTAVT_2P25V
		3V to 3.6V	0.31	0.63	0.91		DELTAVT_3V
		4.5V to 5.5V	0.43	0.75	1.05		DELTAVT_4P5V, DELTAVT_5P5V
V _{IH}	High-level input voltage	1.2V to 1.3V	0.78			V	VIH_1P2V
		1.65V to 2V	1.1				VIH_1P65V
		2.25V to 2.75V	1.28				VIH_2P25V
		3V to 3.6V	1.45				VIH_3V
		4.5V to 5.5V	2				VIH_4P5V, VIH_5P5V
V _{IL}	Low-Level input voltage	1.2V to 1.3V			0.18	V	VIL_1P2V
		1.65V to 2V			0.5		VIL_1P65V
		2.25V to 2.75V			0.65		VIL_2P25V
		3V to 3.6V			0.75		VIL_3V
		4.5V to 5.5V			0.85		VIL_4P5V, VIL_5P5V
V _{OH} 2	I _{OH} = -50μA	1.2V to 5.5V	V _{CC} -0.2			V	VOH_N50UA_1P2V, VOH_N50UA_5P5V
	I _{OH} = -1mA	1.2V	0.8				VOH_N1MA_1P2V
	I _{OH} = -2mA	1.65V to 2V	1.21				VOH_N2MA_1P65V
	I _{OH} = -3mA	2.25V to 2.75V	1.93				VOH_N3MA_2P25V
	I _{OH} = -5.5mA	3V to 3.6V	2.49				VOH_N5P5MA_3V
	I _{OH} = -8mA	4.5V to 5.5V	3.95				VOH_N8MA_4P5V
	I _{OH} = -24mA	4.5V to 5.5V	3.15				VOH_N24MA_5P5V
V _{OL}	I _{OL} = 50μA	1.2V to 5.5V			0.1	V	VOL_50UA_1P2V, VOL_50UA_5P5V
	I _{OL} = 1mA	1.2V			0.2		VOL_1MA_1P2V
	I _{OL} = 2mA	1.65V to 2V			0.25		VOL_2MA_1P65V
	I _{OL} = 3mA	2.25V to 2.75V			0.2		VOL_3MA_2P25V
	I _{OL} = 5.5mA	3V to 3.6V			0.25		VOL_5P5MA_3V
	I _{OL} = 8mA	4.5V to 5.5V			0.35		VOL_8MA_4P5V
	I _{OL} = 24mA	4.5V to 5.5V			0.75		VOL_24MA_5P5V
I _{CC}	V _I = V _{CC} or GND, I _O = 0	1.2V to 5.5V		2	220	μA	ICC_5P5V
ΔI _{CC}	One input at 0.3V or 3.4V, other inputs at V _{CC} or GND	5.5V			1.5	mA	DELTAICC_5P5V
	One input at 0.3V or 1.1V, other inputs at V _{CC} or GND	1.8V			68	μA	DELTAICC_1P8V
I _{OZ} 3	V _O = V _{CC} or GND	5.5V			±26	μA	IOZ_5P5V
I _I	V _I = 0V to V _{CC}	V _I = 0V to V _{CC}			±1	μA	II_5P5V

- Schmitt-trigger input devices only.
- Push-pull output devices only.
- 3-State output devices only.

4 Reference Documents

Texas Instruments total ionizing dose radiation (total dose) test procedure follows the standards put forth in MIL-STD-883 TM 1019. The document can be found at the DLA website.

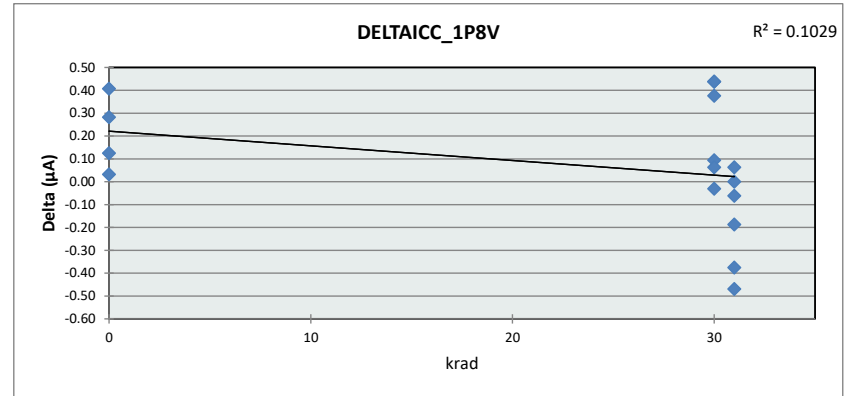
5 Appendix: HDR TID Report Data

This appendix provides the SN54SC8T139-SEP TID HDR report. The report shows the variation for each parameter up to 30krad(Si).

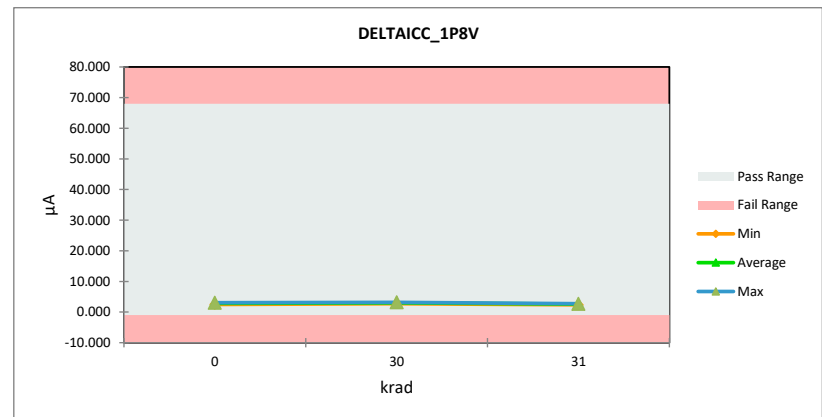
TID Report

SN54SC8T139-SEP

DELTAICC_1P8V						
Units	μA					
Max Limit	68					
Min Limit	-1					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	2.566	2.848	0.28	10.99%	0.41%
0	2	2.472	2.504	0.03	1.29%	0.05%
0	3	2.598	3.005	0.41	15.67%	0.59%
0	4	2.942	3.067	0.13	4.25%	0.18%
30	5	2.754	2.723	-0.03	-1.13%	0.04%
30	6	2.879	2.973	0.09	3.27%	0.14%
30	7	2.723	3.161	0.44	16.09%	0.63%
30	8	2.973	3.036	0.06	2.12%	0.09%
30	9	2.535	2.911	0.38	14.83%	0.54%
30	10	2.723	3.161	0.44	16.09%	0.63%
31	5a	2.754	2.692	-0.06	-2.25%	0.09%
31	6a	2.879	2.692	-0.19	-6.50%	0.27%
31	7a	2.723	2.347	-0.38	-13.81%	0.54%
31	8a	2.973	2.504	-0.47	-15.78%	0.68%
31	9a	2.535	2.598	0.06	2.49%	0.09%
31	10a	2.723	2.723	0.00	0.00%	0.00%
Max	2.973	3.161	0.19	16.09%	0.68%	
Average	2.735	2.809	0.07	2.98%	0.31%	
Min	2.472	2.347	-0.13	-15.78%	0.00%	
Std Dev	0.162	0.249	0.09	9.97%	0.25%	

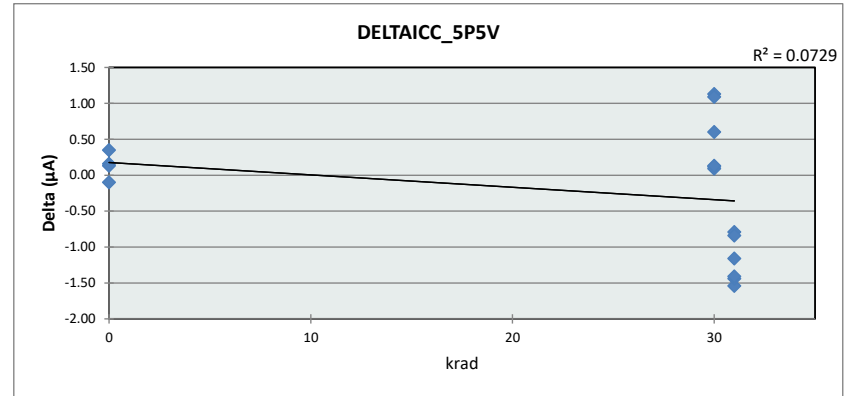


DELTAICC_1P8V			
Units	μA		
Max Limit	68		
Min Limit	-1		
krad	0	30	31
LL	-1.000	-1.000	-1.000
Min	2.504	2.723	2.347
Average	2.856	2.994	2.593
Max	3.067	3.161	2.723
UL	68.000	68.000	68.000

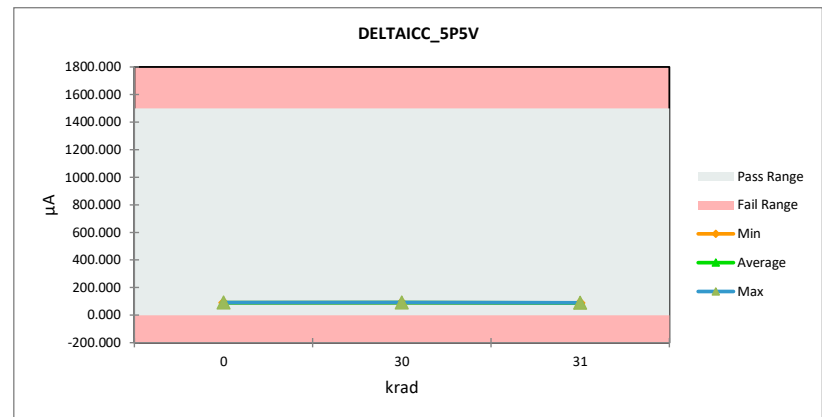


TID Report SN54SC8T139-SEP

DELTAICC_5P5V						
Units	μA					
Max Limit	1500					
Min Limit	-1					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	90.230	90.390	0.16	0.18%	0.01%
0	2	90.390	90.290	-0.10	-0.11%	0.01%
0	3	90.790	91.140	0.35	0.39%	0.02%
0	4	89.820	89.950	0.13	0.14%	0.01%
30	5	89.790	90.920	1.13	1.26%	0.08%
30	6	90.140	90.260	0.12	0.13%	0.01%
30	7	89.420	90.510	1.09	1.22%	0.07%
30	8	90.860	90.950	0.09	0.10%	0.01%
30	9	90.480	90.610	0.13	0.14%	0.01%
30	10	89.630	90.230	0.60	0.67%	0.04%
31	5a	89.790	88.630	-1.16	-1.29%	0.08%
31	6a	90.140	88.600	-1.54	-1.71%	0.10%
31	7a	89.420	88.630	-0.79	-0.88%	0.05%
31	8a	90.860	89.420	-1.44	-1.58%	0.10%
31	9a	90.480	89.070	-1.41	-1.56%	0.09%
31	10a	89.630	88.790	-0.84	-0.94%	0.06%
Max	90.860	91.140	0.28	1.26%	0.10%	
Average	90.117	89.899	-0.22	-0.24%	0.05%	
Min	89.420	88.600	-0.82	-1.71%	0.01%	
Std Dev	0.494	0.904	0.41	0.97%	0.04%	

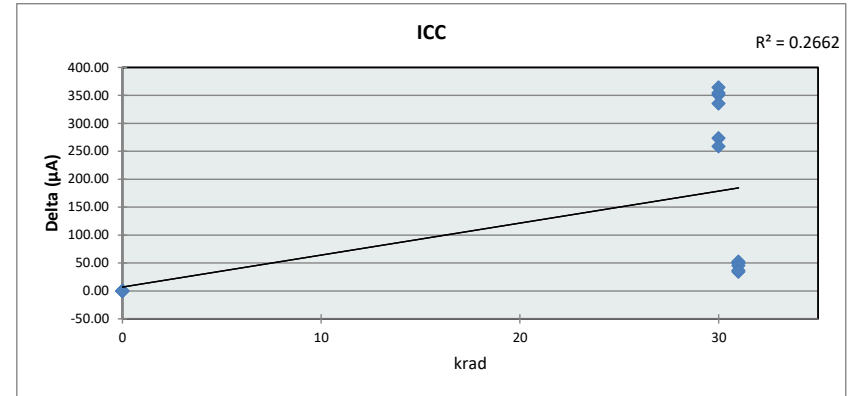


DELTAICC_5P5V			
Units	μA		
Max Limit	1500		
Min Limit	-1		
krad	0	30	31
LL	-1.000	-1.000	-1.000
Min	89.950	90.230	88.600
Average	90.443	90.580	88.857
Max	91.140	90.950	89.420
UL	1500.000	1500.000	1500.000

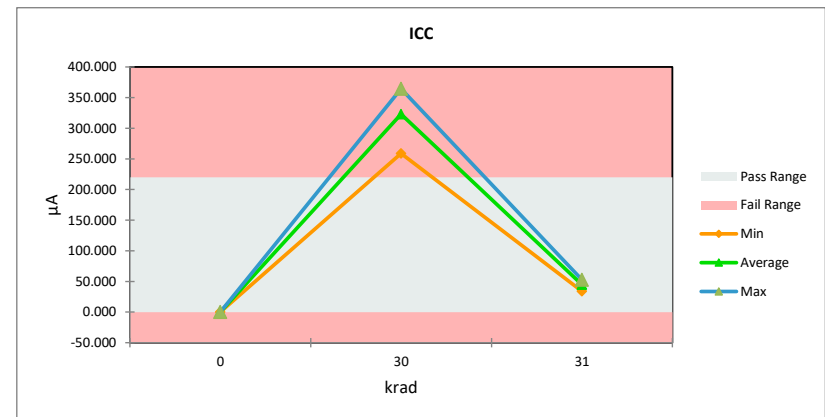


TID Report SN54SC8T139-SEP

ICC						
Units	μA					
Max Limit	220					
Min Limit	-0.1					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.055	0.022	-0.03	-59.41%	0.01%
0	2	0.051	0.070	0.02	38.40%	0.01%
0	3	0.032	0.032	0.00	2.98%	0.00%
0	4	0.033	0.019	-0.01	-41.76%	0.01%
30	5	0.078	350.900	350.82	451160.29%	159.39%
30	6	0.043	354.600	354.56	821113.52%	161.09%
30	7	0.051	364.400	364.35	709539.73%	165.54%
30	8	0.048	335.300	335.25	699900.00%	152.32%
30	9	0.031	273.500	273.47	893398.86%	124.25%
30	10	0.201	258.800	258.60	128848.68%	117.49%
31	5a	0.078	50.190	50.11	64444.75%	22.77%
31	6a	0.043	50.490	50.45	116829.13%	22.92%
31	7a	0.051	52.700	52.65	102529.02%	23.92%
31	8a	0.048	45.410	45.36	94701.67%	20.61%
31	9a	0.031	34.150	34.12	111464.85%	15.50%
31	10a	0.201	36.790	36.59	18230.84%	16.62%
Max		0.201	364.400	364.20	893398.86%	165.54%
Average		0.067	137.961	137.89	263256.35%	62.65%
Min		0.031	0.019	-0.01	-59.41%	0.00%
Std Dev		0.054	151.385	151.33	329344.83%	68.78%

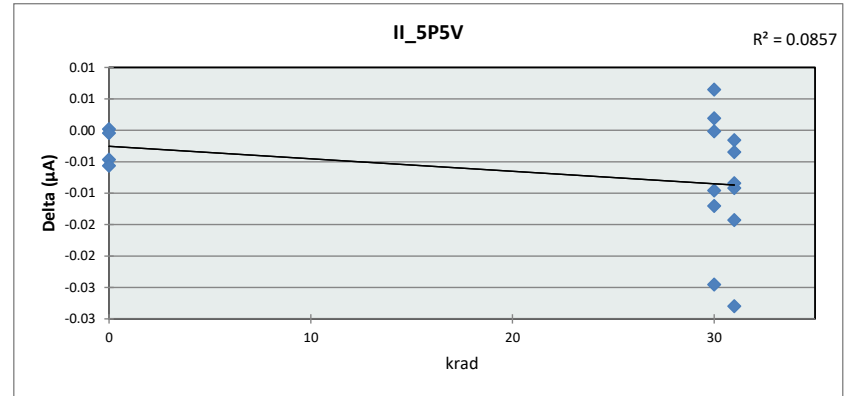


ICC			
Units	μA		
Max Limit	220		
Min Limit	-0.1		
krad	0	30	31
LL	-0.100	-0.100	-0.100
Min	0.019	258.800	34.150
Average	0.036	322.917	44.955
Max	0.070	364.400	52.700
UL	220.000	220.000	220.000

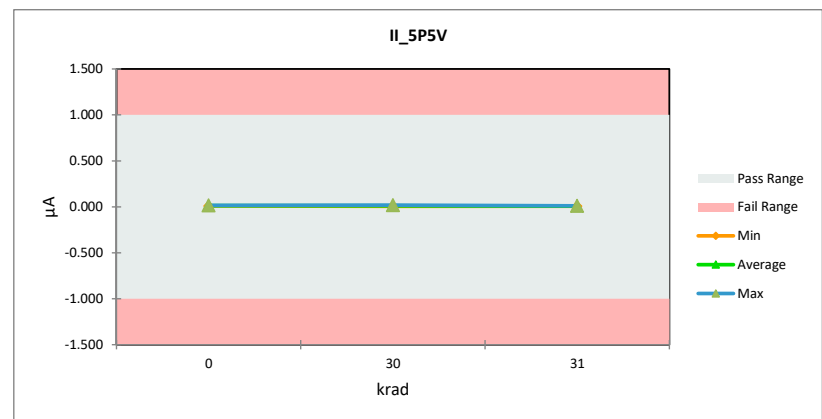


TID Report SN54SC8T139-SEP

II_5P5V						
Units	μA					
Max Limit	1					
Min Limit	-1					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.011	0.011	0.00	1.59%	0.01%
0	2	0.014	0.009	0.00	-32.96%	0.23%
0	3	0.014	0.013	0.00	-3.26%	0.02%
0	4	0.022	0.016	-0.01	-25.75%	0.28%
30	5	0.034	0.009	-0.02	-72.29%	1.23%
30	6	0.012	0.019	0.01	52.90%	0.32%
30	7	0.011	0.011	0.00	-1.66%	0.01%
30	8	0.018	0.006	-0.01	-68.28%	0.60%
30	9	0.022	0.012	-0.01	-43.54%	0.48%
30	10	0.016	0.018	0.00	12.05%	0.09%
31	5a	0.034	0.006	-0.03	-82.48%	1.40%
31	6a	0.012	0.011	0.00	-12.84%	0.08%
31	7a	0.011	0.007	0.00	-31.85%	0.17%
31	8a	0.018	0.008	-0.01	-52.05%	0.46%
31	9a	0.022	0.008	-0.01	-64.96%	0.71%
31	10a	0.016	0.007	-0.01	-53.70%	0.42%
Max	0.034	0.019	-0.02	52.90%	1.40%	
Average	0.018	0.011	-0.01	-29.94%	0.41%	
Min	0.011	0.006	-0.01	-82.48%	0.01%	
Std Dev	0.007	0.004	0.00	36.46%	0.41%	



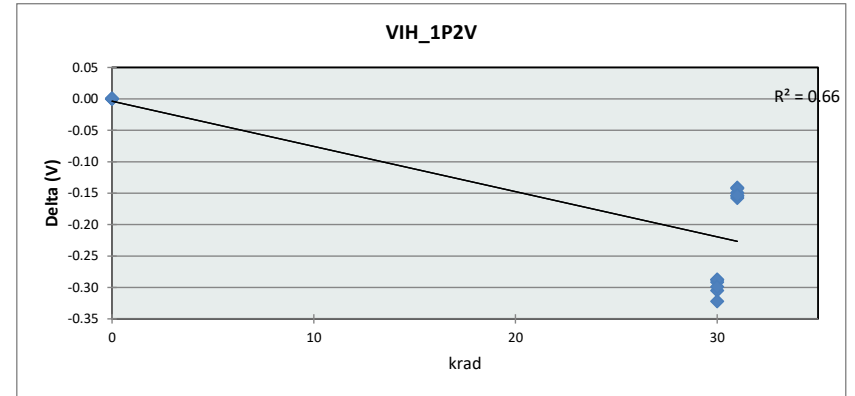
II_5P5V			
Units	μA		
Max Limit	1		
Min Limit	-1		
krad	0	30	31
LL	-1.000	-1.000	-1.000
Min	0.009	0.006	0.006
Average	0.013	0.012	0.008
Max	0.016	0.019	0.011
UL	1.000	1.000	1.000



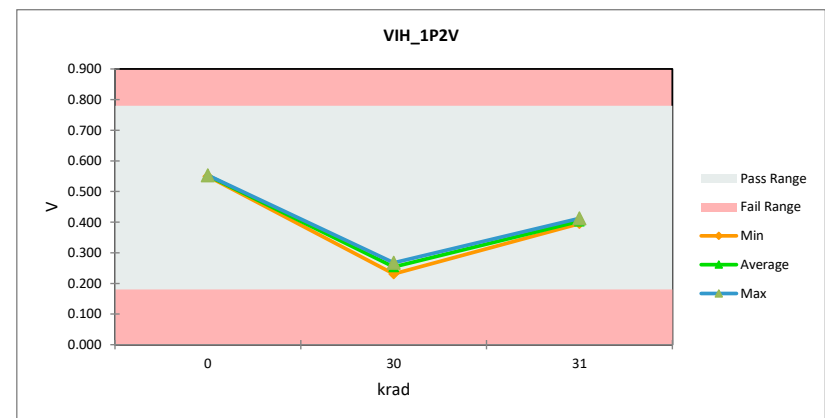
TID Report

SN54SC8T139-SEP

VIH_1P2V						
Units	V					
Max Limit	0.78					
Min Limit	0.18					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.553	0.553	0.00	0.00%	0.00%
0	2	0.549	0.549	0.00	0.00%	0.00%
0	3	0.552	0.552	0.00	0.00%	0.00%
0	4	0.552	0.553	0.00	0.11%	0.10%
30	5	0.553	0.265	-0.29	-52.09%	48.01%
30	6	0.552	0.247	-0.31	-55.28%	50.84%
30	7	0.553	0.231	-0.32	-58.23%	53.67%
30	8	0.552	0.260	-0.29	-52.86%	48.62%
30	9	0.555	0.267	-0.29	-51.81%	47.91%
30	10	0.552	0.253	-0.30	-54.18%	49.83%
31	5a	0.553	0.404	-0.15	-26.98%	24.86%
31	6a	0.552	0.397	-0.15	-28.03%	25.77%
31	7a	0.553	0.395	-0.16	-28.51%	26.28%
31	8a	0.552	0.410	-0.14	-25.61%	23.55%
31	9a	0.555	0.412	-0.14	-25.69%	23.75%
31	10a	0.552	0.398	-0.15	-27.81%	25.57%
Max	0.555	0.553	0.00	0.11%	53.67%	
Average	0.552	0.384	-0.17	-30.43%	28.05%	
Min	0.549	0.231	-0.32	-58.23%	0.00%	
Std Dev	0.001	0.120	0.12	21.86%	20.12%	



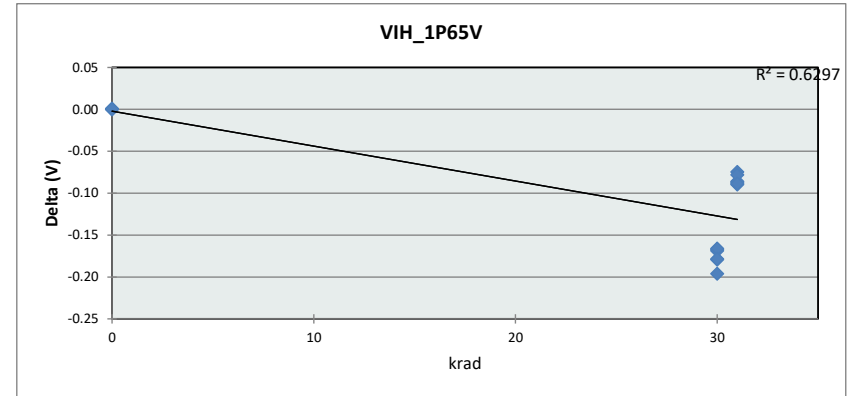
VIH_1P2V			
Units	V		
Max Limit	0.78		
Min Limit	0.18		
krad	0	30	31
LL	0.180	0.180	0.180
Min	0.549	0.231	0.395
Average	0.552	0.254	0.403
Max	0.553	0.267	0.412
UL	0.780	0.780	0.780



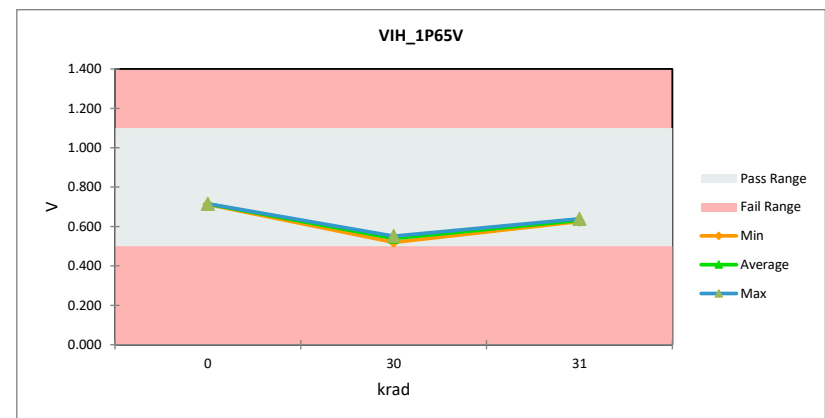
TID Report

SN54SC8T139-SEP

VIH_1P65V						
Units		V				
Max Limit		1.1				
Min Limit		0.5				
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.716	0.716	0.00	0.00%	0.00%
0	2	0.712	0.712	0.00	0.00%	0.00%
0	3	0.715	0.716	0.00	0.12%	0.15%
0	4	0.715	0.715	0.00	0.00%	0.00%
30	5	0.716	0.548	-0.17	-23.57%	28.14%
30	6	0.714	0.534	-0.18	-25.13%	29.90%
30	7	0.716	0.519	-0.20	-27.40%	32.68%
30	8	0.714	0.547	-0.17	-23.41%	27.85%
30	9	0.717	0.551	-0.17	-23.17%	27.70%
30	10	0.715	0.536	-0.18	-24.98%	29.75%
31	5a	0.716	0.630	-0.09	-12.03%	14.36%
31	6a	0.714	0.627	-0.09	-12.20%	14.51%
31	7a	0.716	0.626	-0.09	-12.53%	14.95%
31	8a	0.714	0.639	-0.07	-10.47%	12.46%
31	9a	0.717	0.639	-0.08	-10.91%	13.04%
31	10a	0.715	0.626	-0.09	-12.43%	14.80%
Max		0.717	0.716	0.00	0.12%	32.68%
Average		0.715	0.617	-0.10	-13.63%	16.27%
Min		0.712	0.519	-0.19	-27.40%	0.00%
Std Dev		0.001	0.071	0.07	10.02%	11.92%



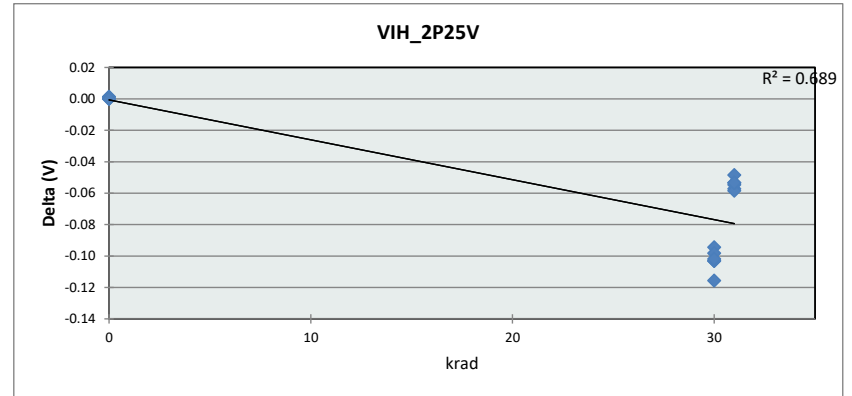
VIH_1P65V			
Units		V	
Max Limit		1.1	
Min Limit		0.5	
krad	0	30	31
LL	0.500	0.500	0.500
Min	0.712	0.519	0.626
Average	0.714	0.539	0.631
Max	0.716	0.551	0.639
UL	1.100	1.100	1.100



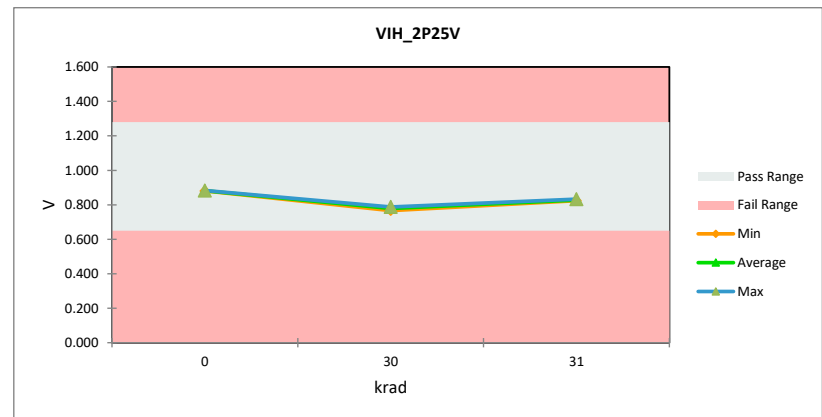
TID Report

SN54SC8T139-SEP

VIH_2P25V						
Units	V					
Max Limit	1.28					
Min Limit	0.65					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.879	0.881	0.00	0.14%	0.20%
0	2	0.881	0.882	0.00	0.14%	0.20%
0	3	0.883	0.883	0.00	0.00%	0.00%
0	4	0.881	0.881	0.00	0.00%	0.00%
30	5	0.883	0.780	-0.10	-11.68%	16.38%
30	6	0.878	0.775	-0.10	-11.75%	16.38%
30	7	0.882	0.766	-0.12	-13.11%	18.35%
30	8	0.882	0.787	-0.09	-10.71%	15.00%
30	9	0.884	0.786	-0.10	-11.10%	15.59%
30	10	0.879	0.778	-0.10	-11.59%	16.18%
31	5a	0.883	0.826	-0.06	-6.47%	9.08%
31	6a	0.878	0.824	-0.05	-6.23%	8.68%
31	7a	0.882	0.824	-0.06	-6.62%	9.27%
31	8a	0.882	0.833	-0.05	-5.50%	7.70%
31	9a	0.884	0.831	-0.05	-6.04%	8.49%
31	10a	0.879	0.826	-0.05	-6.08%	8.49%
	Max	0.884	0.883	0.00	0.14%	18.35%
	Average	0.881	0.823	-0.06	-6.66%	9.37%
	Min	0.878	0.766	-0.11	-13.11%	0.00%
	Std Dev	0.002	0.042	0.04	4.74%	6.55%

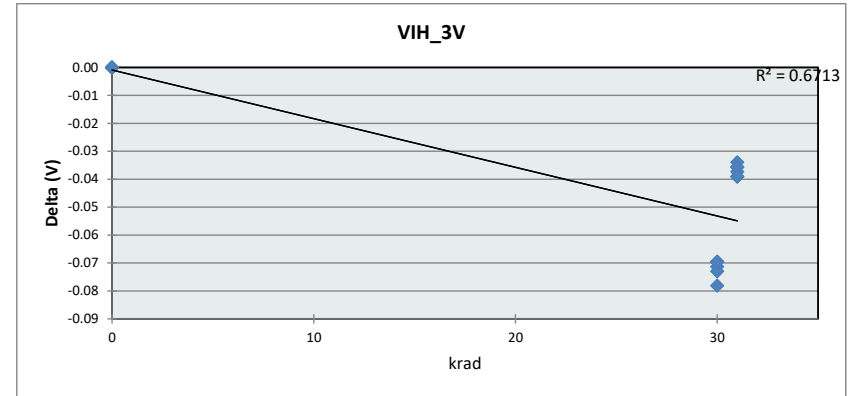


VIH_2P25V			
Units	V		
Max Limit	1.28		
Min Limit	0.65		
krad	0	30	31
LL	0.650	0.650	0.650
Min	0.881	0.766	0.824
Average	0.882	0.779	0.827
Max	0.883	0.787	0.833
UL	1.280	1.280	1.280

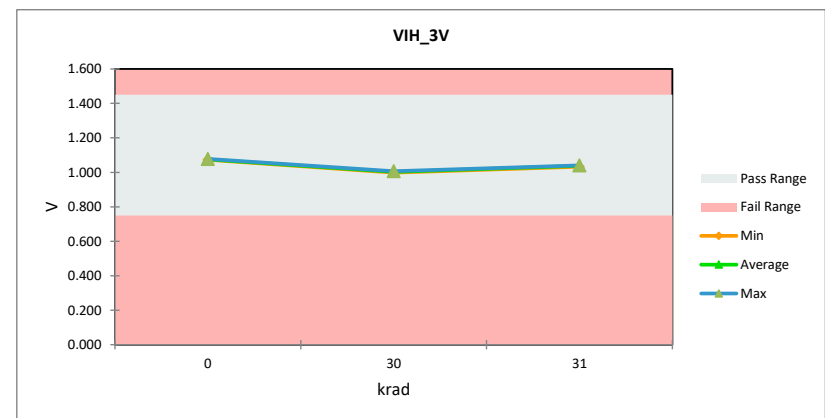


TID Report SN54SC8T139-SEP

VIH_3V						
Units	V					
Max Limit	1.45					
Min Limit	0.75					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.075	1.075	0.00	0.00%	0.00%
0	2	1.075	1.075	0.00	0.00%	0.00%
0	3	1.078	1.078	0.00	0.00%	0.00%
0	4	1.073	1.073	0.00	0.00%	0.00%
30	5	1.075	1.003	-0.07	-6.64%	10.19%
30	6	1.071	0.998	-0.07	-6.82%	10.43%
30	7	1.076	0.998	-0.08	-7.26%	11.16%
30	8	1.076	1.007	-0.07	-6.47%	9.95%
30	9	1.076	1.007	-0.07	-6.47%	9.95%
30	10	1.071	1.002	-0.07	-6.50%	9.95%
31	5a	1.075	1.041	-0.03	-3.16%	4.85%
31	6a	1.071	1.034	-0.04	-3.49%	5.34%
31	7a	1.076	1.037	-0.04	-3.63%	5.58%
31	8a	1.076	1.041	-0.04	-3.31%	5.09%
31	9a	1.076	1.041	-0.04	-3.31%	5.09%
31	10a	1.071	1.032	-0.04	-3.65%	5.58%
Max	1.078	1.078	0.00	0.00%	11.16%	
Average	1.075	1.034	-0.04	-3.79%	5.82%	
Min	1.071	0.998	-0.07	-7.26%	0.00%	
Std Dev	0.002	0.029	0.03	2.70%	4.15%	



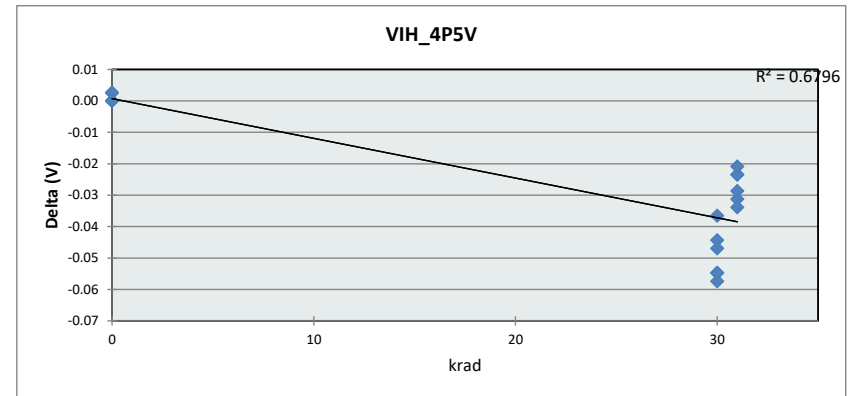
VIH_3V			
Units	V		
Max Limit	1.45		
Min Limit	0.75		
krad	0	30	31
LL	0.750	0.750	0.750
Min	1.073	0.998	1.032
Average	1.075	1.002	1.038
Max	1.078	1.007	1.041
UL	1.450	1.450	1.450



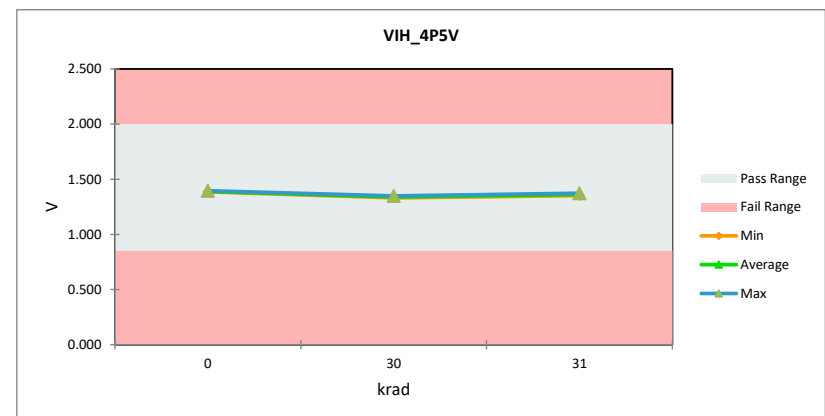
TID Report

SN54SC8T139-SEP

VIH_4P5V						
Units	V					
Max Limit	2					
Min Limit	0.85					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.386	1.388	0.00	0.19%	0.23%
0	2	1.386	1.388	0.00	0.19%	0.23%
0	3	1.396	1.396	0.00	0.00%	0.00%
0	4	1.386	1.386	0.00	0.00%	0.00%
30	5	1.386	1.349	-0.04	-2.63%	3.17%
30	6	1.383	1.339	-0.04	-3.21%	3.85%
30	7	1.393	1.336	-0.06	-4.12%	4.99%
30	8	1.388	1.341	-0.05	-3.38%	4.08%
30	9	1.393	1.339	-0.05	-3.93%	4.76%
30	10	1.386	1.331	-0.05	-3.95%	4.76%
31	5a	1.386	1.362	-0.02	-1.69%	2.04%
31	6a	1.383	1.352	-0.03	-2.26%	2.72%
31	7a	1.393	1.359	-0.03	-2.43%	2.95%
31	8a	1.388	1.365	-0.02	-1.69%	2.04%
31	9a	1.393	1.373	-0.02	-1.50%	1.81%
31	10a	1.386	1.357	-0.03	-2.07%	2.49%
Max	1.396	1.396	0.00	0.19%	4.99%	
Average	1.388	1.360	-0.03	-2.03%	2.51%	
Min	1.383	1.331	-0.05	-4.12%	0.00%	
Std Dev	0.004	0.021	0.02	1.51%	1.74%	

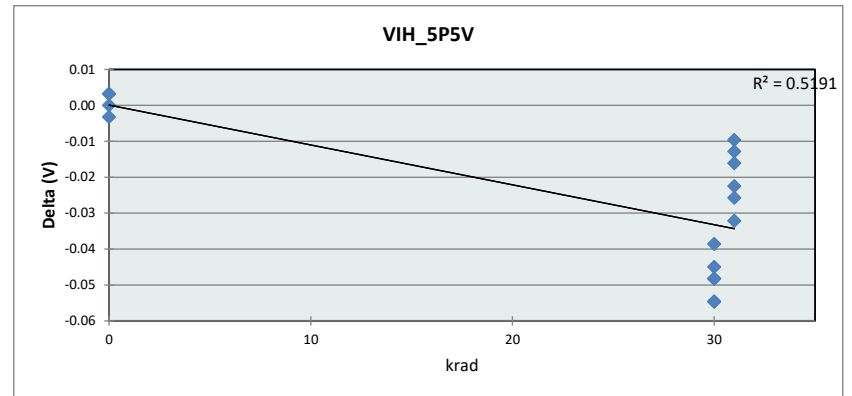


VIH_4P5V			
Units	V		
Max Limit	2		
Min Limit	0.85		
krad	0	30	31
LL	0.850	0.850	0.850
Min	1.386	1.331	1.352
Average	1.389	1.339	1.361
Max	1.396	1.349	1.373
UL	2.000	2.000	2.000

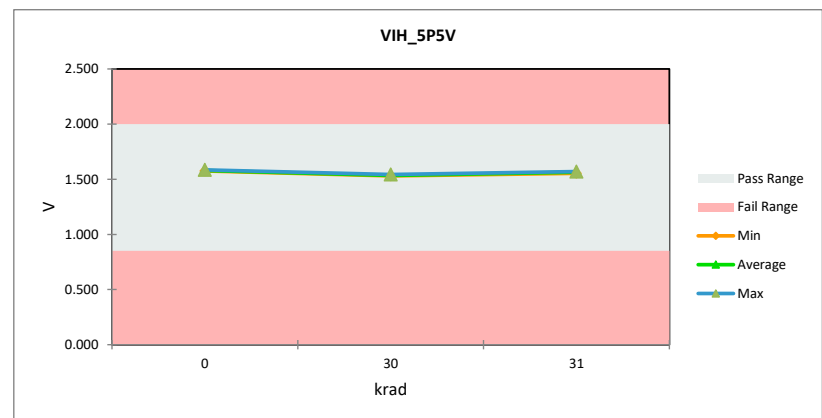


TID Report SN54SC8T139-SEP

VIH_5P5V						
Units	V					
Max Limit	2					
Min Limit	0.85					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.575	1.578	0.00	0.20%	0.28%
0	2	1.575	1.578	0.00	0.20%	0.28%
0	3	1.585	1.585	0.00	0.00%	0.00%
0	4	1.578	1.575	0.00	-0.20%	0.28%
30	5	1.582	1.533	-0.05	-3.05%	4.19%
30	6	1.578	1.530	-0.05	-3.05%	4.19%
30	7	1.585	1.530	-0.05	-3.45%	4.75%
30	8	1.578	1.540	-0.04	-2.44%	3.35%
30	9	1.588	1.543	-0.04	-2.83%	3.91%
30	10	1.585	1.530	-0.05	-3.45%	4.75%
31	5a	1.582	1.569	-0.01	-0.81%	1.12%
31	6a	1.578	1.569	-0.01	-0.61%	0.84%
31	7a	1.585	1.559	-0.03	-1.62%	2.24%
31	8a	1.578	1.562	-0.02	-1.02%	1.40%
31	9a	1.588	1.566	-0.02	-1.42%	1.96%
31	10a	1.585	1.553	-0.03	-2.03%	2.79%
Max		1.588	1.585	0.00	0.20%	4.75%
Average		1.582	1.556	-0.03	-1.60%	2.27%
Min		1.575	1.530	-0.04	-3.45%	0.00%
Std Dev		0.004	0.019	0.02	1.33%	1.73%



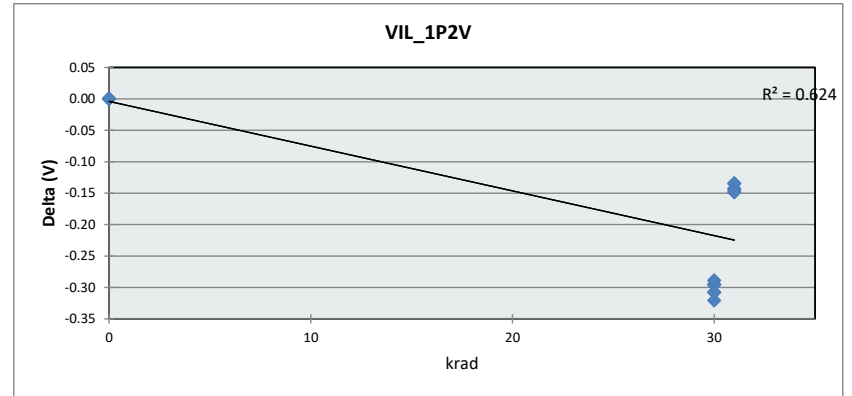
VIH_5P5V			
Units	V		
Max Limit	2		
Min Limit	0.85		
krad	0	30	31
LL	0.850	0.850	0.850
Min	1.575	1.530	1.553
Average	1.579	1.535	1.563
Max	1.585	1.543	1.569
UL	2.000	2.000	2.000



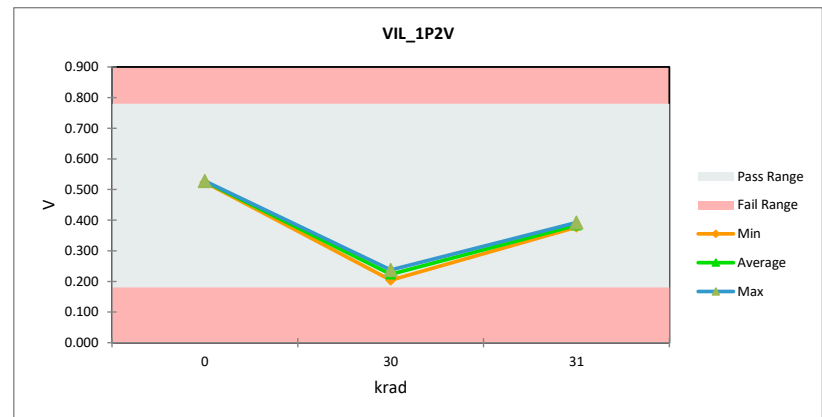
TID Report

SN54SC8T139-SEP

VIL_1P2V						
Units	V					
Max Limit	0.78					
Min Limit	0.18					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.527	0.527	0.00	0.00%	0.00%
0	2	0.526	0.526	0.00	0.00%	0.00%
0	3	0.528	0.528	0.00	0.00%	0.00%
0	4	0.523	0.524	0.00	0.13%	0.11%
30	5	0.528	0.233	-0.29	-55.89%	49.14%
30	6	0.523	0.215	-0.31	-58.81%	51.26%
30	7	0.525	0.204	-0.32	-61.13%	53.48%
30	8	0.526	0.230	-0.30	-56.28%	49.37%
30	9	0.526	0.237	-0.29	-54.89%	48.14%
30	10	0.528	0.219	-0.31	-58.41%	51.37%
31	5a	0.528	0.385	-0.14	-27.06%	23.79%
31	6a	0.523	0.378	-0.14	-27.68%	24.13%
31	7a	0.525	0.377	-0.15	-28.21%	24.68%
31	8a	0.526	0.392	-0.13	-25.61%	22.46%
31	9a	0.526	0.392	-0.13	-25.48%	22.35%
31	10a	0.528	0.379	-0.15	-28.20%	24.79%
Max	0.528	0.528	0.00	0.13%	53.48%	
Average	0.526	0.359	-0.17	-31.72%	27.82%	
Min	0.523	0.204	-0.32	-61.13%	0.00%	
Std Dev	0.002	0.123	0.12	23.39%	20.48%	

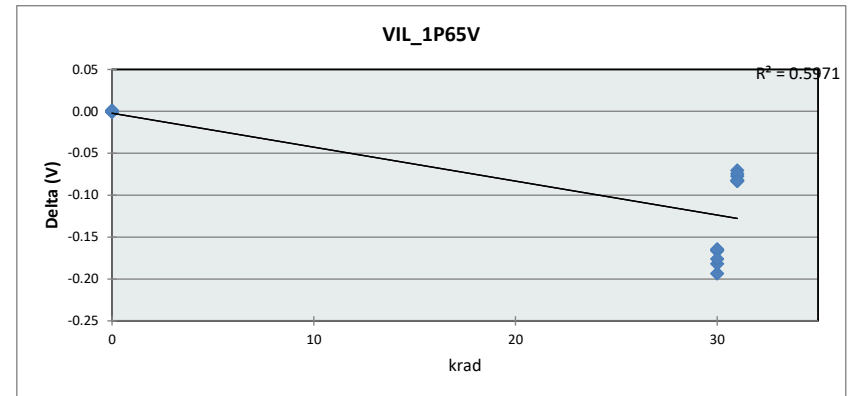


VIL_1P2V			
Units	V		
Max Limit	0.78		
Min Limit	0.18		
krad	0	30	31
LL	0.180	0.180	0.180
Min	0.524	0.204	0.377
Average	0.526	0.223	0.384
Max	0.528	0.237	0.392
UL	0.780	0.780	0.780

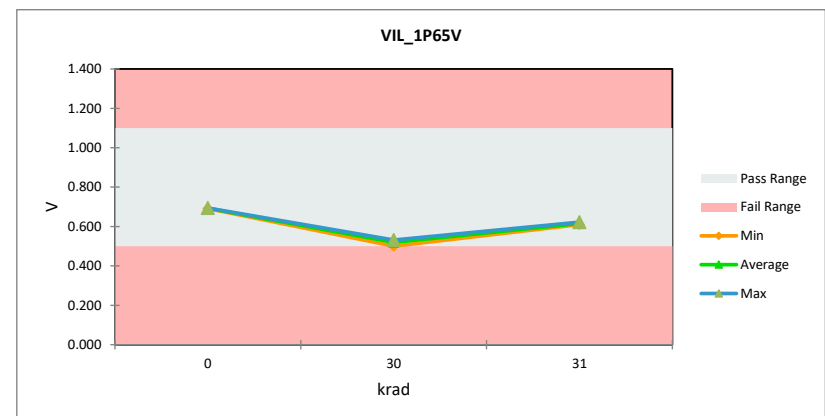


TID Report SN54SC8T139-SEP

VIL_1P65V						
Units		V				
Max Limit		1.1				
Min Limit		0.5				
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.695	0.694	0.00	-0.14%	0.16%
0	2	0.690	0.691	0.00	0.14%	0.16%
0	3	0.694	0.694	0.00	0.00%	0.00%
0	4	0.692	0.693	0.00	0.14%	0.16%
30	5	0.694	0.528	-0.17	-23.98%	27.73%
30	6	0.695	0.513	-0.18	-26.17%	30.31%
30	7	0.694	0.500	-0.19	-27.88%	32.24%
30	8	0.693	0.528	-0.17	-23.87%	27.57%
30	9	0.696	0.531	-0.16	-23.63%	27.41%
30	10	0.693	0.517	-0.18	-25.41%	29.34%
31	5a	0.694	0.617	-0.08	-11.15%	12.90%
31	6a	0.695	0.613	-0.08	-11.83%	13.70%
31	7a	0.694	0.611	-0.08	-11.99%	13.86%
31	8a	0.693	0.622	-0.07	-10.19%	11.77%
31	9a	0.696	0.621	-0.07	-10.70%	12.41%
31	10a	0.693	0.610	-0.08	-12.00%	13.86%
Max		0.696	0.694	0.00	0.14%	32.24%
Average		0.694	0.599	-0.09	-13.67%	15.85%
Min		0.690	0.500	-0.19	-27.88%	0.00%
Std Dev		0.001	0.071	0.07	10.31%	11.86%

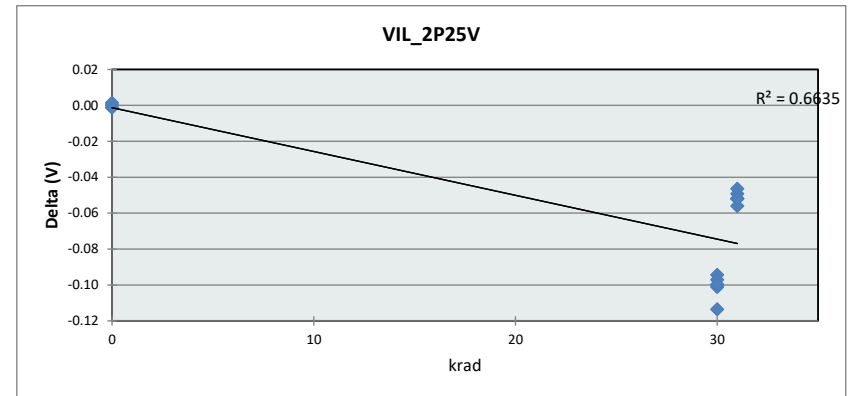


VIL_1P65V			
Units		V	
Max Limit		1.1	
Min Limit		0.5	
krad	0	30	31
LL	0.500	0.500	0.500
Min	0.691	0.500	0.610
Average	0.693	0.519	0.616
Max	0.694	0.531	0.622
UL	1.100	1.100	1.100

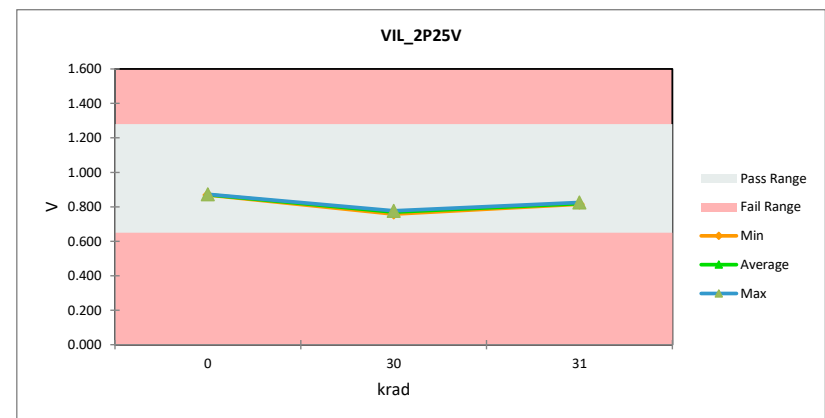


TID Report SN54SC8T139-SEP

VIL_2P25V						
Units	V					
Max Limit	1.28					
Min Limit	0.65					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.870	0.870	0.00	0.00%	0.00%
0	2	0.870	0.870	0.00	0.00%	0.00%
0	3	0.871	0.873	0.00	0.16%	0.22%
0	4	0.870	0.869	0.00	-0.16%	0.22%
30	5	0.871	0.771	-0.10	-11.46%	15.85%
30	6	0.867	0.766	-0.10	-11.67%	16.06%
30	7	0.871	0.758	-0.11	-13.03%	18.02%
30	8	0.871	0.777	-0.09	-10.83%	14.98%
30	9	0.873	0.776	-0.10	-11.13%	15.41%
30	10	0.869	0.769	-0.10	-11.49%	15.85%
31	5a	0.871	0.819	-0.05	-5.96%	8.25%
31	6a	0.867	0.815	-0.05	-5.99%	8.25%
31	7a	0.871	0.815	-0.06	-6.44%	8.90%
31	8a	0.871	0.825	-0.05	-5.34%	7.38%
31	9a	0.873	0.823	-0.05	-5.64%	7.81%
31	10a	0.869	0.817	-0.05	-5.98%	8.25%
Max	0.873	0.873	0.00	0.16%	18.02%	
Average	0.870	0.813	-0.06	-6.56%	9.09%	
Min	0.867	0.758	-0.11	-13.03%	0.00%	
Std Dev	0.002	0.041	0.04	4.70%	6.45%	



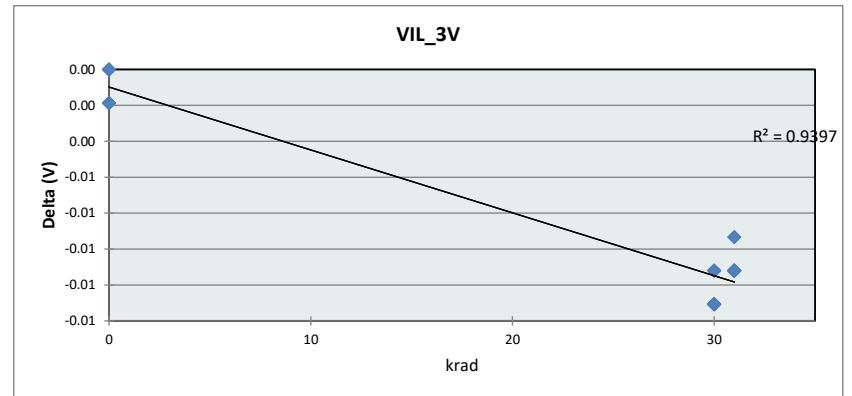
VIL_2P25V			
Units	V		
Max Limit	1.28		
Min Limit	0.65		
krad	0	30	31
LL	0.650	0.650	0.650
Min	0.869	0.758	0.815
Average	0.870	0.769	0.819
Max	0.873	0.777	0.825
UL	1.280	1.280	1.280



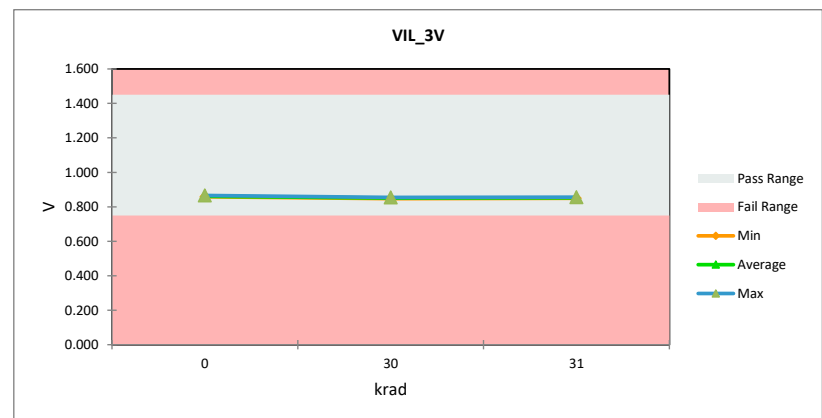
TID Report

SN54SC8T139-SEP

		VIL_3V				
Units		V				
Max Limit		1.45				
Min Limit		0.75				
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.862	0.860	0.00	-0.22%	0.27%
0	2	0.860	0.860	0.00	0.00%	0.00%
0	3	0.868	0.866	0.00	-0.22%	0.27%
0	4	0.858	0.858	0.00	0.00%	0.00%
30	5	0.860	0.849	-0.01	-1.30%	1.60%
30	6	0.860	0.849	-0.01	-1.30%	1.60%
30	7	0.864	0.851	-0.01	-1.51%	1.87%
30	8	0.860	0.847	-0.01	-1.52%	1.87%
30	9	0.866	0.853	-0.01	-1.51%	1.87%
30	10	0.868	0.855	-0.01	-1.51%	1.87%
31	5a	0.860	0.849	-0.01	-1.30%	1.60%
31	6a	0.860	0.849	-0.01	-1.30%	1.60%
31	7a	0.864	0.853	-0.01	-1.30%	1.60%
31	8a	0.860	0.849	-0.01	-1.30%	1.60%
31	9a	0.866	0.857	-0.01	-1.08%	1.33%
31	10a	0.868	0.857	-0.01	-1.29%	1.60%
Max		0.868	0.866	0.00	0.00%	1.87%
Average		0.863	0.854	-0.01	-1.04%	1.28%
Min		0.858	0.847	-0.01	-1.52%	0.00%
Std Dev		0.003	0.005	0.00	0.57%	0.70%



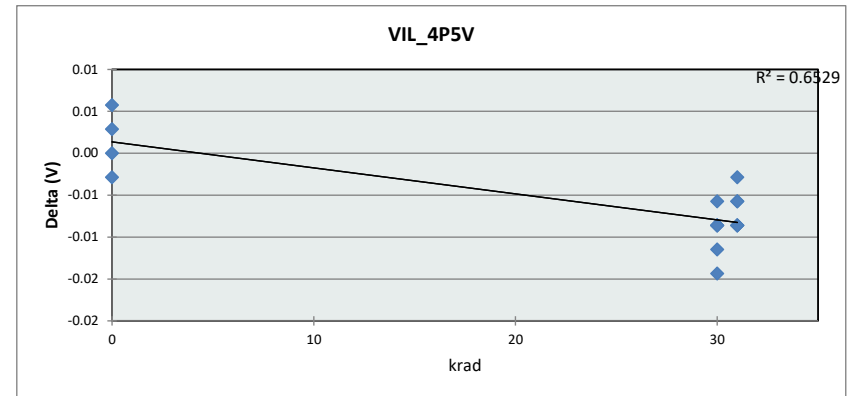
		VIL_3V		
Units		V		
Max Limit		1.45		
Min Limit		0.75		
krad		0	30	31
LL		0.750	0.750	0.750
Min		0.858	0.847	0.849
Average		0.861	0.851	0.852
Max		0.866	0.855	0.857
UL		1.450	1.450	1.450



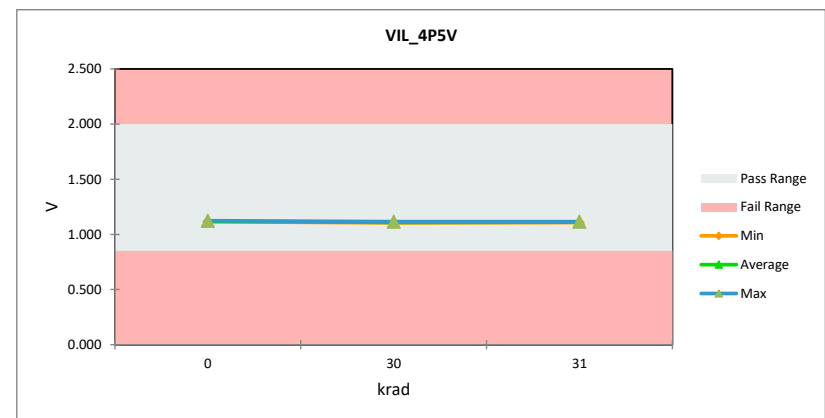
TID Report

SN54SC8T139-SEP

VIL_4P5V						
Units	V					
Max Limit	2					
Min Limit	0.85					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.118	1.115	0.00	-0.26%	0.25%
0	2	1.115	1.115	0.00	0.00%	0.00%
0	3	1.121	1.124	0.00	0.26%	0.25%
0	4	1.113	1.118	0.01	0.52%	0.50%
30	5	1.118	1.104	-0.01	-1.28%	1.25%
30	6	1.115	1.107	-0.01	-0.77%	0.75%
30	7	1.118	1.107	-0.01	-1.03%	1.00%
30	8	1.115	1.107	-0.01	-0.77%	0.75%
30	9	1.121	1.115	-0.01	-0.51%	0.50%
30	10	1.121	1.113	-0.01	-0.77%	0.75%
31	5a	1.118	1.110	-0.01	-0.77%	0.75%
31	6a	1.115	1.107	-0.01	-0.77%	0.75%
31	7a	1.118	1.115	0.00	-0.26%	0.25%
31	8a	1.115	1.107	-0.01	-0.77%	0.75%
31	9a	1.121	1.115	-0.01	-0.51%	0.50%
31	10a	1.121	1.115	-0.01	-0.51%	0.50%
Max	1.121	1.124	0.00	0.52%	1.25%	
Average	1.118	1.112	-0.01	-0.51%	0.59%	
Min	1.113	1.104	-0.01	-1.28%	0.00%	
Std Dev	0.003	0.006	0.00	0.47%	0.31%	



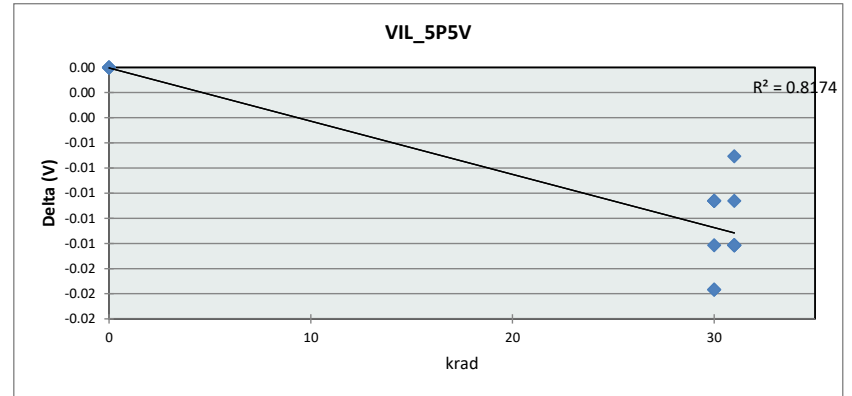
VIL_4P5V			
Units	V		
Max Limit	2		
Min Limit	0.85		
krad	0	30	31
LL	0.850	0.850	0.850
Min	1.115	1.104	1.107
Average	1.118	1.109	1.112
Max	1.124	1.115	1.115
UL	2.000	2.000	2.000



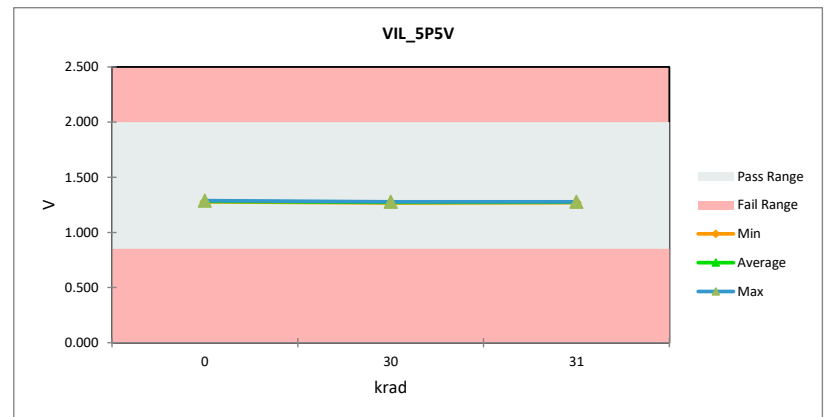
TID Report

SN54SC8T139-SEP

VIL_5P5V						
Units	V					
Max Limit	2					
Min Limit	0.85					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.281	1.281	0.00	0.00%	0.00%
0	2	1.281	1.281	0.00	0.00%	0.00%
0	3	1.288	1.288	0.00	0.00%	0.00%
0	4	1.277	1.277	0.00	0.00%	0.00%
30	5	1.284	1.270	-0.01	-1.10%	1.23%
30	6	1.284	1.267	-0.02	-1.38%	1.54%
30	7	1.288	1.270	-0.02	-1.37%	1.54%
30	8	1.281	1.270	-0.01	-0.83%	0.92%
30	9	1.288	1.277	-0.01	-0.82%	0.92%
30	10	1.288	1.277	-0.01	-0.82%	0.92%
31	5a	1.284	1.270	-0.01	-1.10%	1.23%
31	6a	1.284	1.270	-0.01	-1.10%	1.23%
31	7a	1.288	1.274	-0.01	-1.10%	1.23%
31	8a	1.281	1.274	-0.01	-0.55%	0.61%
31	9a	1.288	1.274	-0.01	-1.10%	1.23%
31	10a	1.288	1.277	-0.01	-0.82%	0.92%
Max		1.288	1.288	0.00	0.00%	1.54%
Average		1.285	1.275	-0.01	-0.76%	0.85%
Min		1.277	1.267	-0.01	-1.38%	0.00%
Std Dev		0.004	0.005	0.00	0.50%	0.56%

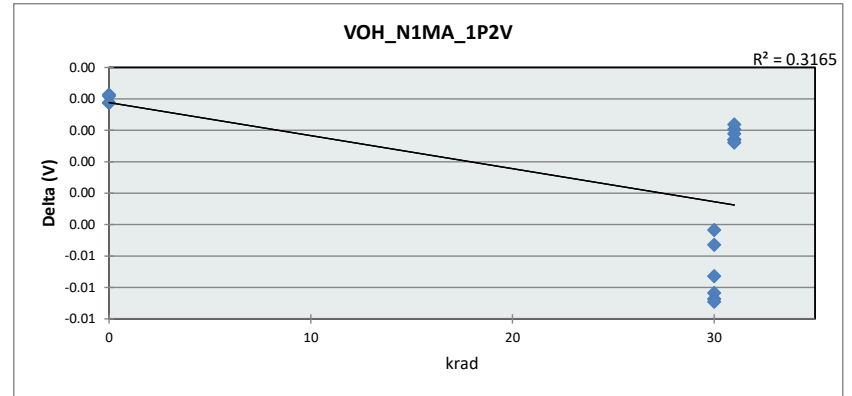


VIL_5P5V			
Units	V		
Max Limit	2		
Min Limit	0.85		
krad	0	30	31
LL	0.850	0.850	0.850
Min	1.277	1.267	1.270
Average	1.282	1.272	1.273
Max	1.288	1.277	1.277
UL	2.000	2.000	2.000

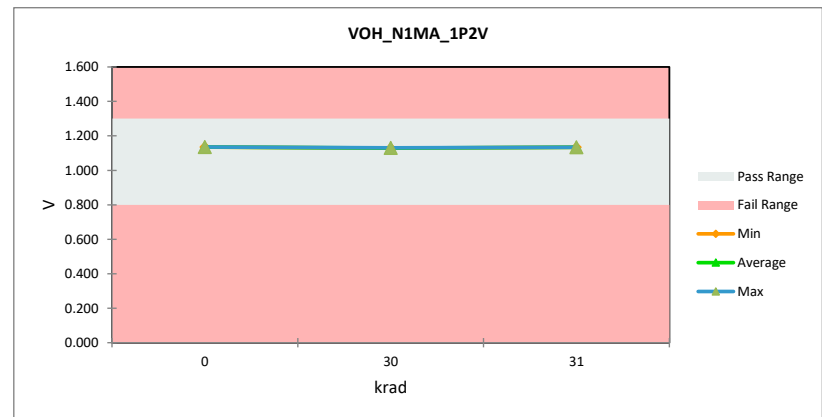


TID Report SN54SC8T139-SEP

VOH_N1MA_1P2V						
Units	V					
Max Limit	1.3					
Min Limit	0.8					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.135	1.135	0.00	0.01%	0.03%
0	2	1.135	1.135	0.00	0.01%	0.02%
0	3	1.135	1.135	0.00	-0.01%	0.03%
0	4	1.135	1.135	0.00	-0.01%	0.03%
30	5	1.135	1.129	-0.01	-0.54%	1.23%
30	6	1.135	1.129	-0.01	-0.56%	1.27%
30	7	1.135	1.129	-0.01	-0.57%	1.29%
30	8	1.135	1.129	-0.01	-0.50%	1.13%
30	9	1.135	1.131	0.00	-0.41%	0.93%
30	10	1.135	1.131	0.00	-0.37%	0.84%
31	5a	1.135	1.134	0.00	-0.11%	0.26%
31	6a	1.135	1.134	0.00	-0.11%	0.26%
31	7a	1.135	1.134	0.00	-0.12%	0.28%
31	8a	1.135	1.134	0.00	-0.10%	0.22%
31	9a	1.135	1.134	0.00	-0.09%	0.19%
31	10a	1.135	1.134	0.00	-0.07%	0.16%
Max	1.135	1.135	0.00	0.01%	1.29%	
Average	1.135	1.133	0.00	-0.22%	0.51%	
Min	1.135	1.129	-0.01	-0.57%	0.02%	
Std Dev	0.000	0.003	0.00	0.22%	0.50%	



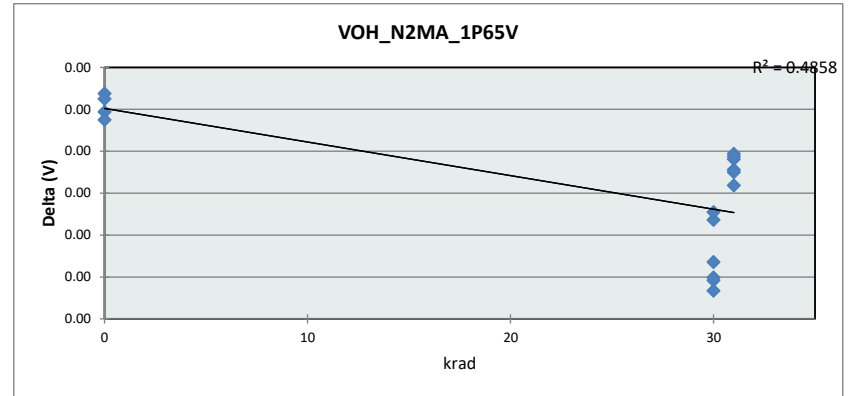
VOH_N1MA_1P2V			
Units	V		
Max Limit	1.3		
Min Limit	0.8		
krad	0	30	31
LL	0.800	0.800	0.800
Min	1.135	1.129	1.134
Average	1.135	1.129	1.134
Max	1.135	1.131	1.134
UL	1.300	1.300	1.300



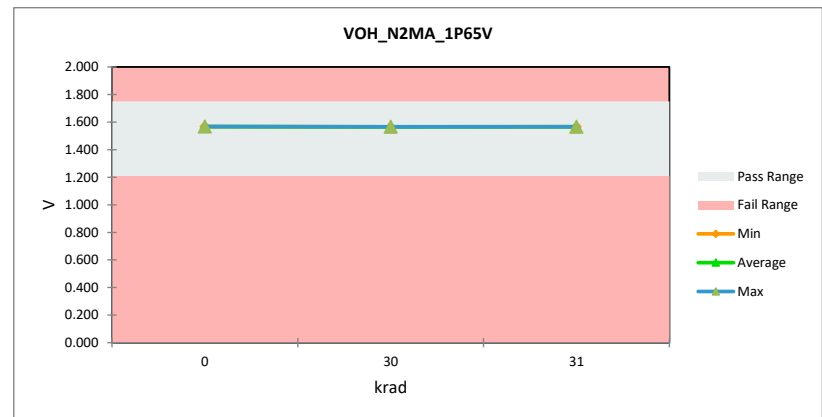
TID Report

SN54SC8T139-SEP

VOH_N2MA_1P65V						
Units	V					
Max Limit	1.75					
Min Limit	1.21					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.568	1.568	0.00	0.00%	0.01%
0	2	1.568	1.568	0.00	-0.01%	0.02%
0	3	1.567	1.567	0.00	0.01%	0.03%
0	4	1.567	1.567	0.00	0.01%	0.02%
30	5	1.567	1.565	0.00	-0.13%	0.38%
30	6	1.567	1.565	0.00	-0.14%	0.40%
30	7	1.567	1.565	0.00	-0.13%	0.37%
30	8	1.567	1.566	0.00	-0.12%	0.34%
30	9	1.568	1.566	0.00	-0.08%	0.24%
30	10	1.567	1.566	0.00	-0.08%	0.23%
31	5a	1.567	1.567	0.00	-0.03%	0.10%
31	6a	1.567	1.567	0.00	-0.05%	0.13%
31	7a	1.567	1.567	0.00	-0.05%	0.14%
31	8a	1.567	1.567	0.00	-0.04%	0.11%
31	9a	1.568	1.567	0.00	-0.04%	0.10%
31	10a	1.567	1.566	0.00	-0.06%	0.17%
Max	1.568	1.568	0.00	0.01%	0.40%	
Average	1.567	1.566	0.00	-0.06%	0.17%	
Min	1.567	1.565	0.00	-0.14%	0.01%	
Std Dev	0.000	0.001	0.00	0.05%	0.14%	

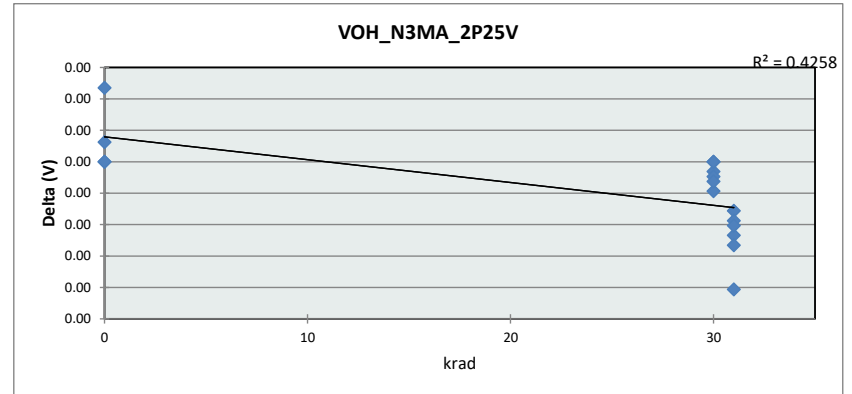


VOH_N2MA_1P65V			
Units	V		
Max Limit	1.75		
Min Limit	1.21		
krad	0	30	31
LL	1.210	1.210	1.210
Min	1.567	1.565	1.566
Average	1.567	1.566	1.567
Max	1.568	1.566	1.567
UL	1.750	1.750	1.750

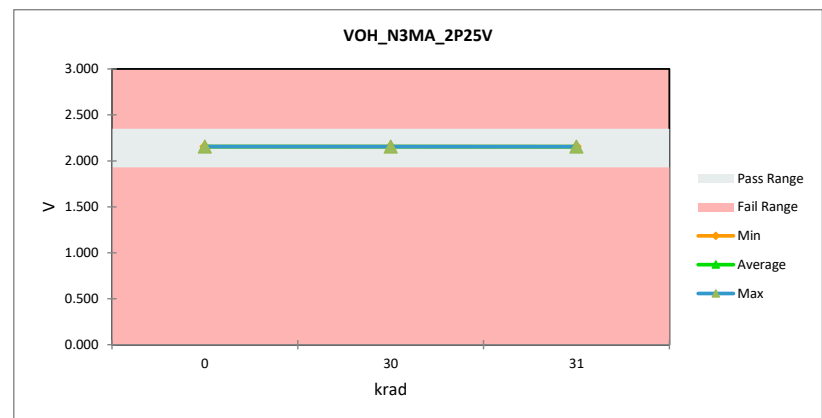


TID Report SN54SC8T139-SEP

VOH_N3MA_2P25V						
Units	V					
Max Limit	2.35					
Min Limit	1.93					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	2.156	2.156	0.00	0.00%	0.00%
0	2	2.155	2.155	0.00	0.00%	0.00%
0	3	2.155	2.155	0.00	0.02%	0.11%
0	4	2.155	2.155	0.00	0.01%	0.03%
30	5	2.155	2.155	0.00	0.00%	0.01%
30	6	2.155	2.155	0.00	-0.01%	0.04%
30	7	2.155	2.155	0.00	0.00%	0.02%
30	8	2.155	2.155	0.00	-0.01%	0.03%
30	9	2.155	2.155	0.00	0.00%	0.00%
30	10	2.155	2.155	0.00	0.00%	0.00%
31	5a	2.155	2.155	0.00	-0.01%	0.07%
31	6a	2.155	2.155	0.00	-0.02%	0.11%
31	7a	2.155	2.155	0.00	-0.02%	0.13%
31	8a	2.155	2.154	0.00	-0.04%	0.19%
31	9a	2.155	2.155	0.00	-0.02%	0.09%
31	10a	2.155	2.155	0.00	-0.02%	0.10%
Max	2.156	2.156	0.00	0.02%	0.19%	
Average	2.155	2.155	0.00	-0.01%	0.06%	
Min	2.155	2.154	0.00	-0.04%	0.00%	
Std Dev	0.000	0.000	0.00	0.01%	0.06%	

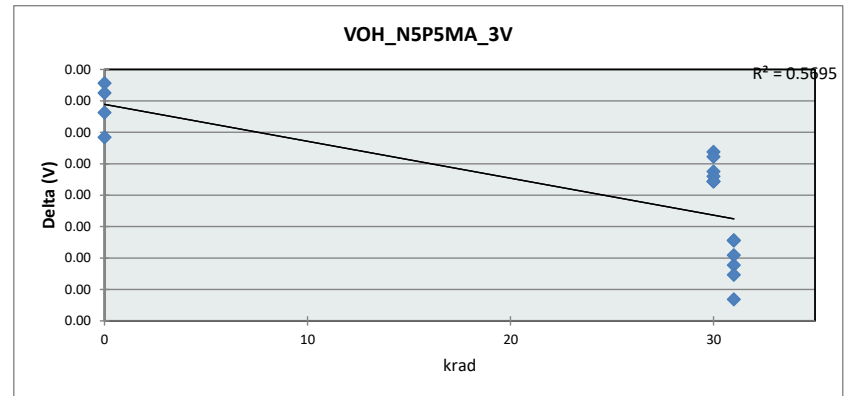


VOH_N3MA_2P25V			
Units	V		
Max Limit	2.35		
Min Limit	1.93		
krad	0	30	31
LL	1.930	1.930	1.930
Min	2.155	2.155	2.154
Average	2.155	2.155	2.155
Max	2.156	2.155	2.155
UL	2.350	2.350	2.350

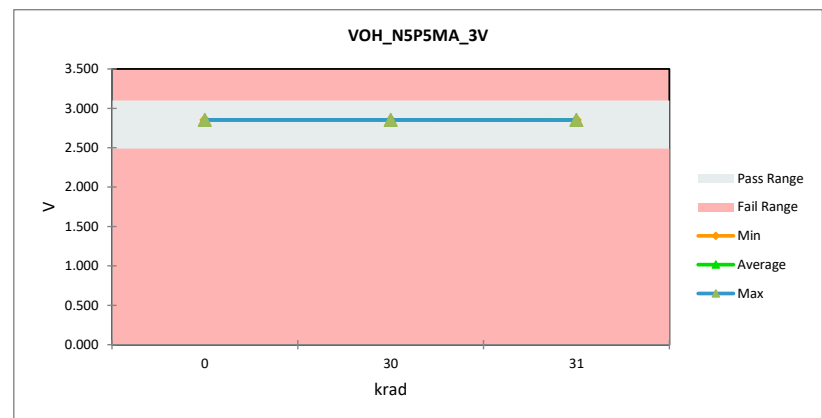


TID Report SN54SC8T139-SEP

VOH_N5P5MA_3V						
Units	V					
Max Limit	3.1					
Min Limit	2.49					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	2.853	2.853	0.00	0.00%	0.02%
0	2	2.854	2.854	0.00	0.00%	0.01%
0	3	2.853	2.853	0.00	0.01%	0.05%
0	4	2.853	2.853	0.00	0.01%	0.04%
30	5	2.853	2.853	0.00	-0.01%	0.04%
30	6	2.853	2.853	0.00	-0.01%	0.05%
30	7	2.853	2.853	0.00	0.00%	0.02%
30	8	2.853	2.853	0.00	-0.01%	0.05%
30	9	2.853	2.853	0.00	-0.01%	0.03%
30	10	2.853	2.853	0.00	-0.01%	0.05%
31	5a	2.853	2.852	0.00	-0.02%	0.11%
31	6a	2.853	2.852	0.00	-0.03%	0.14%
31	7a	2.853	2.852	0.00	-0.02%	0.11%
31	8a	2.853	2.852	0.00	-0.04%	0.17%
31	9a	2.853	2.852	0.00	-0.03%	0.15%
31	10a	2.853	2.852	0.00	-0.03%	0.13%
Max	2.854	2.854	0.00	0.01%	0.17%	
Average	2.853	2.853	0.00	-0.01%	0.07%	
Min	2.853	2.852	0.00	-0.04%	0.01%	
Std Dev	0.000	0.000	0.00	0.01%	0.05%	



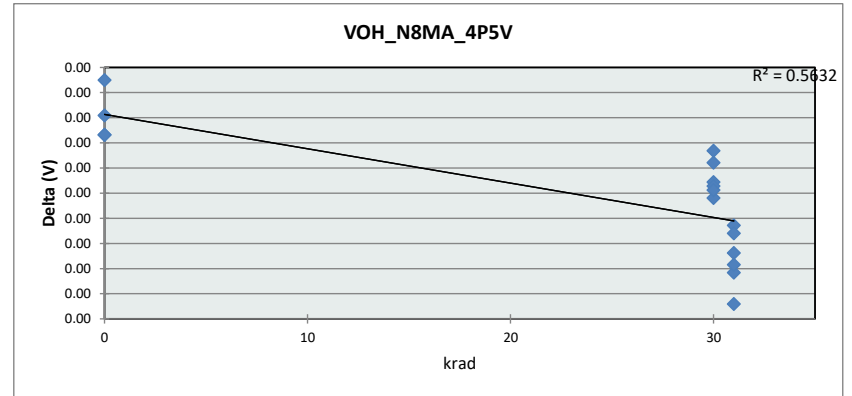
VOH_N5P5MA_3V			
Units	V		
Max Limit	3.1		
Min Limit	2.49		
krad	0	30	31
LL	2.490	2.490	2.490
Min	2.853	2.853	2.852
Average	2.853	2.853	2.852
Max	2.854	2.853	2.852
UL	3.100	3.100	3.100



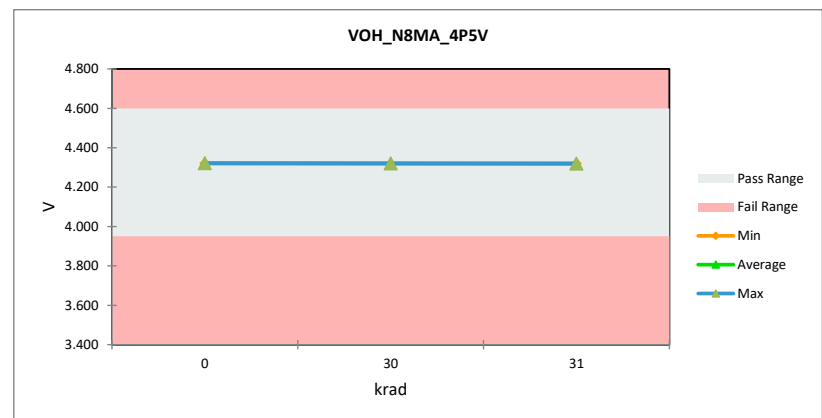
TID Report

SN54SC8T139-SEP

VOH_N8MA_4P5V						
Units		V				
Max Limit		4.6				
Min Limit		3.95				
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	4.321	4.321	0.00	0.00%	0.01%
0	2	4.321	4.321	0.00	0.01%	0.08%
0	3	4.320	4.320	0.00	0.01%	0.03%
0	4	4.321	4.321	0.00	0.00%	0.01%
30	5	4.320	4.320	0.00	-0.01%	0.07%
30	6	4.320	4.320	0.00	-0.01%	0.05%
30	7	4.320	4.320	0.00	0.00%	0.01%
30	8	4.321	4.320	0.00	0.00%	0.02%
30	9	4.321	4.320	0.00	-0.01%	0.05%
30	10	4.320	4.320	0.00	-0.01%	0.06%
31	5a	4.320	4.319	0.00	-0.02%	0.16%
31	6a	4.320	4.320	0.00	-0.02%	0.10%
31	7a	4.320	4.320	0.00	-0.02%	0.11%
31	8a	4.321	4.319	0.00	-0.03%	0.20%
31	9a	4.321	4.320	0.00	-0.02%	0.13%
31	10a	4.320	4.319	0.00	-0.02%	0.15%
Max		4.321	4.321	0.00	0.01%	0.20%
Average		4.320	4.320	0.00	-0.01%	0.08%
Min		4.320	4.319	0.00	-0.03%	0.01%
Std Dev		0.000	0.001	0.00	0.01%	0.06%

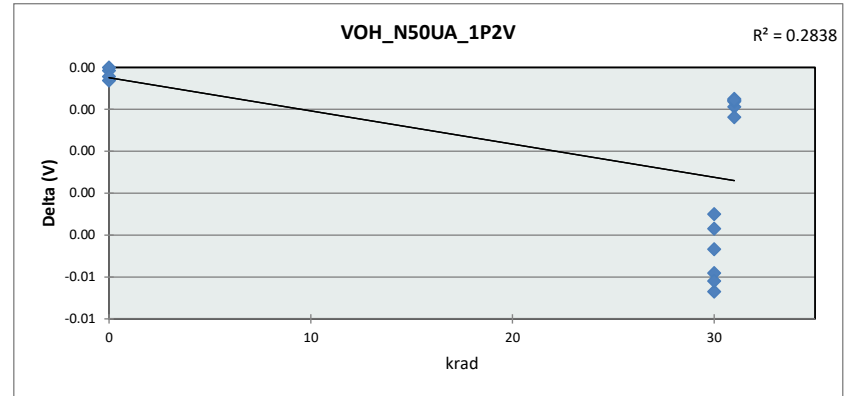


VOH_N8MA_4P5V			
Units		V	
Max Limit		4.6	
Min Limit		3.95	
krad	0	30	31
LL	3.950	3.950	3.950
Min	4.320	4.320	4.319
Average	4.321	4.320	4.319
Max	4.321	4.320	4.320
UL	4.600	4.600	4.600

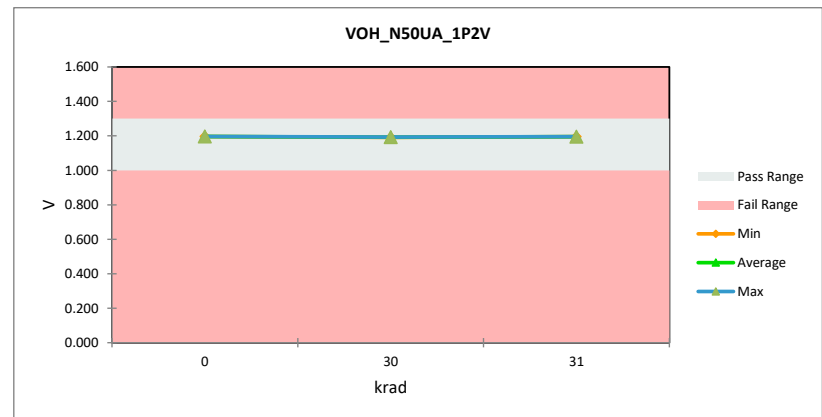


TID Report SN54SC8T139-SEP

VOH_N50UA_1P2V						
Units	V					
Max Limit	1.3					
Min Limit	1					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	1.197	1.196	0.00	-0.03%	0.10%
0	2	1.197	1.197	0.00	-0.01%	0.03%
0	3	1.197	1.197	0.00	0.00%	0.00%
0	4	1.197	1.196	0.00	-0.02%	0.07%
30	5	1.197	1.192	0.00	-0.41%	1.64%
30	6	1.197	1.191	-0.01	-0.45%	1.78%
30	7	1.196	1.191	-0.01	-0.43%	1.70%
30	8	1.196	1.192	0.00	-0.36%	1.45%
30	9	1.197	1.193	0.00	-0.32%	1.28%
30	10	1.197	1.193	0.00	-0.29%	1.17%
31	5a	1.197	1.196	0.00	-0.08%	0.31%
31	6a	1.197	1.195	0.00	-0.10%	0.40%
31	7a	1.196	1.196	0.00	-0.07%	0.27%
31	8a	1.196	1.196	0.00	-0.06%	0.25%
31	9a	1.197	1.196	0.00	-0.07%	0.26%
31	10a	1.197	1.196	0.00	-0.07%	0.26%
Max	1.197	1.197	0.00	0.00%	1.78%	
Average	1.197	1.194	0.00	-0.17%	0.69%	
Min	1.196	1.191	-0.01	-0.45%	0.00%	
Std Dev	0.000	0.002	0.00	0.17%	0.68%	



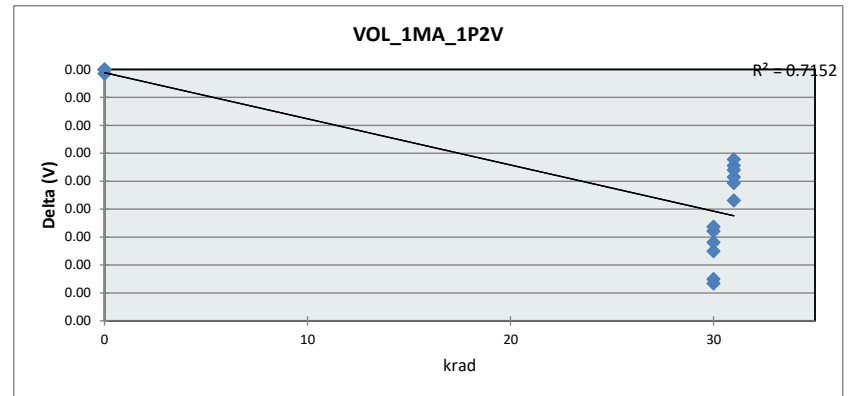
VOH_N50UA_1P2V			
Units	V		
Max Limit	1.3		
Min Limit	1		
krad	0	30	31
LL	1.000	1.000	1.000
Min	1.196	1.191	1.195
Average	1.196	1.192	1.196
Max	1.197	1.193	1.196
UL	1.300	1.300	1.300



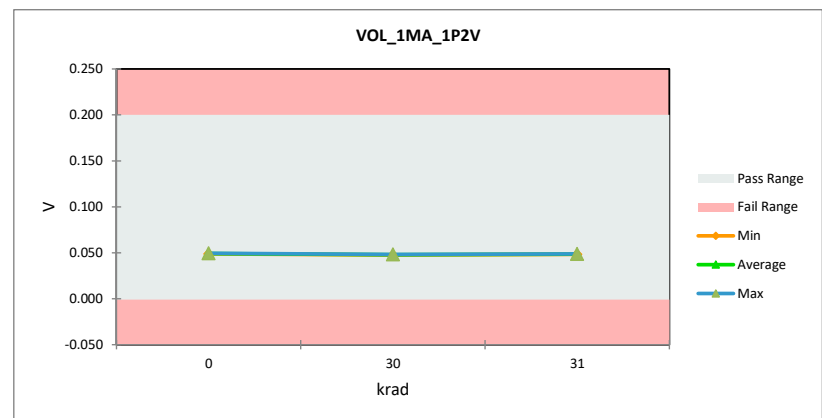
TID Report

SN54SC8T139-SEP

VOL_1MA_1P2V						
Units	V					
Max Limit	0.2					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.049	0.049	0.00	-0.06%	0.02%
0	2	0.049	0.049	0.00	0.00%	0.00%
0	3	0.049	0.049	0.00	-0.01%	0.00%
0	4	0.049	0.049	0.00	0.00%	0.00%
30	5	0.049	0.048	0.00	-3.13%	0.76%
30	6	0.049	0.048	0.00	-2.52%	0.62%
30	7	0.049	0.048	0.00	-3.04%	0.75%
30	8	0.049	0.048	0.00	-2.36%	0.58%
30	9	0.049	0.048	0.00	-2.63%	0.65%
30	10	0.049	0.048	0.00	-2.30%	0.56%
31	5a	0.049	0.048	0.00	-1.66%	0.40%
31	6a	0.049	0.048	0.00	-1.57%	0.38%
31	7a	0.049	0.048	0.00	-1.90%	0.47%
31	8a	0.049	0.048	0.00	-1.40%	0.34%
31	9a	0.049	0.049	0.00	-1.30%	0.32%
31	10a	0.049	0.048	0.00	-1.47%	0.36%
Max	0.049	0.049	0.00	0.00%	0.76%	
Average	0.049	0.048	0.00	-1.58%	0.39%	
Min	0.049	0.048	0.00	-3.13%	0.00%	
Std Dev	0.000	0.001	0.00	1.08%	0.27%	



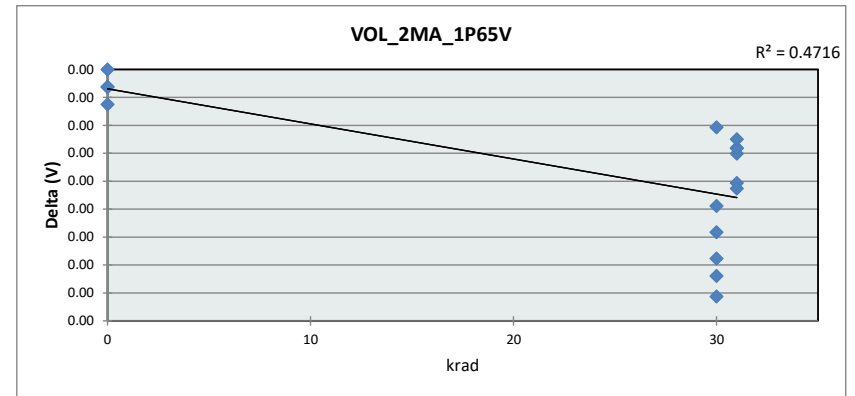
VOL_1MA_1P2V			
Units	V		
Max Limit	0.2		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.049	0.048	0.048
Average	0.049	0.048	0.048
Max	0.049	0.048	0.049
UL	0.200	0.200	0.200



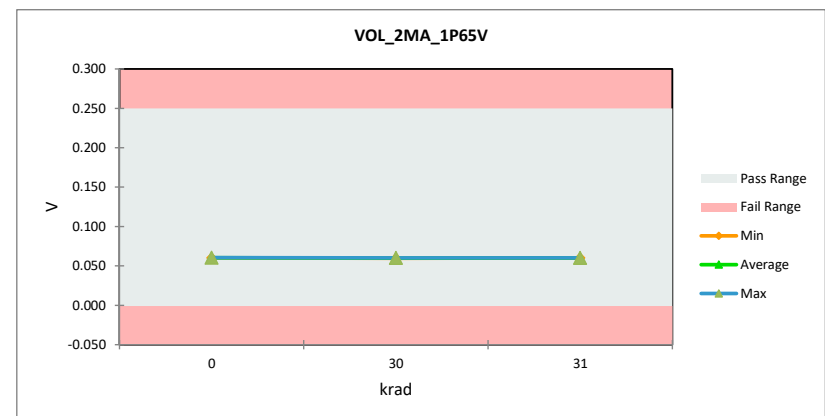
TID Report

SN54SC8T139-SEP

VOL_2MA_1P65V						
Units	V					
Max Limit	0.25					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.060	0.060	0.00	-0.10%	0.02%
0	2	0.060	0.060	0.00	-0.10%	0.02%
0	3	0.060	0.060	0.00	0.00%	0.00%
0	4	0.061	0.060	0.00	-0.21%	0.05%
30	5	0.060	0.060	0.00	-1.34%	0.32%
30	6	0.060	0.060	0.00	-0.34%	0.08%
30	7	0.061	0.060	0.00	-1.12%	0.27%
30	8	0.060	0.060	0.00	-1.22%	0.29%
30	9	0.061	0.060	0.00	-0.81%	0.19%
30	10	0.060	0.060	0.00	-0.97%	0.23%
31	5a	0.060	0.060	0.00	-0.67%	0.16%
31	6a	0.060	0.060	0.00	-0.47%	0.11%
31	7a	0.061	0.060	0.00	-0.70%	0.17%
31	8a	0.060	0.060	0.00	-0.50%	0.12%
31	9a	0.061	0.060	0.00	-0.47%	0.11%
31	10a	0.060	0.060	0.00	-0.41%	0.10%
Max	0.061	0.060	0.00	0.00%	0.32%	
Average	0.060	0.060	0.00	-0.59%	0.14%	
Min	0.060	0.060	0.00	-1.34%	0.00%	
Std Dev	0.000	0.000	0.00	0.41%	0.10%	



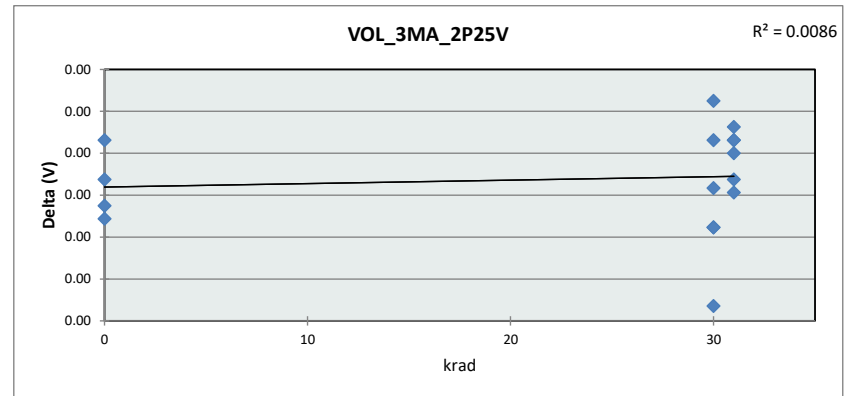
VOL_2MA_1P65V			
Units	V		
Max Limit	0.25		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.060	0.060	0.060
Average	0.060	0.060	0.060
Max	0.060	0.060	0.060
UL	0.250	0.250	0.250



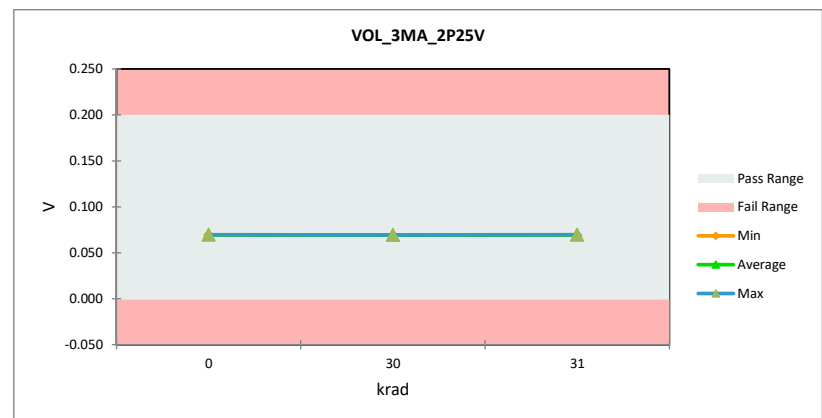
TID Report

SN54SC8T139-SEP

VOL_3MA_2P25V						
Units	V					
Max Limit	0.2					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.069	0.069	0.00	-0.23%	0.08%
0	2	0.070	0.070	0.00	0.04%	0.02%
0	3	0.069	0.069	0.00	-0.09%	0.03%
0	4	0.070	0.070	0.00	-0.18%	0.06%
30	5	0.069	0.069	0.00	-0.12%	0.04%
30	6	0.069	0.069	0.00	0.05%	0.02%
30	7	0.070	0.069	0.00	-0.52%	0.18%
30	8	0.069	0.069	0.00	-0.25%	0.09%
30	9	0.069	0.069	0.00	0.18%	0.06%
30	10	0.069	0.069	0.00	-0.26%	0.09%
31	5a	0.069	0.069	0.00	0.05%	0.02%
31	6a	0.069	0.069	0.00	0.09%	0.03%
31	7a	0.070	0.070	0.00	0.04%	0.02%
31	8a	0.069	0.069	0.00	-0.09%	0.03%
31	9a	0.069	0.069	0.00	0.00%	0.00%
31	10a	0.069	0.069	0.00	-0.14%	0.05%
Max	0.070	0.070	0.00	0.18%	0.18%	
Average	0.069	0.069	0.00	-0.09%	0.05%	
Min	0.069	0.069	0.00	-0.52%	0.00%	
Std Dev	0.000	0.000	0.00	0.17%	0.04%	



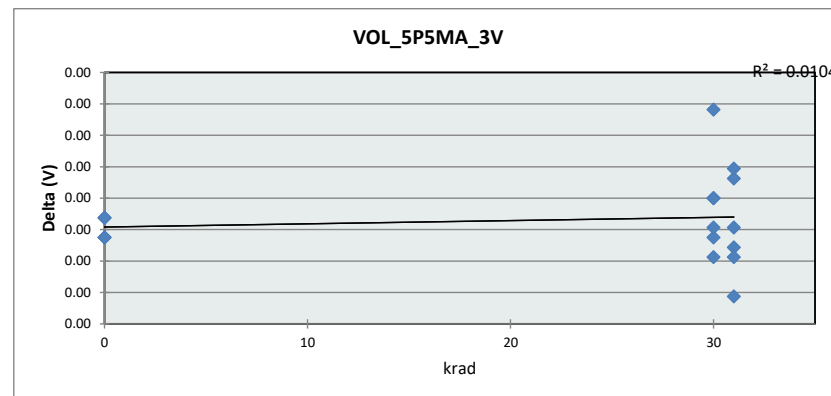
VOL_3MA_2P25V			
Units	V		
Max Limit	0.2		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.069	0.069	0.069
Average	0.069	0.069	0.069
Max	0.070	0.069	0.070
UL	0.200	0.200	0.200



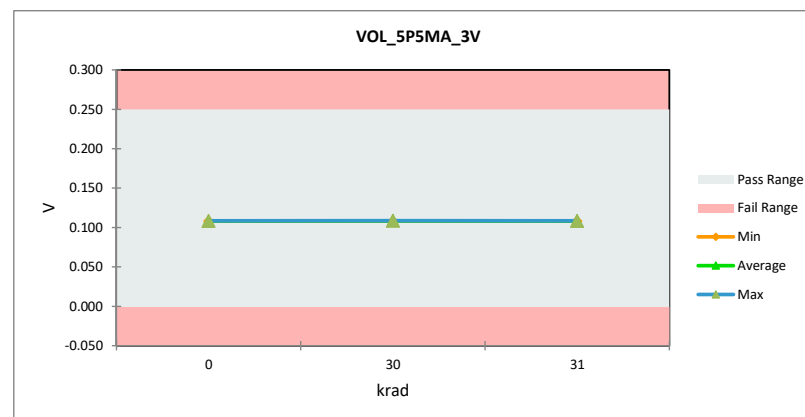
TID Report

SN54SC8T139-SEP

VOL_5P5MA_3V						
Units		V				
Max Limit		0.25				
Min Limit		-0.001				
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.109	0.108	0.00	-0.06%	0.02%
0	2	0.109	0.109	0.00	-0.06%	0.02%
0	3	0.108	0.108	0.00	-0.12%	0.05%
0	4	0.109	0.108	0.00	-0.12%	0.05%
30	5	0.109	0.109	0.00	0.00%	0.00%
30	6	0.108	0.108	0.00	-0.12%	0.05%
30	7	0.108	0.109	0.00	0.26%	0.11%
30	8	0.108	0.108	0.00	-0.09%	0.04%
30	9	0.108	0.108	0.00	-0.17%	0.07%
30	10	0.108	0.108	0.00	0.00%	0.00%
31	5a	0.109	0.108	0.00	-0.14%	0.06%
31	6a	0.108	0.108	0.00	0.06%	0.02%
31	7a	0.108	0.109	0.00	0.09%	0.04%
31	8a	0.108	0.108	0.00	-0.09%	0.04%
31	9a	0.108	0.108	0.00	-0.17%	0.07%
31	10a	0.108	0.108	0.00	-0.29%	0.12%
Max		0.109	0.109	0.00	0.26%	0.12%
Average		0.108	0.108	0.00	-0.06%	0.05%
Min		0.108	0.108	0.00	-0.29%	0.00%
Std Dev		0.000	0.000	0.00	0.13%	0.03%



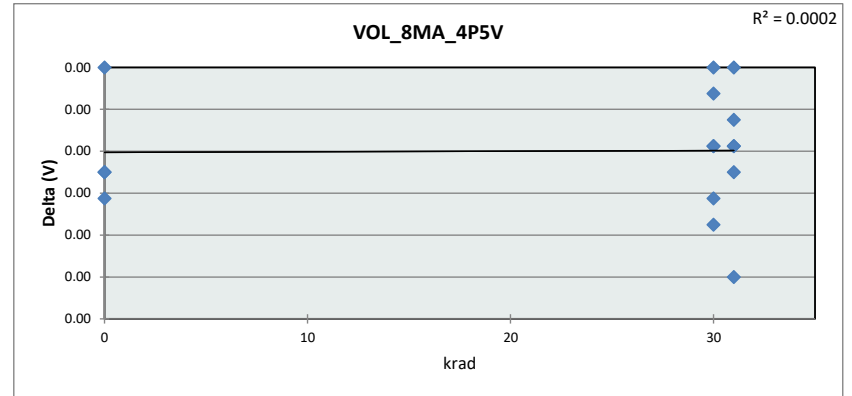
VOL_5P5MA_3V			
Units		V	
Max Limit		0.25	
Min Limit		-0.001	
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.108	0.108	0.108
Average	0.108	0.108	0.108
Max	0.109	0.109	0.109
UL	0.250	0.250	0.250



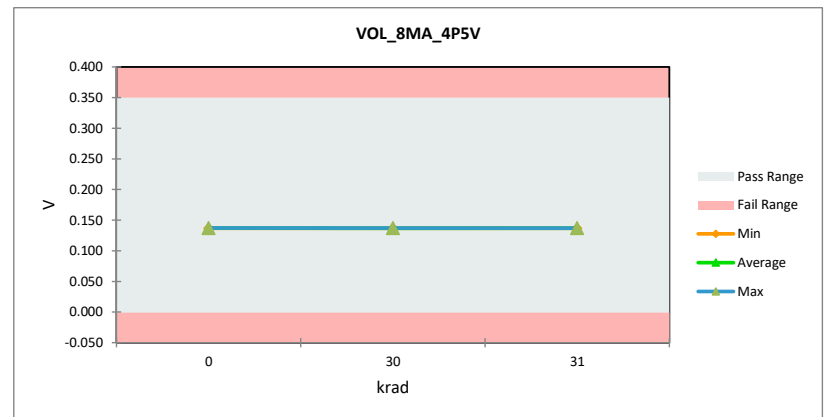
TID Report

SN54SC8T139-SEP

VOL_8MA_4P5V						
Units	V					
Max Limit	0.35					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.137	0.137	0.00	-0.11%	0.04%
0	2	0.137	0.137	0.00	-0.09%	0.04%
0	3	0.137	0.137	0.00	-0.09%	0.04%
0	4	0.137	0.137	0.00	0.00%	0.00%
30	5	0.137	0.137	0.00	0.00%	0.00%
30	6	0.137	0.137	0.00	-0.14%	0.05%
30	7	0.137	0.137	0.00	-0.02%	0.01%
30	8	0.137	0.137	0.00	-0.07%	0.03%
30	9	0.137	0.137	0.00	-0.07%	0.03%
30	10	0.137	0.137	0.00	-0.11%	0.04%
31	5a	0.137	0.137	0.00	-0.18%	0.07%
31	6a	0.137	0.137	0.00	-0.07%	0.03%
31	7a	0.137	0.137	0.00	-0.05%	0.02%
31	8a	0.137	0.137	0.00	-0.09%	0.04%
31	9a	0.137	0.137	0.00	-0.07%	0.03%
31	10a	0.137	0.137	0.00	0.00%	0.00%
Max	0.137	0.137	0.00	0.00%	0.07%	
Average	0.137	0.137	0.00	-0.07%	0.03%	
Min	0.137	0.137	0.00	-0.18%	0.00%	
Std Dev	0.000	0.000	0.00	0.05%	0.02%	



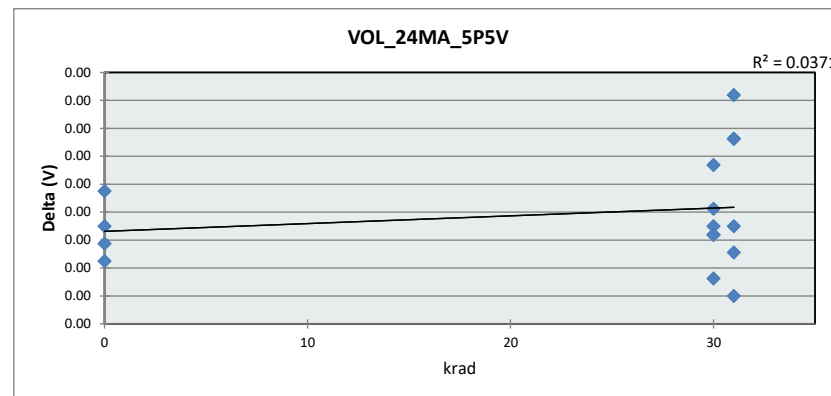
VOL_8MA_4P5V			
Units	V		
Max Limit	0.35		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.137	0.137	0.137
Average	0.137	0.137	0.137
Max	0.137	0.137	0.137
UL	0.350	0.350	0.350



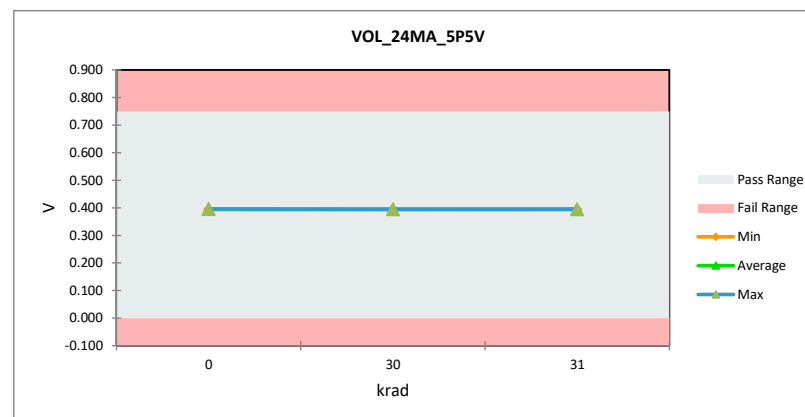
TID Report

SN54SC8T139-SEP

VOL_24MA_5P5V						
Units	V					
Max Limit	0.75					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.395	0.395	0.00	-0.06%	0.03%
0	2	0.396	0.396	0.00	-0.03%	0.02%
0	3	0.394	0.394	0.00	-0.08%	0.04%
0	4	0.395	0.395	0.00	-0.09%	0.05%
30	5	0.395	0.395	0.00	-0.05%	0.02%
30	6	0.395	0.395	0.00	-0.07%	0.04%
30	7	0.395	0.395	0.00	-0.06%	0.03%
30	8	0.395	0.394	0.00	-0.11%	0.06%
30	9	0.394	0.394	0.00	-0.01%	0.00%
30	10	0.394	0.394	0.00	-0.07%	0.04%
31	5a	0.395	0.395	0.00	-0.13%	0.07%
31	6a	0.395	0.395	0.00	-0.09%	0.05%
31	7a	0.395	0.395	0.00	-0.06%	0.03%
31	8a	0.395	0.395	0.00	0.02%	0.01%
31	9a	0.394	0.394	0.00	0.06%	0.03%
31	10a	0.394	0.394	0.00	0.02%	0.01%
Max	0.396	0.396	0.00	0.06%	0.07%	
Average	0.395	0.395	0.00	-0.05%	0.03%	
Min	0.394	0.394	0.00	-0.13%	0.00%	
Std Dev	0.001	0.001	0.00	0.05%	0.02%	



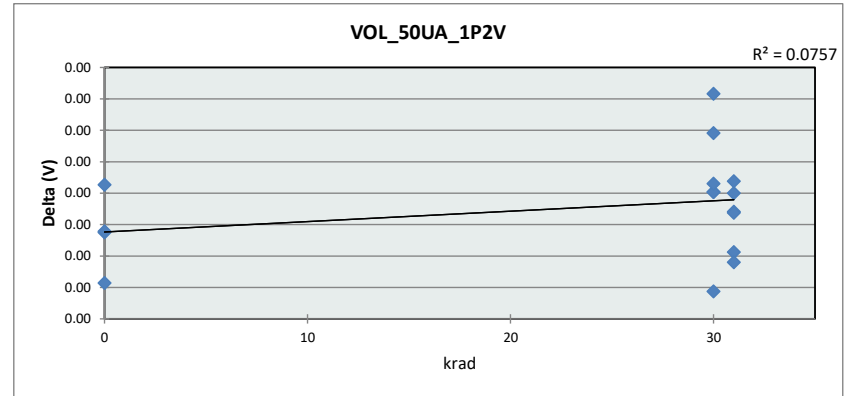
VOL_24MA_5P5V			
Units	V		
Max Limit	0.75		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.394	0.394	0.394
Average	0.395	0.394	0.395
Max	0.396	0.395	0.395
UL	0.750	0.750	0.750



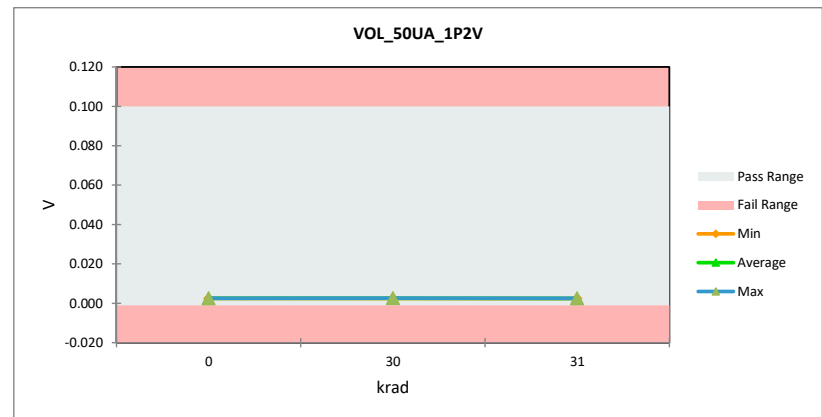
TID Report

SN54SC8T139-SEP

VOL_50UA_1P2V						
Units	V					
Max Limit	0.1					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.003	0.002	0.00	-5.49%	0.14%
0	2	0.003	0.002	0.00	-2.46%	0.06%
0	3	0.003	0.003	0.00	0.52%	0.01%
0	4	0.003	0.002	0.00	-2.37%	0.06%
30	5	0.003	0.003	0.00	0.07%	0.00%
30	6	0.002	0.002	0.00	0.07%	0.00%
30	7	0.003	0.002	0.00	-6.11%	0.15%
30	8	0.002	0.003	0.00	6.42%	0.16%
30	9	0.003	0.003	0.00	0.60%	0.01%
30	10	0.002	0.003	0.00	3.83%	0.09%
31	5a	0.003	0.003	0.00	0.00%	0.00%
31	6a	0.002	0.002	0.00	-1.18%	0.03%
31	7a	0.003	0.002	0.00	-3.66%	0.09%
31	8a	0.002	0.002	0.00	-1.27%	0.03%
31	9a	0.003	0.002	0.00	-4.38%	0.11%
31	10a	0.002	0.003	0.00	0.76%	0.02%
Max	0.003	0.003	0.00	6.42%	0.16%	
Average	0.003	0.002	0.00	-0.91%	0.06%	
Min	0.002	0.002	0.00	-6.11%	0.00%	
Std Dev	0.000	0.000	0.00	3.25%	0.06%	

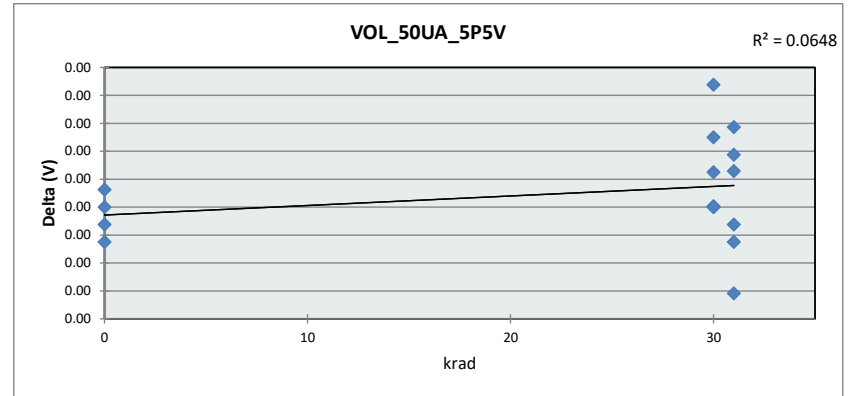


VOL_50UA_1P2V			
Units	V		
Max Limit	0.1		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.002	0.002	0.002
Average	0.003	0.003	0.002
Max	0.003	0.003	0.003
UL	0.100	0.100	0.100

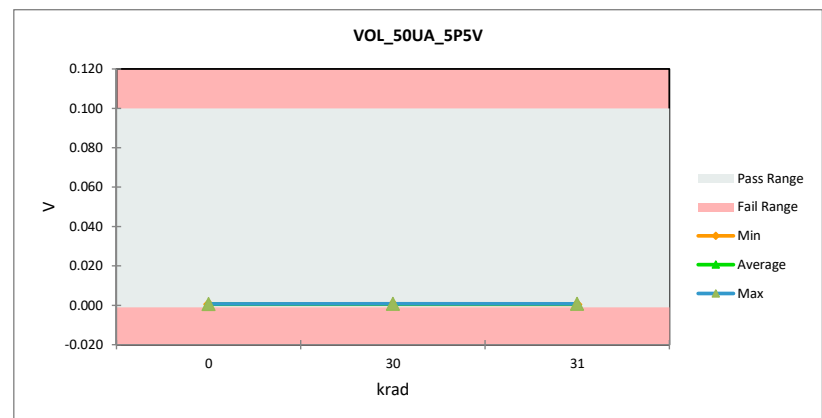


TID Report SN54SC8T139-SEP

VOL_50UA_5P5V						
Units	V					
Max Limit	0.1					
Min Limit	-0.001					
krad	Serial #	PreTestHDR	PostTestHDR	Delta	Delta %	% of Limit Range
0	1	0.001	0.001	0.00	-5.31%	0.03%
0	2	0.001	0.001	0.00	0.00%	0.00%
0	3	0.001	0.001	0.00	4.80%	0.03%
0	4	0.001	0.001	0.00	-10.63%	0.06%
30	5	0.001	0.001	0.00	0.00%	0.00%
30	6	0.001	0.001	0.00	0.30%	0.00%
30	7	0.001	0.001	0.00	22.44%	0.12%
30	8	0.001	0.001	0.00	0.00%	0.00%
30	9	0.001	0.001	0.00	9.17%	0.06%
30	10	0.001	0.001	0.00	39.28%	0.22%
31	5a	0.001	0.001	0.00	-5.31%	0.03%
31	6a	0.001	0.001	0.00	15.94%	0.09%
31	7a	0.001	0.001	0.00	25.65%	0.14%
31	8a	0.001	0.000	0.00	-11.89%	0.06%
31	9a	0.001	0.001	0.00	-22.65%	0.15%
31	10a	0.001	0.001	0.00	11.54%	0.06%
Max	0.001	0.001	0.00	0.00	39.28%	0.22%
Average	0.001	0.001	0.00	0.00	4.58%	0.07%
Min	0.001	0.000	0.00	0.00	-22.65%	0.00%
Std Dev	0.000	0.000	0.00	0.00	15.68%	0.06%



VOL_50UA_5P5V			
Units	V		
Max Limit	0.1		
Min Limit	-0.001		
krad	0	30	31
LL	-0.001	-0.001	-0.001
Min	0.001	0.001	0.000
Average	0.001	0.001	0.001
Max	0.001	0.001	0.001
UL	0.100	0.100	0.100



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